The relationship between the healthy work environment and intention to stay among nurses working in public hospitals in Muscat, Oman

By

Asma Salim Al Yahyaei

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College of Medical and Dental Sciences
School of Nursing
University of Birmingham
Edgbaston
Birmingham

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list of the used abbreviations

HWE	Healthy work environment
ITS	Intention to stay
USA	United States of America
UK	United Kingdom
CA	Concept Analysis
SR	Systematic Review
WHO	World Health Organisation
NHS	National Health Service
AACN	Association of Critical Care Nurses
ICN	International Council of Nurses
RN	Registered Nurse
ITL	Intention to Leave
TRA	Theory of Reasoned Action
SET	Social Exchange Theory
HoH	Omani Ministry of Health
NCSI	National Center for Statistics and Information
AAN	American Academy of Nursing
EOM	Essentials of Magnetism
ICU	Intensive Care Unit
RNAO	Registered Nurses' Association of Ontario
RCN	Royal College of Nursing
PES-NWI	Practice Environment Scale of the Nursing Work Index
NWI	Nursing Work Index
NCI	Nursing Context Index
CRD	Centre of Review and Dissemination
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
OCQ	Organisational Commitment Questionnaire
WDQ	Work Design Questionnaire
NOS	National Organisation Study
MBCS	McCain Behavioural Commitment Scale
OCM	Organisational Career Management
SQUH	Sultan Qaboos University Hospital
RH	Royal Hospital
KH	Khawlah Hospital
PIL	Participant Information Leaflet
RDS	Research Data Storage
UoB	University of Birmingham
VIF	Variance Inflation Factor
IF	Individual Factors
NP	Nursing professional characteristics
NS	Overall nursing satisfaction
OC	Organisational commitment
STAFF/ST	Staffing
DNR	Doctors-nurses' relationships and teamwork
MS	Management support and Leadership
NE	Nursing empowerment
CD	Career development
TE	Training and Education
DM	Decision-Making Autonomy
TV	Task Variety
TS	Task significance
TI	Task identity
PD	Physical demand
PS	Payment satisfaction
OBS/GYN	Obstruction and Gynecology
SD	Standard Deviation
UAE	United Arab Emirates
KSA	Kingdom of Saudi Arabia
OSNI	Oman Specialized Nursing Institute

Abstract

Background: Staffing shortages are affecting an increasing number of health services globally. Predictions suggest that the shortages will worsen in the future. There is a broad consensus that leaders at all levels must do more to support and develop current employees. In Oman, published data suggests there is an ~ 30% shortfall in the required number of nurses to meet the population health demand. More attention is being given, to explore the factors associated with intention to leave. There is a scarcity of research to inform why nurses decide to stay. Understanding the factors that predict nurses' intention to stay would help organisations plan retention strategies more effectively.

Aim: This thesis reports a PhD study that aimed to; explore the concept of a healthy work environment, review the literature pertaining to intention to stay/leave and the healthy work environment and finally it investigated the relationship between intention to stay and the healthy work environment among nurses working in three public hospitals in Muscat, Oman.

Methods: A multi-method, multi-phased, study consisting of a concept analysis using Walker and Avant's framework was used to define the concept of the healthy work environment (HWE) and identify its attributes (phase one); a systematic review to identify, select, quality assess, extract and synthesise the findings reported in published papers which examined the relationship between the work environment and nurses' intention to stay (ITS) in the acute healthcare setting (phase two), two steps of piloting including assessment of potential tools and evaluation of their clarity, suitability and acceptability to be used in the Omani healthcare setting. Finally, a cross-sectional survey to investigate the impact between the healthy work environment and other independent variables on the nurses' intention to stay using path analysis.

Results: Five attributes of the healthy work environment were identified from the literature and were used to define the concept and build the study's conceptual framework relating to intention to stay. In the systematic review, four main categories were identified that related to intention to stay: individual indicators (personal and professional), organisation/profile, work environment, and patient related. Several work environment variables were identified in the review and were significantly associated with nurses' intention to stay, such as leadership practice, empowerment, nursing workload and team interaction. Based on the reviews' findings and the previous intention to stay's framework, a proposed framework was developed and tested. The final model explained 63% of the variance in regard to intention to stay and furthermore showed that organisation commitment, nurses' satisfaction, and healthy work environment' attributes have a substantial effect on nurses' intention to stay. Leadership and empowerment had the strongest impact on intention to stay among the HWE's subscales. Nurses' satisfaction and organisation commitment were indirectly associated to intention to stay through the nursing profession characteristics.

Discussion: Based on the results from the PhD study, a number of issues were identified including the role of leadership, empowerment and team working, global nursing workforce initiatives to 'fill the gap' as well as public and professional perceptions of nursing. Several issues related to Oman and the International nursing workforce shortage were discussed. Recommendations include a need to share, customise and utilise International initiatives which embrace the retention of nurses' and enhance role empowerment, such as Magnet accreditation. Further recommendations were provided relating to future research.

Conclusion: With current and projected nursing workforce shortages, there is a need to retain nurses in healthcare organisations. Although, improved salary payments are likely to assist organisations attract talented nurses, organisations need to do more than that, to retain

them. The factors that attract nurses are not necessarily the factors that will retain them. Establishing and maintaining a healthy work environment, where nurses are allowed to practice independently and grow professionally, will enhance intention to stay and therefore are recommended as a worthwhile investment.

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Chapter I: Introduction

1.1 Chapter overview

This thesis reports a multi-method, multi-phased study undertaken to explore the complex relationship between the Healthy Work Environment (HWE) and Intention To Stay (ITS) among nurses working in acute healthcare settings in Oman. The purpose of this chapter is to introduce the key variables related to healthcare and the geographical context. This chapter also describes the study aims, objectives, key research questions and the structure of the thesis.

1.2 Introduction

In a competitive economic world, it is essential that healthcare organisations use resources wisely, particularly human resources. This is important if they are to survive and progress (Armstrong, 2006). There is also a need to keep employees happy and satisfied with their work in order to maximise staff retention and reduce turnover of the workforce within the current rapidly changing and complex healthcare environment (AbuAlRub *et al.*, 2016; Choi, Cheung and Pang, 2013; Han, Trinkoff and Gurses, 2015; Twigg and McCullough, 2014; WHO, 2013).

Staff turnover is one of the most pressing challenges facing healthcare globally. It is a particular problem in nursing, because of its negative impact on patients and organisations. It has a detrimental effect on the efficiency and effectiveness of healthcare delivery (Alhamwan and Mat, 2015; Beheri, 2009; Castle and Engberg, 2005; Drenkard, 2010; Hayes *et al.*, 2012). Although the extent of nursing shortages varies between countries, there is a global imbalance between the demand and supply of nurses (Oliver and Care, 2019; Haddad, Annamaraju and Toney-Butler, 2020). For example, in the United States of America (USA), the number of

nursing vacancies is predicted to rise by 1.2 million between 2014 and 2022 and the estimated 3.95 million supply of nursing staff will not meet the 4.14 million required (Bureau of Labor Statistics, 2019). Furthermore, it is anticipated that by 2050, the nursing workforce deficit, in the USA will be the largest since the introduction of Medicare and Medicaid in the mid-1960s (Gershon *et al.*, 2007; Buerhaus, 2008). In the United Kingdom (UK), the nursing shortage was estimated to be 8.9 percent in early 2015 and was expected to grow to 11.4 percent by 2020 (NSI Nursing Solutions, 2016). In Australia, the projected shortfall is 109,000 nurses by 2025 (Mason, 2013).

Similarly, the Sultanate of Oman, the setting for this study, is experiencing a serious nursing shortage and an increased demand for nurses. This has resulted from an expansion of healthcare provision and rapid population growth within Oman (Al Maqbali, 2015; Kamanyire and Achora, 2015). Despite efforts to increase the number of national and expatriate nurses in Oman, there was a 30% workforce shortfall in 2008 (J, 2009). According to the latest published data from World Bank, the nurse to (1000) population ratio declined in from 4.67 in 2014 to 4.2 in 2018 (WorldBank, 2018). However, according to the official annual report of the Omani Ministry of Health (MoH) the ratio was 4.4 in 2019 (MoH, 2019c) even though there is no published data about the actual nursing shortage in Oman. In 2014 the Omani government published a document of its healthcare vision 2050 including the projection of the nursing workforce needed to meet the demand arising from population growth (MoH, 2014). A comparison between the projected need and the available workforce indicated a nursing shortage by 8167 nurses which represented 30% shortfall in the nursing workforce of the country's need in 2019 (MoH, 2019a; MoH, 2014). However, given the lack of official data about nursing shortages in Oman it is likely that the actual shortage of nurses in Oman is worse, particularly if the negative impact of Covid-19 on the global nursing workforce is considered.

It has increased the demand for care turnover rate (Buchan and Catton, 2020). There is no evidence to suggest that the situation has improved and no major interventions have been implemented to address the shortage in Oman (Al Salmi and Hannawi, 2018; Maqbali *et al.*, 2019). Furthermore, the Sultanate of Oman's vision and plans for the next ten years, do not include any initiatives to redress the imbalance (Al Salmi and Hannawi, 2018). It is therefore important to explore how high-quality staff can be retained and how best to ameliorate the negative impact of staff shortages on patients and healthcare organisations.

The global nursing shortage highlights the challenges involved in ensuring the nursing workforce is sufficient to meet patient demand, and demonstrates a need to retain high quality staff and reduce nursing turnover (Hirschkorn *et al.*, 2010; Christmas, 2008; Carter, Cook and Dorsey, 2009; Cowden, Cummings and Profetto-Mcgrath, 2011; Twigg and McCullough, 2014). Several factors have been identified in the literature which require further investigation if staff retention is to be better understood. These include individual nurse characteristics, the work environment, leadership and management styles, and nursing autonomy (Choi, Cheung and Pang, 2013; Aiken *et al.*, 2008; AbuAlRub *et al.*, 2016; Christmas, 2008; Twigg and McCullough, 2014). Healthcare organisations globally are concerned with improving the quality of the work environment to increase the recruitment and retention of high-quality staff (RNAO, 2020).

Studies conducted in Western countries and Asia have demonstrated that a healthy nursing work environment is positively linked to greater satisfaction, lower burnout and less intentional turnover among nursing staff (Alhamwan and Mat, 2015; Baernholdt and Mark, 2009; Chen *et al.*, 2008; Dawson *et al.*, 2014). However, different elements of the nursing work environment were examined in these studies such as leadership and staffing levels. In the twenty-first century, researchers' attention has been focussed on the term the 'healthy work

environment' to describe positive elements of the nursing work environment (Schmalenberg and Kramer, 2008; Ritter, 2011; Pearson A *et al.*, 2007; Christmas, 2008; RCN, 2015; Stoewen, 2016; RNAO, 2020). Researchers and nursing organisations have described the concept of a healthy work environment as consisting of a range of basic elements which have some similarities but differ in focus, depending on the speciality. Greater clarity concerning the concept of a healthy work environment is required, prior to exploring its association with other concepts. However, while there is a robust body of literature demonstrating an association between the healthy work environment and nurses' intention to stay in some countries, there is a scarcity of research regarding this relationship in countries in the Middle East including Oman. The nursing shortage and increasing demand for healthcare in Oman, make it essential to understand the effect of the work environment on nurses' intention to stay. A detailed understanding of employees' intention to stay and the related environmental factors is needed if healthcare organisations are to be successful in developing strategies to improve employee retention and reduce staff turnover.

1.3 Aims of the thesis

The primary aim of the thesis is to explore the relationship between intention to stay and the healthy work environment among nurses working in public hospitals in Muscat, Oman. The secondary aims listed below were set to inform the primary aim:

1. Define the concept of the 'Healthy Work Environment' in nursing and identify its main attributes.
2. Identify the relationship between nurses' intention to stay and the work environment as reported in the published literature.

3. Explore available models and factors affecting intention to stay and develop a framework to guide the research.
4. Examine the concept of the healthy work environment as perceived by nurses working in public hospitals in Muscat, Oman.
5. Explore the level of intention to stay among nurses working in public hospitals in Muscat.
6. Investigate the relationship between intention to stay and the healthy work environment among nurses working in three public hospitals in Muscat, Oman (main aim).

1.4 Objectives of the thesis

The following objectives were set to ensure the study aims were achieved:

1. Complete a concept analysis to define the concept of the 'Healthy Work Environment' and identify its key attributes.
2. Undertake a systematic literature review to explore the relationship between the healthy work environment and nurses' intention to stay.
3. Build a conceptual framework of the factors which predict nurses' intention to stay based on the results of the concept analysis and systematic review.
4. Search the literature for assessment tools which have been used to assess intention to stay and healthy work environment to examine their potential for use in an online survey in Oman.
5. Interview nursing workforce experts (at least three) to identify gaps in the identified assessment tools which may affect measurement of the identified factors and the acceptability of the tools in the Omani healthcare setting.
6. Pilot the identified assessment tools to check for clarity and acceptability.

7. Assess the nursing working environment, intention to stay and the relationship between them in the Omani healthcare setting using a cross-sectional online survey.

1.5 Research questions

The intention in this thesis was to answer the following questions:

1. What are the main attributes of a healthy work environment in nursing?
2. Has a relationship between the healthy work environment and intention to stay been identified in the literature in nurses working in an acute healthcare setting?
3. Are the identified tools that measure the important research variables (HWE and ITS) suitable and acceptable for use in the acute healthcare setting in Oman and are there any potential limitations of the identified tools, in terms of their suitability for measurement of the interested concepts?
4. What is the perception of the work environment, job characteristics, overall job satisfaction, organisation commitment and intention to stay in nurses working in public hospitals in Oman?
5. Is there a relationship between the nursing work environment and intention to stay among nurses' working in public hospitals in Oman?

1.6 Thesis overview

Chapter one has introduced the main area of research and presented the primary and secondary aims, objectives and research questions. The second chapter provides background information and examines the nursing shortage, nursing turnover, healthy work environment, and intention to stay or leave. Additionally, background about Oman and its main nursing workforce challenges are presented.

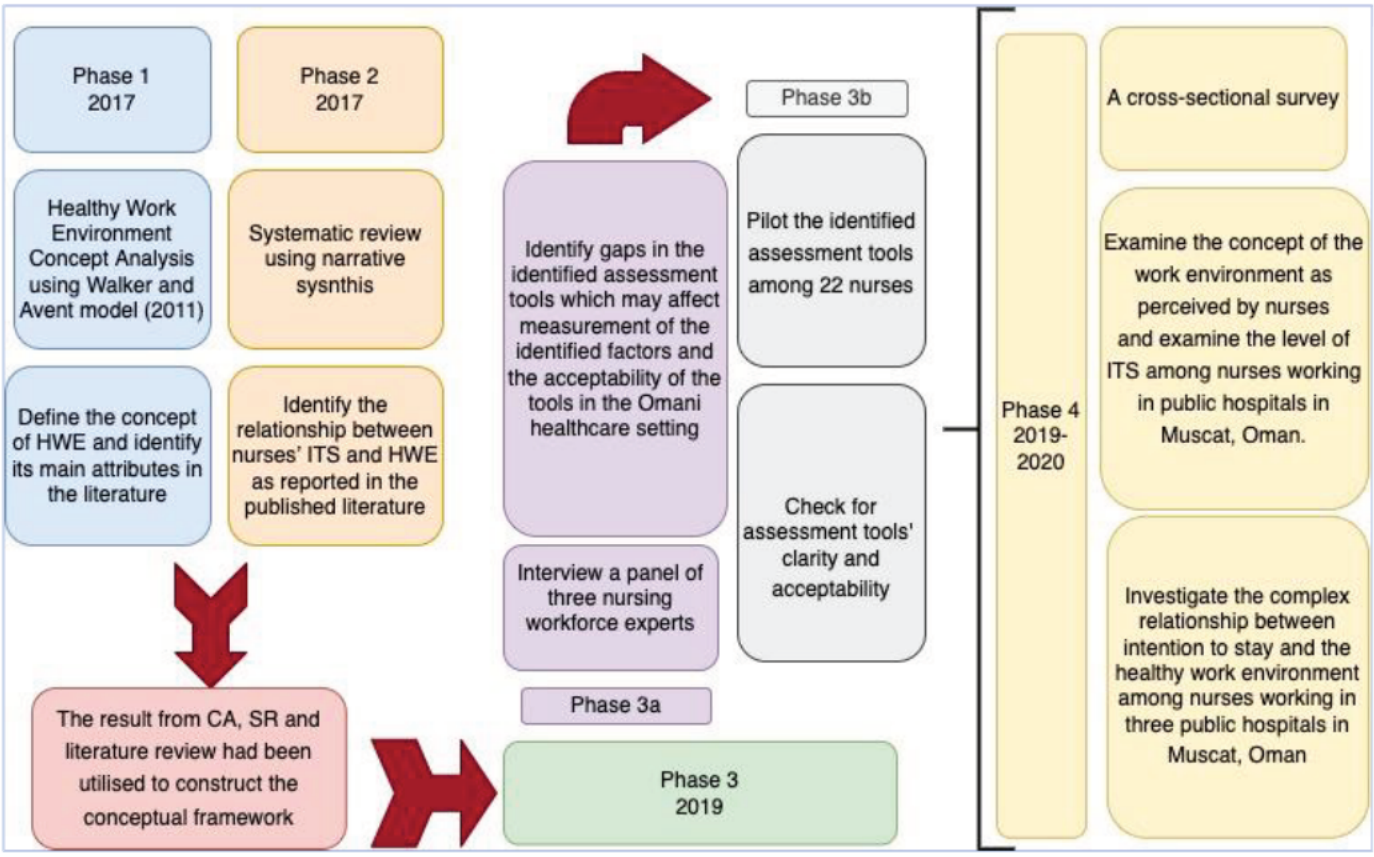
A multi-method, multi-phased approach was used to answer the research questions. This approach allowed for a comprehensive examination of multiple perspectives with the aim of improving scientific accuracy. Detailed information about this methodological approach including the research design, philosophical and theoretical perspectives is included in chapter three (Methodology chapter). The main aim of the project was to examine the relationship between the work environment and intention to stay among nurses working in acute healthcare settings in Muscat, Oman. In order to achieve this aim, a concept analysis was undertaken to define the healthy work environment and identify its attributes. These are presented in chapter four (Concept analysis). Next, a systematic review was conducted to explore the evidence of the predictors of nurses' intention to stay (ITS) in acute healthcare settings. This is presented in chapter five (Systematic review). The findings from the literature review and the concept analysis informed the development of a conceptual framework (Chapter six) which was used to guide development of the final phase in this thesis (Cross-sectional survey).

Based on the results of the concept analysis and the systematic literature review, assessment tools and predictive factors were identified, which further enhanced the conceptual framework and informed the survey development. Once the survey was developed, it was pilot tested with three experts and 22 potential participants to assess language, clarity, and layout.

Finally, an online survey was conducted in three acute hospitals, in Oman. The development, pilot-testing and findings of the survey are presented in chapter six and include the demographic information of the participants, bivariate correlations of the study variables and a path analysis. Chapter seven presents the discussion, including the association of the findings into other studies, study limitations, implications for practice and recommendations for future research. The next chapter (Chapter two) explores the main study variables within

the context of current nursing workforce challenges. Figure 1 illustrates the research phases including each phase's aim, design and how inform it informed the other phases.

Figure 1: Study Phases



Chapter II: Background

2.1 Chapter overview

This chapter highlights the major challenges experienced as a result of the shortages in the nursing workforce. It introduces the key variables that were examined in the thesis. Furthermore, it explores the impact of these challenges on nursing practice and education in Oman. Finally, the significance and contribution of this research to the nursing workforce literature in Oman are summarised.

2.2 Nursing shortages

Globally, nurses make up the largest proportion of the healthcare workforce (WHO, 2013). High quality nursing is required to achieve efficient and safe patient care. However, the current nursing shortage is a major obstacle to the provision of the high-quality nursing care necessary for effective and safe healthcare systems. The nursing workforce is projected to grow from 2.9 million in 2016 to 3.4 million in 2026, with an increase of 15% over a ten-year period, however an ageing workforce (with high numbers of potential retirements) and high staff turnover mean that a shortfall in workforce supply will continue (AACN, 2019). In Canada, it is estimated that by 2022 there will be a shortage of 60,000 nurses, equating to nearly 20% of those currently employed (Marć *et al.*, 2019).

There are also nursing workforce deficits in several European countries. Overall, the World Health Organisation (WHO) estimates there are 7.3 million nurses and midwives employed in the WHO European Region. However, this number is not deemed adequate to meet current and projected needs (WHO Europe, 2017). For example in England, the shortage is evident, in high vacancy rates in the National Health Service (NHS) (Buchan *et*

al., 2019). It is reported that there are more than 41,000 vacant nursing posts in the NHS in England which equates to more than 1 in 10 posts (NSI Nursing Solutions, 2020). In response, the English government has substantially increased the number of nurses in training. However, the gap between the demand for and supply of NHS staff remains a concern (NSI Nursing Solutions, 2020). In order to fill this gap, further initiatives have been taken in England which include increasing the number of nurses recruited from Spain, Portugal, India and the Philippines (Marć *et al.*, 2019). In Norway, due to the ageing workforce, it is predicted there will be a shortage of 41,000 practical nurses by 2030 (Simoens, Villeneuve and Hurst, 2005). Despite initiatives to recruit nurses from China which has a large surplus of nurses, it is estimated that Germany will have a deficit of 157,000 full-time nurses by 2030 (Oliver and Care, 2019; Fang, 2007; Marć *et al.*, 2019).

Generally, there is evidence of a global shortage of healthcare workers, in particular nurses and midwives, who account for up to 50% of the total (WHO, 2018). The nursing shortage is a complex challenge to overcome. Solutions are required that focus not only on external nurse recruitment, but on internal organisation actions that maximise retention of high-quality staff. Furthermore, it is also important to consider variations between countries in terms of economic status, healthcare systems, cultural differences as well as workforce supply and demand issues.

When reviewing the history of the nursing workforce, the main concerns focus on nursing shortages and nurse-patient ratios. Such concerns were raised in the USA, as early as 1930 following an increase in hospital bed capacity to meet increasing patient demands. However, the issue of the nursing shortage, did not attract sustained attention from researchers until the early 1990s, when it had became an acute concern (West, Griffith and Iphofen, 2007). The cause of the current nursing shortage is reported to be varied and multifaceted. However,

key management practices adopted in the 1990s, mainly focused on the implementation of managed care and led to significant cutbacks in nurse staffing, increases in patient loads, and a near-freeze of average wages in the USA (Oulton, 2006, Murray, 2002). Previous nursing shortages were exacerbated by either an increase in demand or a decrease in supply. However, the current shortage has resulted from a reduction in supply *and* an increase in demand (Drennan and Ross, 2019).

The aging population is one factor that has increased the demand for nursing services, because advances in care and improvements in general lifestyle have increased life expectancy (Haddad, Annamaraju and Toney-Butler, 2020). Many people who would have died in previous years are now living longer with multiple chronic comorbidities increasing the demand for health services and nursing care. In addition, shorter hospital stays and more complex, chronic disease management have increased the demand for nurses in primary healthcare settings (Drennan and Ross, 2019).

Another contributory factor is the number of nurse trainees. The preparation of nursing graduates has not kept pace with the number of vacancies in the workplace. The reasons for this vary and include a lower train to need ratio with some higher education institutes recruiting fewer nursing students because of funding shortages and limited availability of clinical placements. Other factors include attrition of student nurses who do not complete their programme and graduate in the expected timeframe. Additionally, some nurses complete training but choose not to work in healthcare (Buchan *et al.*, 2019; Fox and Abrahamson, 2009). In 2017, there was a 23% fall in the nursing student intake in England after the government abolished NHS bursaries (Buchan *et al.*, 2019). However, the number of applications for nursing programmes in the UK has increased by 15% as a consequence of the increased awareness of and interest in the work of nurses during the Covid-19 pandemic (Lintern, 2020).

Other factors contributing to the nursing shortage include the large number of nurses approaching retirement age or who are choosing to retire early due to personal, financial and work-related reasons (Buchan *et al.*, 2019; Blakeley and Ribeiro, 2008). For example in the USA, there are currently one million registered nurses older than 50 years, meaning one-third of the workforce could potentially, be at retirement age in the next 10 to 15 years (Haddad, Annamaraju and Toney-Butler (2020). Thus, there is a need for, an additional 203,700 new nurses each year through to 2026 to replace retiring nurses (AACN, 2019). In Canada, a recent study showed that among 483 retired nurses, 85% retired earlier than expected (before the age of 65) due to financial and caregiving responsibilitiess (Hewko *et al.*, 2019). While several countries are examining and implementing potential initiatives such as, increasing the retirement age, it is doubtful that these changes will be in place early enough to significantly alter the existing and projected deficits in the nursing workforce (Sherman, Chiang-Hanisko and Koszalinski, 2013). Apart from retirement, nurses leave the profession due to unfavourable work conditions characterised by excessive workload, inadequate staff support, violence, stress, burnout, wage disparities and limited involvement in decision making (Drennan and Ross, 2019; Marć *et al.*, 2019).

The nursing shortage is not a new phenomenon, however its current impact on healthcare systems and patient care, means it is of particular interest and concern to policy makers, health system leaders and researchers (ICN, 2021; Haddad, Annamaraju and Toney-Butler, 2020; Oliver and Care, 2019; Nursing, 2019). Several studies report a correlation of a low number of nurses with reduced quality of care, poor patient outcomes, reduced job satisfaction, high staff turnover rates and increased care costs (McHugh *et al.*, 2016; AHRQ, 2004; Oulton, 2006). The impact of nurse staffing on patients' outcomes has been invesitgated and the evidence indicates a statistically and clinically significant association between

registered nurse (RN) staffing and adjusted odds ratio of hospital-related mortality, readmission, failure to rescue, hospital acquired pneumonia, unplanned extubation, respiratory failure and cardiac arrest (McHugh *et al.*, 2016; Braithwaite *et al.*, 2017; Driscoll *et al.*, 2018). Generally, and regardless of the healthcare setting, maintaining appropriate nursing staffing levels is necessary to ensure delivery of safe, high quality care (McHugh *et al.*, 2016; Braithwaite *et al.*, 2017; Driscoll *et al.*, 2018).

In summary, the nursing workforce shortage is a complex, global phenomenon. It results in serious negative consequences for healthcare systems and patient outcomes. However, there is no single or simple solution to address this challenge. Thus, national and global strategies are needed to reduce its impact on healthcare systems and patient outcomes. Despite the range of contributory factors, if nurses are retained in practice and staff turnover is reduced, then one key contributory factor could be addressed.

2.3 Nursing turnover

Reducing staff turnover and increasing nurse retention have been identified by decision makers and researchers as an effective approach to counteract the nursing shortage (Hirschkorn et al., 2010, Christmas, 2008, Carter et al., 2009, Cowden et al., 2011, Twigg and McCullough, 2014b). In the literature, staff turnover frequently appears as the primary topic under examination, when nursing workforce shortages are considered. Turnover rates provide an insight into trends regarding the movement of staff, who exit healthcare organisations. However, the failure to establish a clear and agreed definition of turnover, limits the ability of researchers to compare rates between units, across areas, and over time (Buchan, 2010; Duffield *et al.*, 2014). For example, some papers define turnover as the process by which nurses leave or are relocated within the employer organisation (Boyle and Miller, 2008; LeVasseur *et al.*,

2009), whereas other studies do not include transfers between units/wards or other departments in their definition (Beecroft, Dorey and Wenten, 2008).

Several categories of turnover have been identified. These include external turnover, indicating the number of people who leave an organisation for various reasons (leaving the organisation or the profession) and internal turnover which is the number of position changes within an organisation (Jones and Gates, 2007). Some studies have described nursing turnover as voluntarily leaving or relocating from their current position (O'Brien-Pallas *et al.*, 2010) or obligatory leaving, as a result of a ward relocation or as termination of employment (Jones and Gates, 2007; NSI Nursing Solutions, 2020). However, these differences in defining turnover are not always stated by researchers.

The reported annual nursing turnover rate varies by country. For example, a high rate is noted in New Zealand (44.3%) followed by the US (26.8%), Canada (19.9%), UK (17.2%) and Australia (15.1%) (Duffield *et al.*, 2014; NSI Nursing Solutions, 2020). Although, these numbers suggest there is a difference in turnover rates, it is possible that the differences relate to other reasons for example; differences in definition and/or state mandated ratios. The lack of standardisation makes it challenging to compare results and reach a definitive conclusion. However, the overall turnover rate indicates an indirect measure of an organisation's ability to retain its existing employees. Hence, a high turnover rate would be perceived as a negative indicator of organisation workforce sustainability (Cohen, Blake and Goodman, 2015; Duffield *et al.*, 2014).

There is growing literature on the impact of turnover, particularly in terms of cost to the healthcare sector and several studies have found that nurse turnover is costly because of productivity losses and organisation inadequacies due to workforce instability (Duffield *et al.*, 2014; Hayes *et al.*, 2012; Jones and Gates, 2007; NSI Nursing Solutions, 2020). There is a

reduction in productivity due to turnover when experienced nurses are required to serve as preceptors for newly recruited and/or qualified nurses, which takes them away from frontline care until the new nurses reach full productivity (North and Hughes, 2006).

In the USA, the estimated turnover cost per individual nurse is between US$21,500 and US$ 31,500 (Buchan, 2010; Duffield *et al.*, 2014; Li and Jones, 2013). This overall cost is made up of direct and indirect costs. Direct turnover costs include those assigned to a specific activity including advertising and marketing nursing positions to hire nurses to fill vacancies, temporary replacement, recruitment costs, orientation and training. Indirect costs are those that cannot be allocated to a specific activity, and may be invisible and difficult to calculate, such as productivity losses, and the loss of knowledgeable experienced staff (Jones and Gates, 2007). However, it is not always possible to categorise turnover costs in this way. The cost of turnover varies by country. Turnover related to one nursing position has been estimated as: Australia (US$48,790), UK (US$48,050), USA (US$43,200), Canada (US$26,652) and New Zealand (US$23,711) (Duffield *et al.*, 2014; NSI Nursing Solutions, 2020). In addition to the financial cost, nurse turnover is associated with higher levels of mental ill-health due to the increased workload and resulting stress on existing nurses (O'Brien-Pallas *et al.*, 2010). High levels of turnover are also associated with poor patient outcomes including increased incidence of medication errors, more patient falls and reduced patient satisifaction with their care (Bae, Mark and Fried, 2010; Jones and Gates, 2007; Jones, 2008; Gardner *et al.*, 2007; Hayes *et al.*, 2012). Nursing turnover is a complex and costly challenge which can overwhelm any healthcare system. Reducing turnover offers the potential of substantial cost savings for the organisation and most importantly leads to high quality patient care as a result of retaining qualified, experienced and competent nurses. It is essential to understand the causes of nursing turnover so that organisations can develop and implement strategies that redcue the number of the nurses

who are leaving. At the same time it seems to be crucial to understand the reasons why nurses stay in their orgenisation. The result from both side will help the healthcare organistions to devlopm a more clear, comperhansive stragical plan to enhance the stability of nursing workforce.

2.4 Intention to stay or leave

Prior to the mid-1970s there was limited health care or organisational psychology literature pertaining to behaviour intention and its impact (Steel and Ovalle, 1984). A key publication in 1975, based on the Theory of Reasoned Action (TRA), changed perspectives (Fishbein and Ajzen, 1975). Post publication and more latterly in the last two decades, researchers have focused on employees' intention to leave behaviour. The interest was predominately based on the development of models that could predict organisation workforce outflow to inform workforce planning (Alhamwan and Mat, 2015; Chan *et al.*, 2013; McCarthy, Tyrrell and Lehane, 2007; Parry, 2008; Takase, 2010). Frequently used concepts in the healthcare setting include; intention to leave, intention to quit, turnover intention and more latterly, intention to stay (with employer) (Alhamwan and Mat, 2015; Chan *et al.*, 2013; McCarthy, Tyrrell and Lehane, 2007; Parry, 2008; Takase, 2010).

Nursing intentional behaviour has been explored by examining the concept of Intention To Stay (ITS) and Intention To Leave (ITL) and their impact on retention and turnover (Cho, Johanson and Guchait, 2009). Generally, there is an assumption that the two concepts have an inverse correlation, where if one increases it results in the reduction of the other. Although the distinction between the two concepts has not been extensively explored in the literature, some researchers have sought to address the question of whether intention to stay and intention to leave are in fact two sides of the same coin (Cho, Johanson and Guchait, 2009; Howe *et al.*,

2012; Nancarrow *et al.*, 2014). Nancarrow et al. (2014) suggested that despite the overlapping nature of intention to stay and intention to leave they are not opposing constructs. Similarly, Howe et al. (2012) examined the intention to stay and leave among social and health workers in residential and community care services for the elderly in Australia and found there were significant differences between intention to stay and intention to leave and concluded that predictors of intention to leave are not simply the contrary predictors of intention to stay. Furthermore, Howe et al. (2012) described intention to leave as an employee's individualised plan to exit the organisation at some future timepoint, which implies that intention to leave is a construct associated with the withdrawal process. Takase (2010) undertook a concept analysis of intention to leave to illuminate its meaning and explore how it relates to turnover intention and argues that 'turnover intention' triggers a psychological response to negative elements of the organisation and/or job (Takase (2010). The core process is cognitive and involves a decision to leave, and potential withdrawal behaviour which, may be operationalised by withdrawal from the current position or actual job (Takase, 2010). In the last three decades, there has been an upward trend in the exploration of the concept of intention to leave in the turnover research and some researchers have suggested that intention to leave is a direct, positive significant predictor of employees' actual turnover behaviour (Alhamwan and Mat, 2015; Blau, Ward-Cook and Edgar, 2006; Derycke *et al.*, 2012; Takase, 2010; Wang *et al.*, 2017). It is therefore important for nurse managers to be attentive to early signs of intention to leave such as verbal statements about leaving the organisation or searching for another working opportunity and frequent absenteeism, as these behaviours may be an overt expression of intention to leave a job (Takase, 2010). However, while there has been considerable debate about the reasons why nurses leave, investigation of why nurses stay with their organisation has been minimal. More research is needed to understand the reasons nurses decide to stay

rather than why they leave. Understanding this further will enable nurse managers to build upon and sustain those intentions. Employees' intention to stay mirrors their level of commitment to their organisation and their willingness to continue to work in the same setting (Hewitt, 2004).

In an initial attempt to operationalise the concept of intention to stay among nurses, McCloskey and McCain (1987) described it as the probability of nurses remaining in their current position. Later, Boyle et al. (1999) defined it as the stated likelihood of an individual staying with the current organisation. More recently intention to stay was defined as an employee's intention to stay in the existing employment on a long-term basis (Shahid, 2018, p. 59). There is a lack of consistency in how the concept has been defined, which hinders comparison of research findings (Efendi et al., 2019). For example, nurses' intention to stay can apply to the current unit (Cowden and Cummings, 2012; Cowden and Cummings, 2015; McCloskey and McCain, 1987), the current institution (Abernathy, 2007) or the nursing profession more widely (Engeda, Birhanu and Alene, 2014). Although, these discrepancies can be explained by the variation in the studies' primary aims and contexts, the operational definition of intention to stay used, is not always consistent within the research undertaken. Some studies have shown that the departure of nurses from the profession, progresses through leaving the organisation first and then leaving the profession (Krausz et al. 1995, Simon et al. 2010). However, many may choose to leave their job and/or organisation, choosing an alternative position but remain in the profession.

Based on the theoretical framework which guided this study (see Chapter six), the Social Exchange Theory (SET) was selected as an appropriate proposition for exploring the relationship between nurses and their organisations and how it affects intention to stay. Thus, for the purpose of this study, the research focus was on intention to stay with organisation.

Intention to stay was chosen as the phenomenon of interest for several reasons. First, intention to stay has been postulated as the single best early negative predictor of actual turnover (Cho, Johanson and Guchait, 2009; Tourangeau *et al.*, 2010), and so investigating it, will yield a proactive, modifiable indicator rather than waiting for the actual turnover to take place. Secondly, the focus on intention to leave has resulted in intention to stay being overlooked in nursing research, thus this is the first study which examined nurses' intention to stay in Oman. It is proposed that intention to stay is a multistage process, even though it may seem (by some) to be a passive decision when compared to intention to leave (Tourangeau et al., 2010). Also, as noted earlier, there is a lack of consistency in the use of the terms of intention to stay or intention to leave in research. While investigating their predictors, or ambiguity in determining the level of the assessment whether organisation or unit level, this research in all its phases distinctively focuses on the concept of intention to stay with a specific focus when staying with the organisation. The social exchange theory (SET) has been used to explain employees' behaviours in terms of how they occur, based on employees' and employers' interactions and a detailed explanation of how the SET was applied in this thesis is presented in chapter five.

In summary, employees' intention to stay or to leave has been explored in the literature. There is general agreement that intention behaviour is a significant antecedent of actual turnover (Cho, Johanson and Guchait, 2009; Tourangeau *et al.*, 2010). However, treating the concepts of intention to stay and intention to leave as direct opposites requires reconsideration, especially in relation to their predictive value. There are numerous studies which have investigated health professionals' intention to leave, however there are few studies which focus on the theoretical examination and empirical investigation of nurses' intention to stay.

2.5 Healthy work environment

One of the most common approaches to addressing the workforce challenges such as reducing staff turnover and enhancing staff retention in healthcare organisations is to provide a Healthy Work Environmentfor employees (AbuAlRub *et al.*, 2016; Gardner *et al.*, 2007; Han, Trinkoff and Gurses, 2015; Twigg and McCullough, 2014). Creating a healthy work environment for nurses promotes and maintains high levels of nurse productivity and positive patient outcomes (Choi, Cheung and Pang, 2013; Kramer and Hafner, 1989; Kramer, Maguire and Brewer, 2011; Ma, Olds and Dunton, 2015; Schmalenberg and Kramer, 2008). The concept of a healthy work environment has recently attracted increased attention, due in part to increasing demands on healthcare organisations to maintain and indeed increase employee and patient satisfaction. Early work focused on the healthy work environment in relation to positive inter-staff relationships, especially between staff and their manager and/or the availability of adequate resources and equipment (Christmas, 2008; Pearson A *et al.*, 2007; Ritter, 2011; Schmalenberg and Kramer, 2008). Even though the healthy work environment is a complex and multi-dimensional concept, it is widely used in the literature, and recently, researchers have begun to examine its impact on nursing care outcomes (Albashayreh *et al.*, 2019; Copanitsanou, Fotos and Brokalaki, 2017; Al-Hamdan, Banerjee and Manojlovich, 2018). Despite interest in the concept since the 1990s, there remains a lack of consistency in how it is defined. Many scholars have described the concept in nursing using a variety of key features such as teamwork, leadership, effective communication and shared decision making (Kupperschmidt *et al.*, 2010; Matthews and MacDonald-Rencz, 2007; Ritter, 2011; Stichler, 2009; Stoewen, 2016; Xyrichis and Ream, 2008). The consequence of this is that different nursing organisations use different definitions (Christmas, 2008; Pearson A *et al.*, 2007; Schmalenberg and Kramer, 2008; AACN, 2005). The problem with inconsistency in use is the potential that the concept might become a

vague term, as its use increases and evolves over time (Rodgers and Knafl, 2000) and be less useful for research. Hence, the concept of a healthy work environment requires clarification and development so that there is consistency and agreement in its use. Furthermore, it is important to define and understand what a healthy work environment is, before seeking to examine its relationship with other concepts such as intention to stay. In order to do this, a concept analysis of a healthy work environment was undertaken as part of this study to identify its key attributes, antecedences and consequence (see Chapter 4).

2.6 Healthy working environment and nurses' intention to stay

Healthcare organisations are striving to increase the retention of nurses as a strategy to reduce the current global nursing workforce shortage (McCarthy, Tyrrell and Lehane, 2007; Twigg and McCullough, 2014). Latterly, researchers' attention has been drawn to exploring the predictors and antecedents of nurse intention to leave, rather than turnover (Chen *et al.*, 2008; Duffield *et al.*, 2011b; Hayes *et al.*, 2012). Gershon *et al.* (2007) reported a correlation between nurses' intention to leave or stay and job characteristics, organisation climate, working conditions and individual characteristics. Indeed, the relationship between intention to stay or leave, and working conditions or the work environment has been the subject of several studies (AbuAlRub *et al.*, 2016; Alhamwan and Mat, 2015; Han, Trinkoff and Gurses, 2015; McCarthy, Tyrrell and Lehane, 2007). This could be explained within the context of modifiable and non-modifiable factors with personal characteristics being non-modifiable factors compared to the profession factors and working environment factors, which are considered modifiable (Tourangeau *et al.*, 2010). As there is no consensus regarding the characteristics of a healthy work environment, it is difficult to assimilate available evidence. Despite this, there is a

growing body of literature that suggests specific domains of the working environment may have an impact on nurse turnover and retention (Cho et al., 2016, Choi et al., 2011, Cowden et al., 2011a, Ritter, 2011, Twigg and McCullough, 2014a). However, it is not entirely clear which domains of a healthy work environment have the most impact on nurses' intention to stay.

The lack of consistency in the definitions of a healthy work environment, the lack of agreement on the specific components that constitute a healthy work environment, and interchangeable use of intention to stay and intention to leave as concepts in nursing, prevents definitive conclusions being drawn about the relationship between the healthy work environment domains and nurses' intention to stay (Kramer, Maguire and Brewer, 2011; Ritter, 2011). In order to further understand the relationship between the healthy work environment and nurses' intention to stay, a systematic review of the literature was undertaken (see Chapter 5). No studies on nurses' intention to stay have been conducted in Oman making it difficult to develop and operationalise appropriate nurse retention interventions and policies. The shortage of nurses in Oman is evident in the reliance on the recruitment of international nurses. This situation necessitated the investigation of the relationship between the healthy work environment and nurses' intention to stay in the context of Oman's healthcare system.

The existing literature emphasises the importance of improving the work environment and employees' working conditions to address the nursing shortage and turnover. However, there are many differences between Western countries and Oman such as culture, healthcare system structures, and the nursing workforce. It is important that potential interventions and interpretations are culturally relevant. Since there is limited evidence about the nursing profession, nursing education and the nursing workforce in Oman, the next section summarises the main facts about the country and its healthcare system to set the study in context.

2.7 The context of Sultanate of Oman

The Sultanate of Oman is 309,501 km² and is one of the Arab Gulf countries in the Middle East. It is located in the south-east of the Arabian Peninsula and is bordered by the sea on two sides, the Sea of Oman on the northeast and the Indian Ocean on the south-east side. It is bounded on its land borders with Saudi Arabia to the west, the Republic of Yemen to the south and the United Arab Emirates to the north. The Sultanate of Oman is administratively divided into eleven governorates, Muscat, Dhofar, Musandam, Al-Buraimi, Al-Batinah South, Al-Batinah North, Ad-Dhahirah, Ad-Dakhliyah, Ash-Sharqiyah South, Ash-Sharqiyah North and Al-Wusta. These governorates are further subdivided into 61 cities called Wilayates. The capital city of the Sultanate of Oman is Muscat. Al-Batinah North and Muscat governorates are the most densely populated areas, accounting for almost 49% of the whole population (MoH, 2016c). Although there are some Omani nationals from other ethnic groups such as Baluchi, East African and South Asian, the Omani population consists mainly of Arabs, who in the main are Muslim. Oman's total population in 2016 was almost 4.6 million of which, about 57% were Omani nationals, and the remaining 43% were expatriates working in Oman (NCSI, 2019). According to the National Centre for Statistics and Information (NCSI 2016), the gender ratio of the Oman population is 101 males per 100 females. The majority of the Omani population is young with 15% below the age of 5 years and 38% under 15 years old. Only 6% of the population are 60 years and over (NCSI, 2019).

Before 1970, Oman had only three primary schools and two hospitals and there were high levels of poverty and illiteracy. Many people suffered from communicable diseases due to a lack of preventative healthcare services, and inappropriate treatment (Alghemini and Denham, 2013). From July 1970, a period of development began when Sultan Qaboos bin Said Al Said assumed power and began to develop the Omani state. At present, Oman is ruled by

the conservative monarchy with Sultan Qaboos bin Said as president of the Sultanate. He is also the Prime Minister and Head of the Ministries of Defence and Finance, and the President of the Central Bank. Oman's renaissance was supported economically by oil production which began in 1967 following the discovery of oil reserves in 1964 (MoH, 2014). Consequently, the Human Development Index (HDI) in Oman has increased rapidly for income, education and health. According to the latest report published by the United Nations Development Programme (UNDP), Oman's HDI value for 2015 was 0.79 which put the country in the high human development category positioning it at 52 out of 188 countries and territories (UNDP, 2016).

2.7.1 Healthcare services in the Sultanate of Oman

The Ministry of Health is the main body responsible for providing health services in Oman for all residents. Additionally, the Ministry of Defence, Royal Oman Police, Petroleum Development Oman and Sultan Qaboos University hospital provide health services to their employees and their families. The healthcare system consists of three integrated levels: primary healthcare (health centres), secondary healthcare (local and regional hospitals) and tertiary specialised care. Large hospitals in the Governorate of Muscat (for example, the Royal Hospital and Khawla Hospital) provide tertiary specialised healthcare. Since 1970 and particularly over the past decade the quantity and quality of healthcare has increased. This positive development was reflected in improvements in all health indicators, such as a reduction in child mortality rates, increased life expectancy and 100% national immunisation coverage (for more detailed information see Appendix 1).

2.7.2 Nursing practice and nursing education developments in Oman

The roots of nursing practice in Oman originate in Islamic history. In the past, nursing was practised by women who devoted their lives to caring for needy and wounded people. Nursing in the Islamic world, including Oman, was established by Rufaidah Al-Asalmiya, the

first Muslim nurse identified in the Islamic literature. Rufaidah's father was a healer (a doctor), and she initially obtained her clinical experience from him. Rufaidah became an expert clinical nurse by dedicating herself to nursing and taking care of the sick and needy. In the 7th century, she had a tent on the battlefield during major Islamic battles where she nursed the injured and trained other women to become nurses (Alotaibi, 2016). However, the start of an organised nursing profession and workforce in Oman occurred in 1950, when a small group of American nurses working with the American Missionary Association established a training program for Omani nationals to become nurses. At that point, Muscat had only two small hospitals (Al Rahma and Muscat) to provide healthcare services for the entire population. The American nurses started to work in these two hospitals and established a six-to-nine-month training program at Al Rahma Hospital to train 16 Omani nurses in 1959 (Alghemini and Denham, 2013). That training programme continued to prepare nurses until 1970 when the program was upgraded to a two-year nursing programme, at the Al Rahma School of Nursing. An initial group of five male nurses graduated in 1972 after completing a two-year training programme. In the same year, the Minister of Health (MoH) took over the administration of the Al Rahma School of Nursing and increased the number of nursing students in the school and accredited the programme as a certificate level qualification. Currently, Oman has ten nursing colleges which updated their nursing programmes in 2016 from three-year diploma programmes to baccalaureate programmes. In addition, the first Masters' programme was established in 2016 and specialised in critical care, in Sultan Qaboos University.

In 2000, a Professional Code of Conduct for nursing and midwifery in Oman was launched. The following year the Oman Nursing and Midwifery Council was established (Al Salmi and Hannawi, 2018). The purpose of the Council was to foster professionalism in practice by applying the professional code of conduct for nurses, as well as maintaining high standards

of education and nursing practice. However, in 2014, the council was disbanded, and its responsibilities assumed by the MoH and other government institutes which continue to work to improve nursing education in order to prepare well-educated nurses and enhance the quality of nursing care. (For more detailed information see Appendix 1).

2.7.3 Nursing workforce and challenges in Oman

The Minister of Health (MoH) supervises around 70% of the secondary and tertiary hospitals in Oman. These hospitals recruit the highest percentage of the Oman healthcare workforce and nursing is the largest segment of the healthcare workforce in Oman (MoH, 2019c). A total of 20,323 nurses are employed, 72% of which are female. A three-year diploma is the minimum entry level to nursing practice. The proportion of nurses is 44.0 per 10,000 people (MoH, 2019c). Oman's situation is like its neighbouring countries in terms of its nursing workforce indicators. In 2015, Bahrain had an estimated 52 nursing and midwifery personnel for every 10,000 people (WHO, 2015). In contrast, the UAE had 32/10,000 and Saudi Arabia 49/10,000 people, which is approximately half (88 per 10,000) of that in the United Kingdom (WHO, 2015). The nurse to population ratio is the main indicator used by the WHO to assess the number of nurses working in any country and permits comparisations to be made. For the last 20 years, Oman has been striving to 'Omanise' the nursing profession by increasing the number of native Omani nurses and nursing schools in a structured process called Omanisation (Al Salmi and Hannawi, 2018). In 1998, less than 24% (7,453) of the nurses' employed in Oman were Omani and despite efforts to increase the number of both national and expatriate nurses, in 2009, Oman's healthcare services had a 30% shortage of nursing staff (Alghemini and Denham, 2013).

However, by 2019, the total number of Omani nurses working in government healthcare organisations had increased to 9998, constituting 61% of the nursing workforce in this sector and 49% of the total nursing workforce in Oman (MoH, 2019c). Since the early 1970s, Oman

has had ambitious plans to develop and expand healthcare services. However, these plans were hindered by an inadequate supply of nurses, and a lack of nursing education programmes and nurse educators. In response, the MoH recruited nurses from abroad and until recently, most nursing vacancies in Oman were filled by foreign nurses, primarily from India, the Philippines and Sri Lanka (Alghemini and Denham, 2013). However, the MoH has developed a long-term plan for the development of the healthcare system in Oman. It is entitled "Quality Care, Sustain Health" (MoH, 2014). The purpose of this plan is to answer the question; how would we like our healthcare system to be 40 years from 2010. One of the main concerns of this plan is the human resource challenge. According to the Vision 2050 document, the Omani healthcare system needed an initial boost to increase the number of nurses to address current shortages to be achieved by 2020 (MoH, 2014). The report concluded that the health system would need to recruit about 12,863 nurses before 2020 to achieve a nurse-to-population ratio comparable to that of developed countries. A further 24,187 nurses will be needed between 2021 and 2050 meaning 807 additional nurses will need to be employed annually. However, the total supply from all nursing schools in Oman was predicted to be 4880 nurses by 2020 which is 38% of the projected need (MoH, 2014). Oman has not yet recruited the number of nurses needed to meet the vision projection and there is a current shortage of 8167 (30%) nurses (MoH, 2019c).

Analysis of the nursing workforce in Oman, reveals several related challenges. First the current provision of nursing education in Oman is not sufficient to meet the market demand for Omani nurses resulting in an imbalance of supply/demand (MoH, 2014). Second, the Omanisation process has led to the replacement of experienced expatriate nurses with young, novice Omani nurses which, can adversely affect the quality of healthcare (WHO, 2006). Third, the global nursing shortage creates a challenge for Oman when competing with other developed countries in attracting and recruiting international (expatriate) nurses (Alghemini and Denham,

2013; Ghosh, 2009; Kamanyire and Achora, 2015). However, expatriate nurses working in Oman might not be entirely aware of the Omani culture, community and healthcare needs and furthermore they may experience communication barriers arising from language differences, which limits their contribution to nursing professional development. In general, expatriate nurses have difficulties in communicating and have different types of decision-making, expectations of roles, behaviours, attitudes and values (El-Jardali *et al.*, 2008). Finally, the dearth of statistical data and studies which explore the nursing shortage, nursing turnover, retention, nurses' intention to stay/leave and their predictors is hindering future planning and strategy development.

2.8 Significance of the study

There is a growing body of research, which has investigated the nursing shortage in order to understand its prevalence, antecedents and consequences (Chan *et al.*, 2013; Fathabad, 2016; Oulton, 2006). It has also sought to identify the main strategies necessary to minimise its negative impact on the quality and quantity of care (Aiken *et al.*, 2002; Aiken *et al.*, 2010; Butler *et al.*, 2011; Duffield *et al.*, 2011a; Tervo-Heikkinen *et al.*, 2009). Several studies have emphasised the importance of developing strategies to reduce nursing turnover and enhance retention to minimise, the effect of the global nursing shortage (Carter, Cook and Dorsey, 2009; Hirschkorn *et al.*, 2010; Christmas, 2008; Cowden, Cummings and Profetto-Mcgrath, 2011; Twigg and McCullough, 2014).

However, little is known about how relevant such strategies are for Oman. Despite the growth in healthcare human resources and the substantial improvements in healthcare over the last 40 years, in Oman, 70% of Omani physicians and nurses left the country voluntarily to work in another country during the period 2000 to 2008 (J, 2009). However, no further data is

available about the nurse turnover in Oman. The literature suggests that the predictive relationship between the intention to leave and the actual turnover rate is worthy of exploration to learn more about nursing workforce issues in Oman. However, intention to leave is only a part of the whole picture. In order to further understand and inform our understanding of the phenomenon, the concept of intention to stay must be explored, because of its impact on workforce stability. Therefore, researchers and decision-makers in healthcare need to explore why some employees stay and there is a need to identify the major factors that may influence intention to stay.

One of the primary indicators of intention to stay identified in the nursing literature is the work environment. Various domains and characteristics of the work environment have been associated with different nursing and patient outcomes. Despite the lack of precision in terms of an agreed definition for healthy work environment, a number of large-scale, cross-sectional studies have been conducted in North America, Europe and Asia. These studies have examined particular attributes of a healthy work enviornment and concluded that nurses practising in a healthy work environment report greater job satisfaction, less burnout, more intent to stay and provide higher quality care (AbuAlRub *et al.*, 2016; Cho *et al.*, 2016; Ritter, 2011). However, to the researcher's knowledge, there are no available studies which have investigated the relationship of the healthy work environment and intention to stay among nurses in Oman.

The primary aim of this research, is to explore an issue of prime importance and provide empirical evidence concerning intention to stay of nurses working in Oman and to explore its relationship with identified domains of the healthy work environment such as teamwork, supportive leadership, adequate resources, role autonomy, employees' well-being and organisation culture. This research explores the nursing work environment in Oman, measures nurses' intention to stay with their employer and identifies which aspects of the work

environment have a significant impact on nurses' intention to stay. Amid the challenges facing Oman in planning for and meeting the nursing workforce needs of the country, the significance of this research to decision-makers in the Ministry of Health and the hospital senior leadership team is clear with regard to human resource planning. The current thesis also investigates the extent to which the nursing work environment in Oman is considered to be 'healthy' from the nurses' perspective. The results and conclusions of the research provide insights for decision makers in Oman about how nurses perceive their working environment and what aspects of this environment influence employees' intention to stay with their current employer, which in turn will have an impact on staff retention and workforce planning.

This research is innovative because it is the first to examine the relationship between the healthy work environment domains and nurses' intention to stay with their employer in Oman. The participants' demographics, the scope of practice, staffing ratios and culture are different from those of nurses in other studies. In addition, it is the first study to advance knowledge by exploring organisation level factors, for example: team characteristics and individual factors that inflence nurses' willingness to stay with their employer. This research investigates the relationship between the healthy work environment and nurses' intention to stay at hospital level. This approach will address some of the limitations identified in previous studies (AbuAlRub *et al.*, 2016; Derycke *et al.*, 2012; Lindqvist *et al.*, 2015; Ritter, 2011). The next chapter examines the philosophical framework which guided the design of the thesis.

Chapter III: Methodology

3.1 Chapter overview

The aim of this chapter is to explain the philosophical perspectives which guided the multi-phase research in this thesis. Paradigms and theories are overlapping terms which have been utilised to clarify scientific concepts and define multiple phenomena. Generally, a theory explains a phenomenon based on specific criteria, while the paradigm provides the background or the frame that allows a theory to be tested and measured (Khan, 2002). This chapter presents the research design, its justification, and its application.

3.2 Philosophical foundation

The philosophical foundation of a research study is often used interchangeably with the term paradigm (Guba, 1990). The meaning of "paradigm" in the English Cambridge Dictionary is the "model of something, or a very clear and typical example of something." The word "paradigm" was first used by the American philosopher, Thomas Kuhn in 1962 to mean the philosophical way of thinking (Orman, 2016). According to Kuhn (1970) a research paradigm is made up of a set of common beliefs and agreements shared between scientists, about how problems should be understood and addressed. Guba and Lincoln (1994) define a paradigm as a basic set of beliefs or worldview that guide research action or an investigation. The research paradigm offers a philosophical perspective through which phenomena can be examined (Guba, 1990). This approach therefore illuminates the ontological and epistemological views of the researcher.

The research paradigm is a continuum with two extreme ends which are exclusively different in the nature and sources of knowledge (Kawulich, 2012). These two ends are positivism and interpretivism. Positivism is presented in the literature as an objective,

deductive, value-free approach focusing on the quantitative method. On the other hand, interpretivism is illustrated as a subjective, inductive, biased approach focusing on the qualitative method. However, there are a variety of paradigms used to guide the studies' methodologies in between them (Churchill J, 1979). One of these paradigms is post-positivism which allow the researcher to combine some aspects of positivism and interpretivism positions within the scope of one research project fitting the nature of the research question. Based on the research proposed, positivism and post-positivism were more suitable to answer the study's main research question. However, despite the similarity between the two paradigms' there are major differences between them. Thus, it is crucial to differentiate between them in terms of ontology, epistemology and methodology before selecting the appropriate paradigm and explaining its application in this thesis.

According to Crotty (1998, p. 10) ontology is defined as "the study of being." Guba and Lincoln (1994) highlight that the ontological assumptions concern the question 'what is there, that can be known?' or 'what is the nature of reality?' Whereas, epistemology is defined as the ways of knowing (Neuman, 2011). Epistemology is concerned with what researchers believe to be reasonable facts within a field and how researchers know about the reality of the world around them (Guba and Lincoln, 1994). In contrast, methodology is about which techniques should be adopted and what material should be examined and how. Methodology is mainly associated with the design of the research, and the approach taken to data analysis. Furthermore, this term is generally employed to refer to the whole process of data collection and analysis in research. It is vital to highlight that the association between these three terms is "directional" in that ontology logically precedes epistemology, which in turn precedes methodology (Hay, 2002).

At an ontological level, positivists consider the scientific deductive approach, which promotes logic examination, to be a process focused on producing replicable findings which are accumulated to constitute objective truths. The positivist ontology is that a single, tangible, objective truth exists and that the goal of science is to uncover the truth (Kawulich, 2012). Positivists believe researchers equipped with the appropriate tools can capture that truth. Epistemologically, positivists assume that the researcher and the researched phenomena are separate, independent entities and the role of the positivist researcher is to act as a neutral actor, objectively observing and measuring phenomena from an outsider perspective (Guba, 1990). The subjective concerns of the researcher should not interfere with the process of inquiry. The positivist approach emphasises that science is largely a mechanical affair, and the major approach of the scientific method is the experiment, the attempt to understand certain phenomena through direct manipulation of variables and observation of the effect this has (Fox, 2008).

On the other hand, whilst post-positivists also claim that a single truth exists, they believe that reality can never be completely understood and attempts to comprehend it are restricted due to the person's sensory and intellectual shortcomings (Guba, 1990). While the truth can never be fully captured, the post-positivist believes that through research and statistical analysis, one can state that there is a high probability that the truth has been discovered. The post-positivist believes that the goal of science is to hold steadily to the goal of getting it right about reality, even though one can never fully achieve that goal (Fox, 2008).

From an epistemological viewpoint, post-positivism recognises that the way scientists think and work and the way other people think in their everyday life are not distinctly different. The researcher's role from the post-positivist perspective is to act as neutrally as possible while accepting that subjective bias cannot be completely removed from the process

of inquiry (Fox, 2008). Post-positivists believe that objectivity is achieved through the collection of multiple sources of evidence and by the examination of the selected methodology including research design and findings (Bisel and Adame, 2017). However, the researchers cannot detach from the social world completely and their research process may affect to a certain level by their experience and perception of the world.

At the methodological level, both positivists and post-positivist use quantitative data to calculate probability statistics, such as the p value and confidence levels. However, where positivists rely only on quantitative data, post-positivists consider multi-methods (using both quantitative and qualitative approaches) to be valid and indeed desirable (Fox, 2008). Utilising this approach, the qualitative data or secondary research such as systematic reviews can be used in a way that enables and facilitates the development of a more effective quantitative approach. Post-positivists assume that the research method to be selected and applied is based on the research question being addressed. Post-positivists believe that knowledge is acquired through rigorous, multiple data analysis and through theory-building and testing (Bisel and Adame, 2017).

In general, post-positivism is considered a contemporary paradigm established because of the criticisms of positivism. Post-positivism was developed as an extension of positivism and so there is some similarity between the two (Fox, 2008). Giddings and Grant (2007) called post-positivism a "lite" version of positivism, stating that the "post" prefix indicates a development or extension. The distinguished differences between them allow post-positivists to accept more complexity, ambiguity, subjectivity and individual experiences in research designs (Kawulich, 2012). The differences between positivism and post-positivism are summarised in Table 1.

Table1: Differences between positivism and post-positivism		
paradigm	Positivism	Post-positivism
Synonym	Verify	Predict
Ontology and epistemology What is the real and what is true?	There is objective reality which exist out there independently from our mind and Using scientific method, we can derive verifiable facts	We can never know the truth about reality with absolute certainty. The scientific method provides us with the best means of understanding reality, but our observations are fallible, and our theories are subject to revision. Our scientific knowledge is imperfect and probabilistic.
Goal of inquiry	To develop true and accurate theories that can explain phenomena	To develop theories that can explain phenomena as accurately as possible
Role of the researcher	To act as neutral bystanders objectively observing and not interfere with the measuring phenomena Subjective concerns should not interfere with process of inquiry.	To act as neutrally as possible while accepting that subjective bias cannot be completely removed from the process of inquiry. Greater objectivity can be achieved through collecting multiple sources of evidence and submitting scientific findings to the critical examination of a wide community of peers
Method	Quantitative primarily experimental and quasi experimental	Multi-method approached including quantitative and qualitative design
Source: adopted from Mind attic (2018)		

3.3 Choosing a paradigm for the current research (post-positivism)

Based on what has been presented earlier and reflecting on the current research questions, and finally given the multifactorial nature and complicity of the examined concepts, positivism was not enough to justify decisions taken in this research study. The post-positivism paradigm was the best justified term as it helped to answer the research question most adequately. Its philosophy gave more freedom to explore various aspects surrounding the main question, adding more clarity to the examined concepts and made the research process more reliable. This research aimed to examine whether a healthy work environment enhances nurses' intention to stay, directly or indirectly by using a validated measure of nurses' organisation commitment and satisfaction. The post-positivist paradigm underpins many of the decisions the researcher made throughout the study.

In this study, the initial plan was to collect data through focus groups and a cross-sectional survey. However, due to the complexity of the concepts, there was a need to conduct additional work to clarify the concepts' definitions prior to examining their relationship. Although, the research plan was therefore modified, to use a multi-method, multi-phase approach to answer the research questions, this fitted with the post-positivism

paradigm based on its assumption that the method to be applied in a particular study should be selected based on the main research question being addressed. Although the main empirical phase of this research was a quantitative, cross-sectional survey, utilising a secondary research approach such as a concept analysis and systematic review enabled and facilitated the development of a more effective quantitative approach which is supported by post-positivism.

The framework was established to overcome some of the gaps and limitations of existing conceptual frameworks which were identified in the literature review. This is aligned with the post-positivist view that an inquiry should start with an assessment of existing knowledge based on disparate studies to identify key substantive content and gaps and to consider the assumptions of creating a conceptual framework where certain variables predict other variables (Bisel and Adame, 2017). During the process of selecting the variables from the literature, the researcher seems to be isolated from the social world. While, in fact the selected variables, are the result of the researchers' experiences, identities, and perceptions of the social world. In other words, to develop a model that predicts nurses' intention to stay by analysing existing knowledge and synthesising new evidence and selecting specific variables, an approach is needed that acknowledges that the researcher is not completely separable from the social world and that social reality can be measured (Bisel and Adame, 2017).

In line with post-positivist assumptions, the piloting phase was designed to assess the applicability and acceptability of the instruments to the clinical setting. During the pilot phase some interpreters were recruited and interviewed to check the tools' validity and language clarity. This is fitting with the post-positivists approach that advocates the use of multiple resources of knowledge to achieve a certain level of objectivity. Reflecting on all the above, the principles of post-positivism were a good fit and the main driver of several

decisions which had been made throughout the study including utilising a multi-phase, multi-method approach to answer the research's questions.

3.4 Research design and justification

Guided by the philosophical approach, the research questions and the complexity of the concepts to be investigated, a sequential multi-phase, multi-method approach was deemed most appropriate. Teddlie and Tashakkori (2003, p. 11) define a multi-method design as one where more than one method is used and/or it has more than one worldview. But distinguishing between the multi-method and the mixed method approach is quite important. While some authors note a distinction between mixed methods and multi-methods approaches, some studies considered them synonymous and used them interchangeably (Anguera *et al.*, 2018). Consequently, the concepts underlying both terms have become unclear and created confusion. Multi-method was used to describe any combination of two or more methods which are qualitative and/or quantitative methods, whereas the core of a mixed methods design is that it must contains qualitative and quantitative components (data or result) which must be integrated to ensure the benefits of the approach are realised (Morse, 2003; Anguera *et al.*, 2018). Whereas studies such as this research address a variety of research questions associated with a broader research aim in which each of these questions need to be answered using a specific method. The multi-method approach utilised in this study was driven by the overall research aim and it used a number of complementary methods to answer the main research question. The multi-method approach is broader and involves the use of two or more research methods such as two or more quantitative, two or more qualitative, each conducted rigorously and complete in itself, in one project with the results merged to form a complete whole (Morse, 2003). In relation to this research, each phase is a

discrete study, with each phase reported in a separate chapter. However, the findings from each phase were synthesised to answer the thesis questions.

The key benefits of multi-method research include:

1. Triangulation to verify data and findings by integrating several data sources, processes, or observers.
2. Imagination to identify fresh or paradoxical variables that encourage more analysis.
3. An extension of the scope of the study to incorporate contextual aspects of the phenomenon (Tashakkori, Teddlie and Teddlie, 1998).

Morse (2003) defines three key principles that underpin multi-method designs:

Principle 1: identify the theoretical drive of the research project which may be inductive (for discovery) or deductive (for testing).

Principle 2: develop an overt awareness of the dominance and order of each project. This includes defining which project is core and which is supplemental. Be aware of when working inductively or deductively, to ensure the precepts of each method are not violated.

Principle 3: respect methodological integrity. When using a multi-method design, it is important to keep each method intact and defined. It is important not to violate the assumptions, sampling (appropriateness and adequacy of data), and so forth.

The use of multi-method is a growing trend in nursing research that offers another option for researchers in addressing the complex health problems faced (Lee, Mills and Lu, 2009; Van Oostveen, Braaksma and Vermeulen, 2014). Healthcare research increasingly examines complex interventions using different sample strategies, layered levels of analysis and consideration of multiple outcome measures. Multi-method research is therefore particularly suitable for studying complex interventions and holds the promise of new insights and perspectives in the understanding of phenomena in nursing research. Thus, some

researchers have used the multi-method approach to explore areas of nursing such as education and learning (learning nursing practice, nursing attitudes to online learning and curriculum frameworks for advanced practice nursing) (Kelly *et al.*, 2009; McNelis *et al.*, 2014). Multi-method research has also been used to test a computerised system for nurse-to-patient assignment and the evaluation of a nursing information system in Taiwan (Lee, Mills and Lu, 2009; Van Oostveen, Braaksma and Vermeulen, 2014).

To answer the main research questions proposed within this study, several research methods were applied in sequence. This was felt to be the most appropriate design because it facilitated a comprehensive examination of multiple perspectives, whilst maintaining scientific rigour. The multi-phased approach meant that each phase could be informed by the findings of a previous phase. This approach had the advantage of exploring the relationship between multiple variables related to attitudes, opinions, beliefs, values, and behaviours from a large number of respondents. The three principles of the multi-method approach were applied to the phases in this thesis. Within the research, a deductive approach was used to test the conceptual framework of the relationship between intention to stay and the healthy work environment. The quantitative stance (phase 4) with its deductive approach was dominant in this research study. However, an inductive approach was taken in earlier phases, in the literature review, concept analysis and systematic review, for example, in order to build the conceptual framework for the thesis.

As a summary, using more than one method offers the potential to obtain a deep understanding of the complex issues faced by nursing. Another strength of using a multi-method design is that it provides a different perspective on the phenomenon under investigation. While others contend the real strength of multiple methods is the different levels of data obtained (Morse, 2003). In conclusion, this chapter examined the philosophical foundation of post-

positivism and highlighted the foundational nature of post-positivism. Furthermore, the chapter articulates the justification of the research design and discussed the application of a multi-method approach. The next chapter presents the first phase of research study which utilised a concept analysis approach to examine and define the concept of the healthy work environment.

Chapter IV: Concept Analysis

4.1 Chapter overview

This chapter presents a concept analysis of the healthy work environment using the Walker and Avant (2011) framework. As stated in the background chapter (Chapter 2), there is inconsistency in the definitions of the concept of a healthy work environment in the literature. Having a detailed understanding of the concept was critical prior to exploring if a relationship between the healthy work environment and intention to stay existed. The aim of this phase was to provide a literature-based analysis of the concept including the development of an operational definition.

The concept analysis was the first phase in this PhD study and it was undertaken in 2017. The findings informed the systematic review (phase 2), the pilot study (phase 3) and the online survey (phase 4). This thesis chapter includes an introduction, the concept analysis methodology, the results, and a summary of the key points. The aim of this phase of the study was to develop an operational definition of the concept of the healthy work environment and identify its key attributes, antecedents, and consequences.

4.2 Introduction

Nurses are the largest group of staff in the healthcare workforce, however there is a global shortage of registered nurses and demand outweighs supply (see the Chapter 1 and 2). The reasons for the shortfall include an ageing workforce, increased nursing turnover and an

increasing demand for high quality healthcare (WHO, 2013). It is important that healthcare organisations explore ways to retain high quality staff, as well as increase recruitment. It has been claimed that creating and maintaining the healthy work environment enhances staff morale, role satisfaction and increases productivity and patient satisfaction (Choi, Cheung and Pang, 2013; Ma, Olds and Dunton, 2015; Kramer and Hafner, 1989; Kramer, Maguire and Brewer, 2011; Schmalenberg and Kramer, 2008), even though it is difficult to define the concept of the healthy work environment in healthcare with precision. This is because the range of political, economic and social factors that affect the healthcare delivery system makes it a particularly complex phenomenon. However, researchers have recently become interested in this concept, as the demand for nursing healthcare services have increased (Christmas, 2008; Pearson A *et al.*, 2007; Ritter, 2011; Schmalenberg and Kramer, 2008). Thus, the eight step model of Walker and Avant (2011) was utilised to guide the concept analysis.

The first step in the Walker and Avant (2011) model is to choose an appropriate concept to explore. As noted earlier the term the healthy work environment is widely used, yet poorly defined. The second step is to state the purpose. In this study the purpose was to explore and further understand the concept and identify critical its attributes in order to develop an operational definition for research. The healthy work environment as a concept is complex and multidimensional, furthermore the term is used widely in the literature although with little consistency (Gardner *et al.*, 2007; Ritter, 2011; Baernholdt and Mark, 2009; Twigg and McCullough, 2014; Cowden, Cummings and Profetto-Mcgrath, 2011; Wilson *et al.*, 2008; Christmas, 2008). The healthy work environment can be defined in different ways by different healthcare professionals and researchers in different settings (Russell, 2012). The impact and end outcome of the healthy work environment varies, with some studies focusing on nurse satisfaction, and others on positive patient care outcomes (Schmalenberg and Kramer, 2008;

Ritter, 2011; Pearson A *et al.*, 2007; Christmas, 2008). The remaining six steps represent the results of the concept analysis including clarification of its use in the literature.

4.3 Rationale and value of the concept analysis

In the social sciences, concepts are regarded as the building blocks of theory (Morse et al., 1996b). Concepts filter our interactions and experiences in a meaningful way that facilitates effective understanding and transmission of the experience (Sykes, 2014; Weaver and Mitcham, 2008). A concept analysis is usually undertaken when exploring commonly used concepts which have a variety of meanings. Although the concept analysis approach has limitations, this does not undermine its suitability as a method for defining concepts in such a way that contributes to their operationalisation in research (Morse *et al.*, 1996a; Weaver and Mitcham, 2008). According to Morse *et al.* (1996a) a concept's maturity is considered as a core indicator of how the concept should be defined or analysed. The concept is "mature," if there is a large body of literature about the term which includes definitions, descriptions, clinical exemplars, and reports of quantitative measurement instruments. The term the healthy work environment could be considered a mature concept because much has been written about it, despite the fact its measurement and application vary.

The main aim of this phase was to examine the concept of the healthy work environment and identify its core attributes to build the conceptual framework and then examine its relationship with nurses' intention to stay in an acute healthcare setting. The Walker and Avant (2011) concept analysis method provided a firm foundation to further understand the concept and establish its internal composition.

Rodgers and Knafl (2000) highlight the importance of considering the concept of interest within the context of the development of the discipline. The significance of the healthy

work environment for nursing, relates to the need to increase the workforce in this critical time of a global staff shortage (Haddad, Annamaraju and Toney-Butler, 2020; Murray, 2002). Furthermore, it is important to consider the use of the term within related disciplines, including business, psychology and nursing. Given the range and diversity of the concept's use in organisation psychology, business and workplace research, searching several disciplines is recommended and considered to be helpful in capturing these uses (Rodgers and Knafl, 2000; Walker and Avant, 2011). Understanding this concept and identifying its main characteristics is crucial, if such an environment is to be created in healthcare organisations. The end product of this analysis is a definition of the concept which incorporates the scientific understanding of the concept and this knowledge is thereafter integrated into what is already known (Paley, 2019).

4.4 Method

4.4.1 Concept analysis design

Interest in undertaking a concept analysis as an approach to clarify phenomena in the healthcare field is not new (Hupcey and Penrod, 2005). Cronin, Ryan and Coughlan (2010) analysed several approaches to a concept analysis in healthcare. For example, Cronin et al. (2010) listed several concept analysis approaches including Rodgers's (2000) based on an evolutionary paradigm, Walker and Avant's (2011) approach based on a strategic method, Wilson's (1963) is based on the use of an ordinary language philosophy, Meleis's (2011) is based on concept clarification and Schwartz-Barcott and Kim's (1986) based on a hybrid model (Cronin et al., 2010). These models were reviewed for the purpose of selecting the one that was most congruent with the main aim and objectives of the PhD study. Despite, the overlap

between the approaches in their purpose and process, essential methodological differences between them are evident (Cronin, Ryan and Coughlan, 2010; Hupcey and Penrod, 2005). Despite these differences, one commonality is to assess the degree of maturity and identify fundamental attributes to establish an empirical definition of a concept (Rodgers et al., 2018). In relation to this research, this was congruent with the intended goal and objectives. As the term is mature, yet used with variability, a concept analysis was appropriate. Other identified purposes of a concept analysis include theory development, integration of literature, clarification of an overused concept, to make the concept more measurable, and lastly to distinguish between two similar concepts (Cronin, Ryan and Coughlan, 2010; Hupcey and Penrod, 2005).

4.4.2 Walker and Avant method (2011)

The Walker and Avant method has undergone several revisions (in 1983, 1988, 1995, 2005 and more latterly in 2011). The model has been widely used in nursing to analyse and define healthcare related concepts (Hupcey and Penrod, 2005). The Walker and Avant method was originally inspired by the work of Wilson (1963) which focused primarily on the linguistic use of concepts and to aid the development of related principles to assist definition setting (Nuopponen, 2010). Walker and Avant's (2011) model incorporates 8-steps (figure2).

The Eight steps of Walker and Avant (2011) concept analysis approach
1. Select the concept 2. Determine the aim or purpose of the analysis
3. Identifying all uses of the concept 4. Defining attributes 5. Identifying a model case 6. Identifying borderline, related, and contrary cases 7. Identifying antecedents and consequences 8. Defining empirical referents

Figure 2: Walker and Avant (2011) Framework

4.4.3 Literature search

To identify the concept usage, identify the attributes, antecedents, and consequences a literature search and review was undertaken. The literature review concerned the healthy work environment and its surrogate terms (positive, productive work setting/workplace). The search strategy included review of the following databases: ProQuest, PubMed, CINAHL, Business Source Premier (EBSCO), PsycINFO and IBSS. Papers written in English published between 1990 and 2017 were retrieved. The literature published in the early 1990s was characterised by its recognition of the global nursing shortage and an increasing demand for improved healthcare outcomes (Haddad, Annamaraju and Toney-Butler, 2020; Murray, 2002). It was around this time that the notion of the healthy work environment emerged and was associated with nursing turnover and retention. However, the hand searching for relevant references did identify some seminal historical work which was published prior to 1990 which is included to illustrated the development of the concept in the literature (Seidman, 1943; Worthy, 1950; Douglas, 1919; Somers and Somers, 1953; Lyon and Ivancevich, 1974).

The key terms used for the literature search were nurs*, healthy/productive/positive work environment, healthy/productive/positive workplace, healthy/productive/positive work setting/organisation. Using the terms above, a large volume of literature was identified, so

articles were further screened by title for relevance to the concept. Inclusion criteria for the literature review were studies published in the English language between 1990-2017, where the content focused on the use, definition, attributes, antecedents and/or consequence of the healthy work environment or its surrogate terms.

The initial search retrieved 14,784 references. After limiting the search to those written in English, and removing the duplicated papers, the number was reduced to 5,435 citations. After title scanning for key words, the total decreased to 345 citations. Abstracts from these articles were reviewed. A further 201 citations were removed because the content was not relevant to the healthy work environment (Figure 3). All full text papers were retrieved and after review, a further 90 papers were excluded as they were not relevant to the concept of the healthy work environment. Some sources were identified by hand searching and by the 'snowball' technique (Hepplestone *et al.*, 2011). A flow diagram of the search strategy, process of exclusion and results is shown in the diagram (figure3).

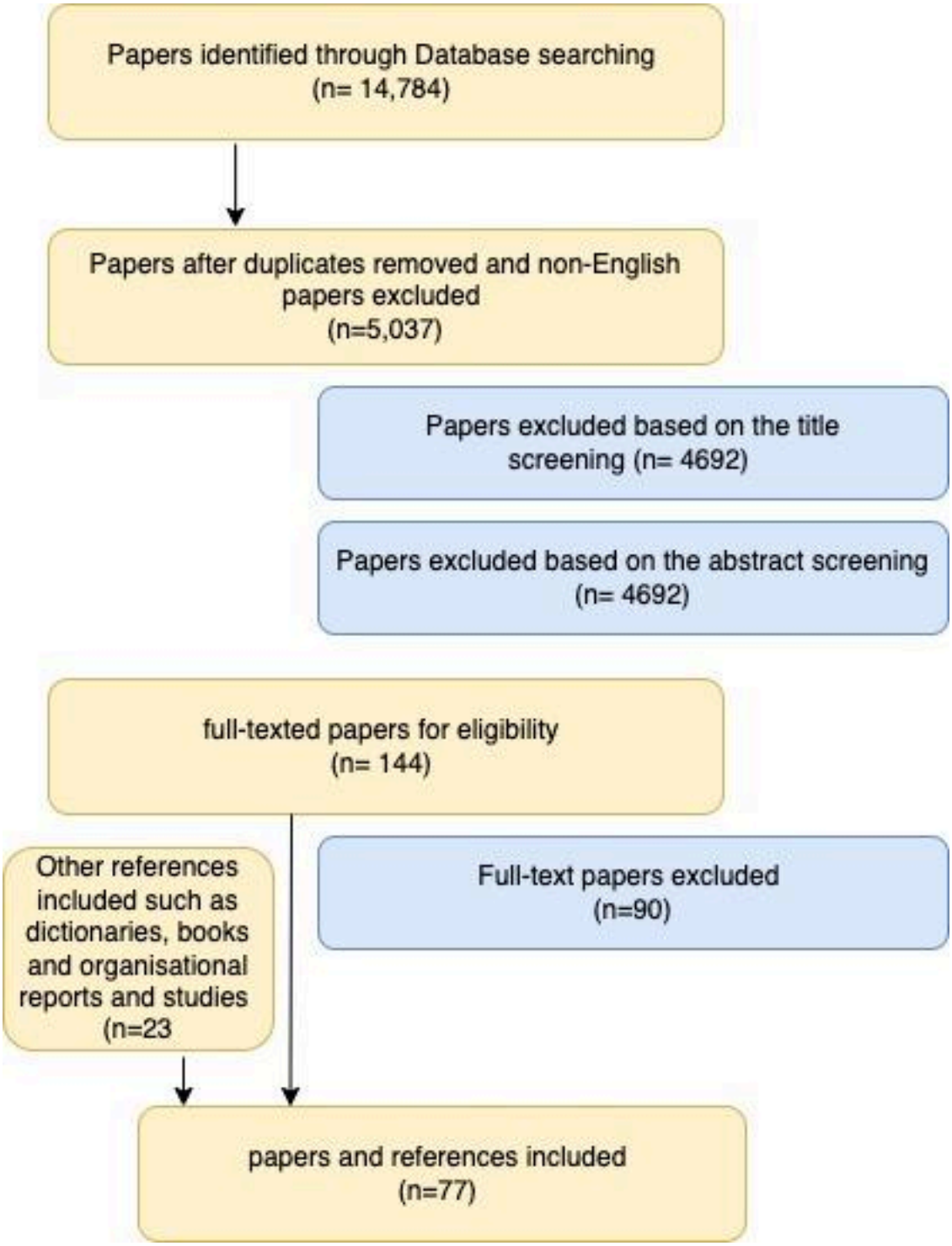


Figure 3: A flow diagram of the search strategy

4.4.4 Data analysis and synthesis

The data collected from the articles was sorted, categorised and compared using content analysis (Kleinheksel *et al.*, 2020). Content analysis is a well-established data analysis method

that has evolved for use with textual data. It is a systematic and objective technique for describing, and analysing phenomena (Kleinheksel *et al.*, 2020). It was used to identify and interpret meaning within the text by identifying codes and themes. The codes and themes then informed the development of a framework. This process is recognised as a useful and pragmatic way to organise information in a way that can be used to describe or explain a phenomenon (Graneheim and Lundman, 2004). Qualitative content analysis can also be used in a flexible way to incorporate inductive or deductive approaches or indeed a combination of both in data analysis. Once codes are developed into categories and themes, these can further be extended to create models, conceptual structures and conceptual maps that describe the subject under study (Graneheim and Lundman, 2004; Kleinheksel *et al.*, 2020). The final themes were ordered and became the focal point for each element of the concept analysis; that is, the attributes, antecedents, and consequences. This procedure enhanced the validity of the analysis because the creation of the defined attributes was based on codes that emerged from the analysis of published texts. Thus, the risk of personal influence and selection bias were minimised (AnAaker and Elf, 2014). Analysis is a continuous process where data are organised and reorganised until a descriptive pattern of themes throughout the texts is reached. The main categories were identified as the healthy work environment attributes which would be utilised in building the conceptual framework in the fourth phase in this PhD study.

4.5 Result

4.5.1 Step three: identifying all uses of the concept

The third step involves defining all applications of the term and involves accessing various reference sources including dictionaries, thesauri, international healthcare organisations, historical and disciplinary literature. First, common English-language dictionaries were

reviewed to give the concept a deeper linguistic understanding. Three of the most common dictionaries which had been used in several published concept analyses were used. Then, the concept's usage in the literature was reviewed and the retrieved sample literature was organised based on the publication date to understand the development of the concept use and its evolving over the time. While this step may produce an enormous amount of data, it is helpful in offering an indicator of the variety and diversity of use of the concept (Walker and Avant, 2011). In addition to the papers retrieved from the literature search, a variety of dictionaries, thesauruses, dissertations, nursing organisation websites, were also searched as Walker and Avant (2011, p.162) suggest using both "ordinary and scientific" material to identify all uses of the concept as this helps produce a deeper understanding of the concept.

Dictionaries and thesauruses

Three common English dictionaries used in several published concept analyses were selected to be searched for the concept of the healthy work environment (Xyrichis and Ream, 2008; Eckroth-Bucher, 2010; Reed, 2014). Using the term "healthy work environment" retrieved no results. Thus, the concept of healthy work environment was searched word by word. According to The Merriam-Webster Dictionary, the adjective "healthy" indicates being well, free from diseases, good, positive, strong (Webster, 2005). Furthermore, the Oxford Advanced Learner's Dictionary, define it as being normal, sensible, successful and working well (Hornby and Cowie, 2002). The term environment was defined by the Merriam-Webster Dictionary as the persons, animals or plants surroundings, whereas it was defined by the Oxford Advanced Learners Dictionary as the conditions in which a person operates in or in which an activity takes place which is similar to the definition the Cambridge Dictionary. While the term "work environment "and "workplace" are frequently used interchangeably, they are defined differently. The term "workplace" was defined as the place where people work with

more emphasis on the physical and location aspect of work (Hornby and Cowie, 2002; Webster, 2005; Combley, 2011). Generally, linguistic definitions of the healthy work environment emphasised the availability of positive conditions and surroundings for employees in the work setting.

Retrieved literature

Similar to the dictionary definition, in the literature, the term “workplace" has been used interchangeably with "work environment" in the business literature, particularly in studies exploring workplace safety in terms of the physical aspects of work (Grawitch, Gottschalk and Munz, 2006). The concept was then extended to encompass relationships with co-workers and managers (Attridge, 2009; Douglas, 1919; Maslow, 1943). In view of this development, the term ‘workplace’ has been used to describe the physical setting, with the term ‘work environment’ referring to working conditions, including interactions, regulations, work process and procedures which influence the employees' job performance (Grawitch, Gottschalk and Munz, 2006)

The attention of organisations and researchers on the provision of safe and healthy work conditions for employees increased considerably at the beginning of the 20th century (Grawitch et al 2006). Douglas (1919) reported that the main issue was the availability of safety equipment in the workplace. However, in the mid of 1900s, attention shifted from a focus on the provision of safety equipment to a concern with the wider needs of employees (Somers and Somers, 1953). Furthermore, the concept of a healthy workplace and equivalent terms continued to evolve in the business and manufacturing industry where the term focused on employees’ morale, job satisfaction and absenteeism (Seidman, 1943; Worthy, 1950).

One of the first studies which examined the nurses’ work environment focused on the impact of the organisation climate on nurses’ and hospital administrators’ esteem and job

satisfaction (Lyon and Ivancevich (1974). They concluded that organisation climate impacts employee satisfaction and esteem at different levels and they suggested that researchers should examine data from nurses and hospital administrators separately (Lyon and Ivancevich, 1974). During the 1980s, the hospital work environment got more attention due to the inception of the concept of Magnet accreditation by the American Academy of Nursing (AAN), then Magnet accreditation was officially introduced in the 1990s (Urden and Monarch, 2002). This was a critical time for the nursing profession, as it highlighted the beginning of the chronic global nursing shortage (Haddad, Annamaraju and Toney-Butler, 2020; Murray, 2002) and the nature of the nursing work environment was examined in some detail in the literature in 2000s (Aiken et al., 2002, Cho et al., 2016, Clark, 2008, Kane et al., 2007, Kutney-Lee et al., 2015, Pearson et al., 2006, Pearson et al., 2007). These built on the pioneering work of Menzies (1960) which had identified the nursing work setting as a stressful work environment. The impact of the nursing work environment on healthcare outcomes including staff satisfaction, turnover and wellbeing as well as patient outcomes, such as medication errors, patient satisfaction, and organisation outcomes, such as accreditation and designation, has been investigated more extensively in the 21 century (Aiken *et al.*, 2002; Cho *et al.*, 2016; Clark, 2008; Kane *et al.*, 2007; Kutney-Lee *et al.*, 2015; Pearson *et al.*, 2006; Pearson *et al.*, 2007; Jennings, 2008; Padilha *et al.*, 2017).

According to Pearson *et al.* (2006), the healthy work environment is a combination of attributes in the nursing workplace which enhance nurses' mental and physical wellbeing and improves organisation outcomes by reducing patients' length of stay, and providing high quality healthcare at a reasonable cost. In 2007, Pearson A *et al.* (2007) redefined the healthy work environment as the daily operation functions in the workplace that drive nurse turnover and retention. The healthy work environment has also been defined as a work setting where

administrators and front-line managers show respect to nurses (Ritter 2011). Kramer, Schmalenberg and Maguire (2010, p.4) defined the healthy work environment as, "one in which leaders provide the structures, practices, systems, and policies that enable clinical nurses to engage in work processes and relationships that are essential to ensure safe and quality patient care outcomes" .

Several other studies have defined and examined the concept of the work environment from the perspective of the leader's role (Boev, 2012; Kotzer, Koepping and LeDuc, 2006; Shirey, 2009; Cowden, Cummings and Profetto-Mcgrath, 2011). However, within nursing the meaning is not always clear, as it is closely associated with a variety of elements and used with little consistency (Christmas, 2008; Pearson A *et al.*, 2007; Ritter, 2011; Schmalenberg and Kramer, 2008). Generally, in the literature reviewed, some researchers did not provide a definition of the concept but did describe and examine one or more of its attributes. Most of the quantitative studies reviewed, focused on one or more of the psychosocial components of the healthy work environment such as leadership, and staffing level instead of considering the whole environment (Shirey, 2009; Kramer, Schmalenberg and Maguire, 2010; Cho *et al.*, 2015). Moreover, in much of the literature that reviewed the concept it has been used to describe the organisation's support for patients and nursing outcomes (Aiken *et al.*, 2002; Cho *et al.*, 2016; Clark, 2008; Kane *et al.*, 2007; Kutney-Lee *et al.*, 2015; Pearson *et al.*, 2006; Pearson *et al.*, 2007). The concept of the healthy work environment has been alluded to by a number of scholars and endorsed by various nursing organisations, such as the American Association of Critical Care Nurses (AACN) and the American Nurses Credentialing Centre (AACN, 2005, Schmalenberg and Kramer, 2008, Kramer and Schmalenberg, 2004) despite the lack of consensus on its definition.

In 2005, the American Association of Critical-Care Nurses (AACN) developed six standards for establishing and maintaining the healthy work environment based on the perceptions of nurse leaders, experts, and members of professional organisations. The AACN framework identifies authentic leadership, skilled communication, true collaboration, effective decision making, adequate staffing and meaningful recognition as key elements of the healthy work environment. They further advise that these should be adopted at every level of the organisation (AACN, 2005). The work initially developed by the AACN formed the Essentials of Magnet (EOM). Magnet attributes are drawn from nurses' insights and include a satisfying and productive work environment (Kramer and Schmalenberg, 2004). In 1983, the American Academy of Nursing (AAN) appointed a task force to identify which hospitals attract and retain nurses, they also explored the key features of a successful organisation that attracted and retained staff (McClure *et al.*, 1983). The result recommended that organisations should consider adopting Magnet designation [or recognition] which had been officially introduced in 1990, and first awarded in 1994 (ANA, 2011). Based on the Magnet model of the healthy work environment, the Essentials of Magnetism (EOMII), was developed and tested in 2004 and revised in 2008 (Kramer and Schmalenberg, 2004; Schmalenberg and Kramer, 2008). According to the Magnet accreditation program, standards related to the healthy work environment include: working with other nurses who are clinically competent, collegial/collaborative nurse-physician and interdisciplinary relationships, autonomy, clinical decision making, supportive nurse managers, control of nursing practice, support for education, adequate staffing and a culture in which concern for patients is paramount (Kramer and Schmalenberg, 2004; Schmalenberg and Kramer, 2008). When compared, the ANCC and EOM standards and attributes share similarities, although some differences remain. For example, the EOM considers competent nurses, a culture of patient centred care and nursing

training as major elements of the healthy work environment. Whereas the AACN framework focusses more on the wider organisation issues related to leadership, communication, collaboration, decision making and adequate staffing (AACN, 2005). However, the focus of the AACN framework was on ICU nurses and the focus of the EOM was on organisations attaining MAGNET accreditation. As both models are USA based, there is a need to examine the healthy work environment concept in a non-USA context.

Outside the American context, the Registered Nurses' Association of Ontario (RNAO) in Canada defined the healthy work environment as a practice setting that maximises the health and wellbeing of nurses, quality patient outcomes, organisation performance and societal outcomes. RNAO created six best practice guidelines as a foundation for the healthy work environment: collaborative practice, effective staffing sustaining nursing leadership, developing cultural competence, professionalism in nursing and workplace health, safety and nurses' well-being (RNAO, 2020). Additionally, RNAO emphasised that to create a healthy work environment for their nurses, managers should promote the development of cultural diversity competence, enhance nursing professionalism, and maintain nurses' wellbeing. This definition identifies nurse, patient and organisation outcomes as indicators of the establishment and maintenance of the healthy work environment (RNAO, 2020).

In the UK, the Royal College of Nursing (RCN) developed a healthy workplace toolkit to support healthcare employers and RCN workplace representatives to implement healthy work environments with high quality employment practices (RCN, 2015). This toolkit used the term "healthy workplace" and defined it as; "a workplace which offers fair pay, rewards and one where high-quality employment practices and procedures promote a good work-life balance; dignity at work; protects and promotes employees' health and safety at work; these organisations design jobs which provide employees with a degree of autonomy, control and

provide equitable access to training, learning and development opportunities for all employees" (RCN, 2015, p 4).

Overall, there is a substantial body of literature that uses the concept and its attributes, although Wong, Spennce Laschinger and Cummings (2010) concluded that the nursing profession lacks the theoretical knowledge needed to create the healthy work environment for nurses. Further complexity exists as individual organisations are unique and focus on different priorities and challenges. These challenges might explain the inconsistency in defining and using the concept. However, there is no one-size-fits-all approach, and the success of any implementation is based on a need to tailor a program that meets the organisation workforce needs, addressing the unique challenges and communicate effectively to enhance and maximise employees' involvement. Moreover, establishing the healthy work environment is not an end outcome, it is better perceived as a dynamic process which involves assessing needs, developing, implementing and evaluating a programme of initiatives. The concept of the healthy work environment in nursing has evolved over time and its attributes require further clarification and specification in order to build on existing theoretical knowledge. According to Rodgers and Knafl (2000) the main purpose of a concept analysis is to offer a clear presentation of the concept's usage, thus solving conceptual problems and to establish theoretical knowledge of the concept is essential.

4.6.3 Step four - identify the concept's main attributes

Identifying the concept's main attributes is the fourth and crucial step in defining the concept of the healthy work environment. Defining attributes is at the heart of the process of a concept analysis because attributes help explain the concept of interest (Walker and Avant, 2011). They are the essential characteristics that appear frequently in the literature which help to distinguish the identified concept from other related concepts and clarify its meaning. Walker and Avant (2011) suggest making notes of the characteristics of the concept that appear

frequently in the literature. This list of characteristics is best described as defining characteristics or defining attributes (Walker & Avant, 2011, p. 68). Its primary purpose is to help name the occurrence of a specific phenomenon to enable it to be differentiated from another similar or related one (Walker & Avant, 2011, p. 68). Attributes are described in the literature using different terms including attributes, characteristics, features, standards and elements. The similarities and discrepancies were considered to identify the attributes of the healthy work environment in a comprehensive and flexible way. The attributes in this concept analysis were linked to the frequent, positive terms used to describe or instruments designed to measure the nursing work environment in the literature. They are the characteristics which describe the parties involved in creating a healthy work environment (nurses, leaders, and organisations) and their interactions with each other. This was an iterative process in which the studies which examined the concept of the healthy work environment were analysed and primary attributes were catogrised under four headings:

1. A positive group-work culture and interactions (effective collaboration/ communication/ teamwork/ positive nurses-physicians relationship).
2. A culture of support (supportive leadership and empowerment).
3. Professional development growth opportunities (promotion and continuing education).
4. Adequate staffing and a reasonable workload.

These key attributes emerged from the literature, however attribute two; a culture of support was further sub-divided into separate domains labelled as supportive leadership and empowerment. This was because although they both link to a culture of support, they were felt to be of sufficient difference to be classified as separate attributes. Therefore, a total of five key attributes were included in the conceptual model for the thesis. These headings were used

to further explore the data and informed the conceptual framework which then guided the cross-sectional survey.

Positive work-group culture and interactions

Different terms and sub-themes are included under the attribute of the positive work-group culture and interactions. These include effective collaboration, effective communication, teamwork and positive nurse-physician relationships. All these sub-themes identify healthy and positive interactions between team members. Evidence indicates that collaborative, team-based practice is a vital aspect of the healthy work environment, and that this leads to increased nurses' job satisfaction (D'Amour and Oandasan, 2005; CHSRF, 2010). Collaboration and teamwork were the most frequent healthy work environment characteristics identified by the participants in the focus groups in the study conducted by (Tourangeau *et al.*, 2010) and echoed in the literature (Clark, 2009; Matthews and MacDonald-Rencz, 2007). Collaboration and teamwork are related concepts as they both involve a group of people working together to complete a shared goal (Xyrichis and Ream, 2008). Collaboration and teamwork play a crucial role in enhancing the quality of care, overall job satisfaction and general performance of healthcare organisations (Clements, Dault and Priest, 2007).

The impact of effective teamwork has been studied in many disciplines including business, psychology, and nursing. For example Xyrichis and Ream (2008), define teamwork as an active process involving two or more healthcare professionals with different backgrounds and skills, sharing common health goals in providing patient care. The main elements of teamwork are interdependent and require collaboration, open communication and shared decision-making (Xyrichis and Ream, 2008). Furthermore, teams are more efficient when team members are supportive and exhibit mutual trust to create an active work-group

culture (Pearson A *et al.*, 2007; Pearson *et al.*, 2006; Schmalenberg and Kramer, 2008) Twigg and McCullough (2014b). Owens (2011) examined the impact of nurses' perceptions of occupational safety and teamwork on job satisfaction and commitment and found that teamwork climate accounted for 46% of the variance in nurses' job satisfaction. Collaboration is a continuing process that all interdisciplinary team members must endeavour to accomplish to improve patient outcomes (AACN 2001).

Without the synchronous, ongoing collaborative work of healthcare professionals from multiple disciplines, patient and family needs cannot be satisfied within the complexities of today's healthcare systems (AACN, 2005). Effective communication between teams is essential for collaboration and teamwork and achieving effective, and open communication between employees in the workplace is a goal of most organisations (Hartung and Miller 2013). Positive relationships between nurses and physicians have been identified as one of the key healthy work environment attributes (AbuAlRub *et al.*, 2016; Abernathy, 2007; Al-Hamdan, Manojlovich and Tanima, 2017; Aiken and Patrician, 2000; Dorigan and Guirardello, 2018; Manojlovich, 2007). The interaction between nurses and physicians has reciprocal benefits, where they share responsibility to solve problems, and make joint decisions when preparing and carrying out plans for patient care (Elsous, Radwan and Mohsen, 2017).

Culture of support

The main element of a supportive culture is supportive leadership. In the literature reviewed, eight papers examined different aspects of leadership. Effective leadership occasionally appeared in the literature as a precursor to the healthy work environment, but most commonly it appeared as a key attribute. Several studies reported the importance of effective leadership in establishing and sustaining the healthy work environment (Cowden, Cummings

and Profetto-Mcgrath, 2011; Kramer, Maguire and Brewer, 2011; Pearson A *et al.*, 2007; Twigg and McCullough, 2014; AONE, 2003). Additionally, the AACN (2001) identified authentic leadership as a practice standard that contributes to the healthy work environment. There have been several attempts to explore if a correlation exists between a particular leadership style and a productive working environment (Schalk *et al.*, 2010; Pearson A *et al.*, 2007; Cowden, Cummings and Profetto-Mcgrath, 2011). However a systematic review conducted by Pearson A *et al.* (2007) reported that there is no specific leadership style or trait alone that creates a positive healthy work environment.

Another systematic review by Cummings *et al.* (2010) reviewed 166 papers and examined several types of leadership (for example; people oriented vs task oriented) and explored their differential impact on the nursing workforce and work environment. The review reported that task oriented leadership alone was not enough to achieve optimum nursing outcomes and suggested that transformational and relational leadership is needed to enhance the healthy work environment (Cummings *et al.*, 2010). While several leadership styles have been examined in the literature, more attention was given to three new theories of leadership: transformational, charismatic, and visionary leadership. These share qualities such as a focus on enhancing employees' commitment, motivation, and engagement by directing their behaviour towards a shared vision. Leaders' characteristics such as respect, trust, flexibility, consideration, support and motivation were linked to positive outcomes and the healthy work environment (Pearson A *et al.*, 2007). Similarly, leaders who are knowledgeable, educated, supportive of their staff in their professional growth, communicate effectively and involve their employees in decision making were found to be important factors when creating a productive work environment (Cowden, Cummings and Profetto-Mcgrath, 2011; Kramer, Maguire and Brewer, 2011; Pearson A *et al.*, 2007; Schalk *et al.*, 2010; Twigg and McCullough, 2014). A

key element of effective leadership is the skill to facilitate change and promote team development. Thus, it is suggested that managers should be visible, available, and approachable to their staff (Kramer, Maguire and Brewer, 2011; Upenieks, 2002).

A further sub-theme of a supportive culture is nursing empowerment. Empowerment is a complex and multi-dimensional process that requires individuals and organisations to enable others to be accountable for decision-making (Spence Laschinger *et al.*, 2009). Empowering nurses increases their ability to practice independently and thus improve the quality of care provided (Manojlovich, 2007). Hayes *et al.* (2012) defined nursing empowerment as the process of involving, engaging and supporting nurses in the decision-making process and giving them access to opportunities, resources and personal power within their institution. Empowered work environments are characterised by a shared governance structure that facilitates the flow of information between bedside (frontline) nurses and executives at board level (Al-Dweik *et al.*, 2016). This gives nurses opportunities to be heard and to contribute to organisation development. These structures also ensure that nurses understand the purpose and rationale of organisation policies and procedures which further enhance their commitment to and involvement in, the organisation (Kramer *et al.*, 2009; Upenieks, 2002). Additionally, nursing empowerment was associated positively with enhancing nurses' job satisfaction, nurse's productivity, and high-quality care for patient in clinical sittings (Manojlovich, 2007; Spence Laschinger *et al.*, 2009; Nedd, 2006; Al-Dweik *et al.*, 2016). Batson and Yoder (2012) identified four key al empowering attributes including: being a good role model, taking responsibility for actions, eliminating obstacles and challenging/broadening employees' perspectives.

A term which appears in the literature and is sometimes used interchangeably with empowerment is autonomy. A concept analysis of autonomy identified empowerment as a

consequence of nursing autonomy (Chi and Yoo, 2001). Whereas, McCarthy and Freeman (2008) identified autonomy as an attribute of empowerment indicating that there is an overlap between the two concepts. Although empowerment and autonomy were closely related in the literature and sometimes used interchangeably, they are different concepts. Empowerment is to grant power to others through resources and authority, in comparison autonomy relates to the individual having the ability to act for themselves in accordance with the task they are challenged with (Al-Dweik *et al.*, 2016). Also when it appears in the literature the term autonomy was generally used in the context of the nursing profession rather than as a job requirement (Morgeson and Humphrey (2006). This indicates that the empowerment, rather than autonomy, is appropriate as an attribute of the healthy work environment.

Adequate staffing/ reasonable workload

Nurses' workloads and staffing levels attracted a lot of attention in the literature because of the global shortage of nurses and its impact on patient outcomes (Trinkoff *et al.*, 2011). Furthermore, nursing services are required throughout the day and night and therefore it is understandable that staffing and scheduling have been recognised as a priority. Hence, circumstances in which nurses have a reasonable workload, both in terms of the number of patients and intensity of required care is appropriate to be considered as an healthy work environment attribute (Cho *et al.*, 2016; Cho *et al.*, 2015; McHugh *et al.*, 2016; Elsous, Radwan and Mohsen, 2017).

The method used by organisations to determine workforce requirements in terms of number of staff, job demand and workload must be adapted in order to provide high quality patient care (Trinkoff *et al.*, 2011). Staffing is a complex process which aims to match patient need at different points of their illness trajectory with sufficient skillful and competent nurses (AACN, 2005). However, this can be hampered by changes in patient acuity and nurses'

absenteeism. Moreover, inadequate staffing can be caused by additional demands of orienting, supervising, and mentoring students or new employees. However, the job demand may be more successfully managed when staffing is stable (O'Brien-Pallas *et al.*, 2010). Insufficient unit staffing is a significant contributing factor to increased workload, increased nurse dissatisfaction, burnout, and turnover which compromises the quality of care, increases costs, and decreases hospital success (AACN, 2005). Providing sufficient staffing is important, as is the right skill mix (Duffield *et al.*, 2011a; Twigg *et al.*, 2012). Levels of hospital nurse staffing and skill mix are important organisation characteristics when predicting patient outcomes and identifying a healthy work environment (Twigg *et al.*, 2012).

To provide adequate staffing levels, different hospital staffing models have been developed. For example, the Nurse-Patient Ratio Model, Patient Acuity Model, Collaborative Staffing Model, and Supplemental Nurses model have been used in a range of clinical settings (Ubochi, 2019). Although these models have been investigated there is insufficient evidence to determine the effectiveness of specific staffing models and their role in delivering outcomes (Aragon Penoyer, 2010; Shin, Park and Bae, 2018; Butler *et al.*, 2019).

Professional development growth

The availability of professional development opportunities is a key attribute of the healthy work environment. Professional development includes opportunities such as training, education, and support for promotion (Rubel and Kee, 2015) and educational advancement is a basic requirement for professional advancement (CDC, 2017). Nurses are experiencing a rapid change in their practice due to advancements in medical technology, the development of evidence-based practice, creative role advancement opportunities and new healthcare systems (Sherman and Pross, 2010; Schmalenberg and Kramer, 2008) and so professional development is essential to enable them to manage these changes. It is essential to have well trained,

educated, competent nurses in order to produce positive patient outcomes (Baernholdt and Mark, 2009; Witkoski and Dickson, 2010; Schmalenberg and Kramer, 2008; Cho *et al.*, 2015), and organisations with productive work environments have a clear, structured roadmap for their employees' training and education in order to enhance employees' productivity and reduce turnover (Schmalenberg and Kramer, 2008). Furthermore, receiving training and education advancement increases nurses' opportunities to move up the professional ladder (Twigg and McCullough, 2014). Promotion opportunities are essential to increase nurses' sense of commitment to the organisation (Holtom *et al.*, 2008; Rubel and Kee, 2015).

In summary, the literature supports the inclusion of a positive group-work culture and interactions, a culture of support, adequate staffing/reasonable workload, and professional development growth as attributes for the healthy work environment (Table 2).

Table 2: Healthy work environment attributes		
References	Category (attributes)	Codes
	Positive group-work culture and interactions	
D'Amour and Oandasan (2005); CHSRF (2010).		Collaborative, team-based practice
		Collaboration and teamwork
Xyrichis and Ream (2008)		Teamwork
Pearson A *et al.* (2007); Pearson *et al.* (2006); Schmalenberg and Kramer (2008)		Active work group culture
AACN (2005)		Collaboration
Hartung and Miller (2013)		Effective, open communication
AbuAlRub *et al.* (2016); Abernathy (2007); Al-Hamdan, Manojlovich and Tanima (2017); Aiken and Patrician (2000); Dorigan and Guirardello (2018); Manojlovich (2007)		Positive relationships between nurses and physicians
	Culture of support	
Cowden, Cummings and Profetto-Mcgrath (2011); Kramer, Maguire and Brewer (2011); Pearson A *et al.* (2007); Twigg and McCullough (2014)		Leadership styles
AONE (2003)		Competent management
AACN (2005)		Authentic leadership
Cummings *et al.* (2010)		Transformational and relational leadership
Cowden, Cummings and Profetto-Mcgrath (2011); Kramer, Maguire and Brewer (2011); Pearson A *et al.* (2007); Schalk *et al.* (2010); Twigg and McCullough (2014)		Leaders charctersitcs (knowledgeable, educated, supportive)
Kramer, Maguire and Brewer (2011); Upenieks (2002).		Leaders charctersitcs (visible, available, and approachable)
Manojlovich (2007) Al-Dweik *et al.* (2016); Nedd (2006)	Empowerment.	Empowerment.
	Adequate staffing/ reasonable workload	
Cho *et al.* (2016); Cho *et al.* (2015); McHugh *et al.* (2016); Elsous, Radwan and Mohsen (2017)		Reasonable workload and appropriate staffing levels
AACN (2005)		Staffing
Twigg *et al.* (2012)		Staffing and skill mix
	Professional development growth	
Schmalenberg and Kramer (2008)		Employees' training and education
Rubel and Kee (2015)		Promotion opportunities
Twigg and McCullough (2014)		Advancement opportunities

4.6.4 Step five and six: develop the model and constructed cases

According to Walker and Avant (2011) a model case should include all the attributes of the concept and it should demonstrate what the concept looks like in real life. Additionally, borderline, related, contrary, invented, and illegitimate cases are necessary to further illuminate the attributes (Walker and Avant (2011). Constructed cases clarify the concept and illuminate its attributes (Walker and Avant 2011). However, the step of constructing cases has been criticised as one of the main limitations of using a concept

analysis as a research design because the constructed cases can diminish the result, validity and comprehensiveness (Hupcey and Penrod 2005), and are unnecessary when extensive literature is available (Weaver and Mitcham (2008). Therefore, the most common refinement of the Walker and Avant's method is to reduce the number of such cases or remove them entirely (Risjord, 2009; Squires *et al.*, 2019). However, consistent with the Walker and Avant methodology, cases were developed (Appendix 2) however they did not elucidate the concept beyond the extensive literature review, hence they are not included here.

4.7.5 Step seven - identify antecedents and consequences

The seventh step is to identify antecedents and consequences to generate insight into the social context in which the concept is used Walker and Avant (2011).

Antecedents

Antecedents are events or incidents that occur before the concept (Walker and Avant, 2011). Basically, a researcher enquires about what needs to be available for the concept's existence. The fundamental elements of a work environment for nursing are the physical healthcare organisation and their staff. However, for the work environment to be healthy, it is essential that healthcare organisations and their staff nurses demonstrate their readiness and availability of resources. The antecedents in the literature include but are not limited to; organisation, individual readiness and resource availability.

Organisation readiness is considered to be an essential pre-requisite to the effective introduction of any dynamic improvements made to the healthcare environment including building a healthy work environment for nurses (O'Connor and Fiol, 2006). It involves a focus on employees as the most valuable organisation asset and therefore worthy of investment (Heath, Johanson and Blake (2004). In fact, half of all the failures to make organisation changes are linked to a lack of adequate preparation (Kotter, 2012). Building the healthy work environment requires both organisation and nurse preparation. Organisation readiness is a

multi-level, multi-faceted construct which includes several elements (Weiner, 2020), such as the availability of appropriate policies and professional practice, and most importantly, the ability of the organisation to communicate these policies and professional practices to their nurses. The policies concerned relate to fairness and anti-bullying as part of systems supporting fair and equitable treatment of employees to help reduce discrimination and establish a productive work environment. A workplace free of bullying is a basic human need for employees and an essential antecedent for the healthy work environment (Gates, Gillespie and Succop, 2011; Berry *et al.*, 2012; Cleary, Hunt and Horsfall, 2010). .

Kupperschmidt *et al.* (2010) highlighted the individual nurse's responsibility when building the healthy work environment. They found leaders and organisations might fail to establish a healthy work environment without the active involvement of nurses. According to Grawitch, Gottschalk and Munz (2006) the perception of the healthy work environment is to some extent dependant on individual personality and although, every healthcare organisation implements certain approaches to create a healthy workplace for their employees, organisation leaders have to ensure that these measures are what their employees need. Disharmony between individual and organisation goals might result in different perceptions of what a healthy work environment is and is not (Grawitch, Gottschalk and Munz, 2006; Henry *et al.*, 2008).

Nurses' readiness was identified in the literature using various terms including non-judgmental stance, and tolerant attitude, however, it appeared more frequently as self-awarness (Eckroth-Bucher, 2010; Pearson *et al.*, 2007). Nurses' self-awareness, both personally and professionally, is often developed through reflective practice (Pearson *et al.*, 2007). The fundamental idea of self-awarness is that the more understanding one has of self, the less they need to interpret or criticise others and increases one's ability to accept differences in others (Eckroth-Bucher, 2010). A culture that embraces being non-judgmental

and acceptance of differences in others is a necessary antecedent, along with readiness, to the healthy work environment.

A second antecedent is resource availability. The need to provide employees with access to the required resources is a prerequisite for the healthy work environment. Such resources include advanced equipment that reduces the risk of nurses getting injured (patient movement equipment for example), and clear policies and protocols for the management of incidents such as physical injury or needle stick injury. Meeting the basic needs of employees, such as giving them timely breaks, providing good air conditioning and noise control, also have a positive impact on staff productivity and are important when creating the healthy work environment (Dendaas, 2011; Durosaiye, Hadjri and Liyanage, 2016). Dendaas (2011) found that the physical setting of the work environment was significantly correlated with moderate to extreme stress among nurses in their jobs. The study concluded that adequate space which increases patient visibility was an important element in the nursing working environment. Other elements of the physical nursing environment include good lighting, adequate workspace, and low levels of noise. These factors were associated with increased nursing care quality, nurses' morale and job satisfaction. Appropriate design of the healthcare setting decreases the incidence of back injuries, improves adjustment to night shifts, and enhances team working (Dendaas, 2011; Durosaiye, Hadjri and Liyanage, 2016). Safety measures are critical as nursing is reported to have one of the highest rates of work injury (6.8 injuries per 100 full-time nurses) in the United States of America (USA) (U.S. Department of Labour, 2015). Thus, the antecedents of the healthy work environment emphasise the role of individual nurses when establishing the healthy work environment and the role of the organisation to provide employees with the required resources and to ensure they have easy access to required

resources. In summary, three antecedents were identified in the literature: organisation readiness, individual preparation and readiness, and resource availability and safety (Table 3).

Table 3: Healthy work environment Antecedents		
References	Categories	Codes
	Organisation readiness	
Gates, Gillespie and Succop (2011); Berry *et al.* (2012); Cleary, Hunt and Horsfall (2010), Weiner (2020),		Policies and professional practice
Heath, Johanson and Blake (2004)		Focus on employees as the most valuable organisation assets
Pearson *et al.* (2007), Eckroth-Bucher (2010).	Individual preparation and readiness	Self-awareness
Dendaas (2011); Durosaiye, Hadjri and Liyanage (2016).	Resource's availability and safety	Providing nurses with advanced equipment safe physical environment

Consequences

Consequences are events or incidents that occur because of the concept and are also known as outcomes of the concept (Walker and Avant 2011). The consequences of the healthy work environment can be described in terms of how they relate to nurses, patients, and the organisation, however all three perspectives are inter-related. For example, if the healthy work environment is not maintained it can have a negative impact on nurse retention (Cowden, Cummings and Profetto-Mcgrath, 2011; Pearson A *et al.*, 2007; Pearson *et al.*, 2006). Some attributes of the healthy work environment such as teamwork and supportive leadership are important in reducing turnover among nurses. Furthermore nurses who feel more valued by their organisation are more likely to stay, be more committed and productive (Schalk *et al.*, 2010; AACN, 2005). Improved nursing morale is another positive consequence of a supportive work environment (LaSala and Bjarnason, 2010). One of the most important consequences of the healthy work environment relates to employee wellbeing. Employees' wellbeing is a multi-

dimensional construct, composed of physical, environmental, psychological and social aspects. However, for nursing, which is recognised as a physically and emotionally demanding profession, it is very important to maintain both physical and emotional health. Furthermore, the healthy work environment helps employees maintain a positive life-work balance as part of their wellbeing (Dall'Ora *et al.*, 2016; Grawitch, Gottschalk and Munz, 2006).

Secondly, the healthy work environment improves quality of care outcomes (Aiken *et al.*, 2008; Cho *et al.*, 2016; Kane *et al.*, 2007). Positive work conditions, teamwork, and adequate staffing result in increased patient satisfaction (Cho *et al.*, 2016; Kutney-Lee *et al.*, 2009). The healthy work environment has been associated with a reduction in the number of medication errors (Sevilla-Zeigen (2016) and effective communication between nurse leaders, managers, and patients provides a more stress-free working environment, which then enhances the quality of patient care (Sevilla-Zeigen (2016).

Finally, there is evidence that in the healthy work environment, organisation productivity and performance increases and absenteeism decreases. Additional benefits include increased staff engagement, satisfaction, and retention, enhanced quality of care and increased patient satisfaction (Vessey, Demarco and DiFazio, 2010; Pearson A *et al.*, 2007). The healthy work environment was also found to reduce organisation costs and improve the financial position of the organisation by reducing turnover and absenteeism (Clark, 2008; Dee and Alyssa, 2008; Simons and Mawn, 2010; Drenkard, 2010). The overlap between the healthy work environment consequences is evident, a cascade impact is noted, where one consequence impacts another, for example, improved patient outcomes are likely to lead to higher staff satisfaction, which then leads to increased productivity and therefore increased organisation reputation. In summary, the literature supports three consequences: nurse related consequences, patient related consequences and organisation consequences (Table 4).

Table 4: Healthy work environment Consequences		
References	Categories	Codes
Cowden, Cummings and Profetto-Mcgrath (2011); Pearson A *et al.* (2007); Pearson *et al.* (2006), Dall'Ora *et al.* (2016); Grawitch, Gottschalk and Munz (2006)	Nurses related consequences	Enhance satisfaction/morale/mental and physical well-being
Aiken *et al.* (2008); Cho *et al.* (2016); Kane *et al.* (2007), Cho *et al.* (2016); Kutney-Lee *et al.* (2009), Sevilla-Zeigen (2016)	Patients related consequences	Enhance their care outcomes/ satisfaction
Vessey, Demarco and DiFazio (2010); Pearson A *et al.* (2007), Clark (2008); Dee and Alyssa (2008); Simons and Mawn (2010); Drenkard (2010).	Organisation related consequences	Enhance financial status/reputation

The following antecedents and consequences were taken forward into the conceptual model.

Antecedents (Table 3)

1) Organisation readiness (including policies and professional practice).

2) Individual preparation and readiness (including self-awareness).

3) Resource availability and safety.

Consequences (Table 4)

1) Nurses related consequences (including enhance satisfaction/morale/mental and physical wellbeing).

2) Patient related consequences (including enhance care outcomes and/or satisfaction).

3) Organisation related consequences (including enhanced financial status and reputation).

4.7.6 Step eight - determine the empirical referents

The final step of Walker & Avant's method is to determine the empirical referents, which relates to measuring the concept and/or confirming its existence in the real world.

Empirical referents are the observable phenomena that by their existence validate the concept of interest (Walker and Avant, 2011). In many cases the attributes and empirical referents are identical and may inform instrument development (Nuopponen, 2010). Alternatively, the defining attributes may point to instruments that are already available (Cronin et al., 2010).

Numerous assessment tools of the nursing work environment exist and encompass various aspects of the healthy work environment concept. Some focus on attributes and their relationship with the consequences whereas others assess the association between its attributes and antecedents. A recognised comprehensive tool for assessment of the nursing work environment is the Nursing Work Index (NWI) developed by Kramer and Hafner (1989) and revised following the exclusion of relatively less correlated items found in the original scale (Aiken and Patrician, 2000). However, both the original and revised tools have been used to assess the work environment at hospital level (Kim *et al.*, 2013). In 2000, Aiken and Patrician revised the widely used Nursing Work Index by re-examining the importance of each of the original 65 NWI items. The result was a 57 item survey composed of 55 of the original questions, one revised question and a new question about team nursing. The tool comprises of four subscales of autonomy, control over the practice setting, nurse/physician relations, and organisation support (Aiken and Patrician, 2000).

The Practice Environment Scale of the Nursing Work Index (PES-NWI) retained 31 of the 48 items originally selected from the NWI as part of five subscales; nurse participation in hospital affairs (9 items), nursing foundations for quality of care (10 items), nurse manager, ability, leadership and support of nurses (5 items), staffing and resource adequacy (4 items), and collegial nurse-physician relations (3 items). The first two subscales reflect the hospital wide environment and the remaining three are unit specific ((Lake, 2002). The PES-NWI is the most commonly used instrument to assess the nursing work environment (Swiger *et al.*,

2017b). It is popular as it has a low respondent burden, satisfactory psychometric performance, provides an opportunity for comparison across studies, has high discriminant ability and is available for free use (Lake, 2002; Swiger *et al.*, 2017a).

Another validated tool is the Essentials of Magnet (EOM) and its revised version known as the EOM II. Although the Magnet Recognition Program was established in 1990 by the American Nurses Association, the first tool to measure the work environment based on Magnet standards was not developed until 2004 (Schmalenberg and Kramer, 2008; Kramer and Schmalenberg, 2004). The Essentials of Magnet (EOM) has 54 items and 8 dimensions (Bai, Hsu and Zhang, 2015; Yıldırım, Kısa and Hisar, 2012). In 2005, the EOM was revised to create the EOM II tool. It is used in most Magnet hospitals to measure and evaluate the healthy work environment and in non-Magnet facilities to assess their readiness to apply for Magnet recognition. This tool has been translated into many languages including Dutch, Thai, Turkish and Chinese (Schmalenberg and Kramer, 2008).

Two further commonly used tools assess subjective perceptions of the nursing work environment. These include the Perceived Nursing Work Environment Scale and the Revised Individual Workload Perception Scale. There is general agreement regarding the purpose and use of these instruments, which focus on the efficacy of interventions that create and maintain the nursing healthy work environment (Gu and Zhang, 2014; Swiger *et al.*, 2017b; Ribeiro *et al.*, 2020). Although the dimensions and items vary between the instruments, there is commonality regarding interpersonal relationships, supportive management and decision-making participation (Ribeiro *et al.*, 2020). Gu and Zhang (2014) reviewed the assessment tools and concluded that they require further consideration and attention. None of the available tools, assess all the attributes of the nursing work environment comprehensively (Gu and Zhang, 2014), therefore, some organisations use a combination of assessment tools.

In 2009, Slater, McCormack and Bunting (2009) developed a measurement tool, the Nursing Context Index (NCI), which measured the improvement in nursing work conditions and workplace culture from the viewpoint of health care staff. It consists of 78 items responded to by means of a seven-point Likert scale. The items can be used to assess three workplace culture constructs, job stress (36 items), job satisfaction (18 items), and practice environment traits (24 items). The section about the perception of the practice work environment trait evaluates the perception of six subscales including adequate staffing and support, doctor / nurse relationship and teamwork, nurse management, organisation commitment, empowerment and intention to leave. The instrument has been used recently to investigate the perceptions of registered nurses' workplace culture in Finland, and Ireland (Slater, McCormack and Bunting, 2009; Lohikoski, Roos and Suominen, 2019; Slater *et al.*, 2020).

Overall, based on the result of this concept analysis and the identified attributes of the healthy work environment in addition to the tool's level of comprehensiveness, the tool of NCI was found to be more suitable and congruent to this research study's aims. Thus, the NCI was selected to be utilised in assessing the healthy work environment in phase three and four.

4.7 Operational definition

Rodgers and Knafl (2000) noted one goal of a concept analysis is to create an empirical based definition of the concept. Tofthagen and Fagerstrøm (2010) note clusters of attributes inform the concept analysis process. An empirical based definition of the concept of the healthy work environment was developed because of the concept analysis. It is, therefore, the nursing healthy work environment which is situated within the context of a healthcare setting. It is a dynamic process which provides adequate and appropriate staffing for nurses

who can build and maintain effective teamworking relationships. This is based on effective communication and collaboration. It has effective leaders and managers who empower staff and provide them with the required resources and opportunities for professional career growth.

4.8 Healthy work environment framework

Following the concept analysis, a conceptual framework was developed to inform the design and conduct of the study (Figure 4). The framework is a visual representation of the antecedents, attributes and consequences of the healthy work environment. It was refined through an iterative process as the study progressed and further details about its application can be found in chapter six (cross-sectional survey phase).



Figure 4: Healthy work environment' Framework

4.9 Critique of the Walker & Avant method

Although the Walker and Avant approach is the method used most frequently to undertake concept analyses in nursing (Hupcey and Penrod, 2005; Weaver and Mitcham, 2008), it has been criticised for lacking precision and accuracy due to the potential bias in describing and defining the concept (Draper, 2014a; Draper, 2014b; Morse, 2014; Paley, 2019). Moreover,

the constructed cases and utilisation of dictionary definitions can limit the validity and comprehensiveness of the process (Hupcey and Penrod, 2005). The lack of a literature search in the previous version of the Walker and Avent framework had also been criticised (Morse *et al.*, 1996a). Additionally, Morse et al. (1996a) argue that publications which have used the Walker and Avant approach have consistently recommended the need for further research but have failed to specify the precise direction for the research.

In order to address some of the design limitations, several additions are recommended such as using criteria to assess concept maturity, a need to focus on concept clarification and use of a data synthesis technique to organise themes and codes identified from the literature (Morse *et al.*, 1996a). Dictionary definitions were used in this concept analysis which helped create an initial understanding of the terms used and inform the identification of similar terms related to the concept. However, the main source of data collection was the comprehensive literature review. As mentioned earlier, considering the low value of case construction and their threat to the validity of this analysis, they were not included in this chapter. The debate about the usefulness of concept analyses continue in the literature with contrasting perspectives (Draper, 2014a; Draper, 2014b; Morse, 2014; Paley, 2019) however it has been used effectively to explore and analyse concepts related to health, wellbeing, nursing care, education and practice (Nuopponen, 2010).

The eight steps of the Walker and Avant (2011) framework provide a clear and systematic process to clarify concepts. When applied in this study it enabled the development of a more accurate definition of the healthy work environment based on available evidence which was suitable for investigation. The Walker and Avant approach allows for the identification of antecedents and consequences which were helpful in the development, understanding and application of the theorical framework of the concept.

4.9 Summary

With little consistency in the definition of the concept of the healthy work environment in healthcare, it was appropriate to undertake a concept analysis. Using the Walker and Avant (2011) concept analysis approach, it was possible to identify the attributes, antecedents and consequences of the healthy work environment (Figure 4). The findings of the analysis informed the development of the conceptual framework as it applies to nursing. The findings have the potential to help researchers and policy makers design strategies that improve the working environment and thereby improve outcomes for nurses, patients, and the organisation.

However, gaps remain as there is no consensus in the literature regarding which tools should be used to measure the healthy work environment and which factors/dimensions should be prioritised. A systematic review was needed to identify and evaluate the evidence concerning the nursing work environment and to identify appropriate tools that measure the healthy work environment and furthermore, explore the direct and indirect relationship with a nurses' decision to stay with their organisation.

The next step in this multi-phase research study was to explore the relationship between the healthy work environment and nurses' intention to stay in an acute healthcare setting as reported in the literature. Therefore, the following chapter presents the methodology and findings of the systematic review.

Chapter V: Systematic Review

5.1 Chapter overview

This chapter presents the second phase (the systematic review) of the PhD project which aimed to review the existing literature to a) identify appropriate tools for measuring a healthy work environment and b) to explore the relationship between a healthy work environment and nurses' intention to stay in the acute healthcare setting. The findings of the systematic review informed the conceptual framework which guided the data collection in the cross-sectional survey phase.

5.2 Introduction

Although the factors contributing to global nursing shortages vary, due to the uniqueness of each country and its healthcare system, there are some common key factors. These include the growing number of retirees due to an aging nursing workforce, an inadequate supply of new nursing graduates and unfavorable work environments. These factors have led to high staff turnover rates and an uneven distribution of the workforce (Eley, Eley and Rogers-Clark, 2010; Oulton, 2006). The multifactorial nature of the nursing shortage indicates that its solution requires a combination of approaches to reduce turnover and enhance retention (Hayes *et al.*, 2006; Kleinman, 2004).

Traditionally, research in this area has focused on staff turnover and retention, more recently though, the intention of nurses to leave or stay in their current organisation and the main predictors of such decisions have become the focus of research (Jiang *et al.*, 2017; Wang *et al.*, 2018). However, the terms, intention to stay, intent to leave, turnover, and retention are often used interchangeably in the literature, making it difficult to determine the relative impact

of different factors. Despite this inconsistency in the use of the terms, it is important to examine potential predictors of each of them to understand their impact on workforce stability and different aspects of organisation performance (Buchan, 2010). Intention to leave among nurses, as a predictor of nursing turnover, has featured in the literature since the early 1980s, whereas research attention on intention to stay is a relatively recent development over the last two decades (Buchan, 2010; McCarthy, Tyrrell and Lehane, 2007). Furthermore, the predictors of intention to stay often contradict those of intention to leave which include aspects of job characteristics, organisation climate, working conditions and perceived nursing role value (Gershon et al., 2007). Working conditions and the work environment are predictors of intention to stay and intention to leave that have been explored in depth in the literature (AbuAlRub et al., 2016; Alhamwan and Mat, 2015; HanTrinkoff and Gurses, 2015; McCarthyTyrrell and Lehane, 2007). In light of this evidence, healthcare organisations around the world have identified a need to develop, maintain and improve the quality of the work environment to promote the recruitment and maintain the retention of high-quality staff (Haynes, 2008). However, gaps remain as there is no consensus in the literature regarding the definition or priority of factors that contribute to the healthy work environment. A systematic review will help identify and evaluate the evidence for the impact of the nursing work environment and explore its direct and indirect impact on nurses' decision to stay with their organisation.

5.2.1 Aims of the review and the review question

The aim of the review was to identify, select, quality assess, extract, and synthesise the findings reported in published papers which examined the relationship between the work environment and nurses' intention to stay with their current employer. The intention was to also examine the implications of the findings for nursing practice, management, education and identify deficits in the knowledge base. This systematic review was undertaken to provide a clear insight about the relationship between the work environment and nurses' intention to stay

in the published literature and to assess the state of the knowledge base and finally, to compare these findings with the findings of the fourth phase of this PhD study which was a cross-sectional survey of nurses in Oman. This systematic review is informed by the concept analysis which was conducted to identify the main elements of the nursing healthy work environment. Although the concept analysis identified a few attributes related to the healthy work environment, it was not appropriate to limit the review solely to these attributes. Thus, the question addressed in this systematic review and narrative analysis was *"Is there an association between the work environment and intention to stay among nurses working in an acute healthcare setting?"*

5.2.2 The rationale for performing a systematic review

A systematic review was undertaken because it is considered the 'gold standard approach' to answering a research question (Khan K *et al.*, 2011; Pollock and Berge, 2018). Systematic reviews are key to evidence-based healthcare because of their methodological rigour. They include a pre-determined and inclusive plan and search strategies to minimise bias by identifying, screening, appraising and synthesising all relevant studies about the topic of interest (Khan et al. (2003). Although some work has been done to review the literature about predictors of nurses' intention to leave, to the researcher knowledge, there are no systematic reviews exploring the relationship between the healthy work environment and nurses' intention to stay in acute healthcare settings. The aim of this phase was to address this gap in the literature and explore if a relationship exists between the healthy work environment and nurses' intentional behaviour to leave or stay with the employing organisation.

5.3 Method

5.3.1 Search strategy, data sources and screening

The healthcare systematic review guidelines of the Centre of Review and Dissemination (CRD) and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed to guide and report this systematic review (Moher *et al.*, 2009; Tacconelli, 2010; CRD, 2009). An initial limited search of PROSPERO, COCHRANE and MEDLINE was completed using keywords such as nurses, work environment, work setting, workplace and intention to leave/stay, in order to detect previous systematic reviews related to the concepts of interest, and to inform the development of the systematic review protocol. No published systematic review was identified which examined the relationship between the healthy work environment and nurses' intention to stay. A systematic review protocol was developed and registered on PROSPERO, an international database of prospective registered systematic reviews in health and social care (Registration number: CRD42018103107) (Appendix 3).

Developing a systematic review protocol prior to conducting the review is recommended in order to make the review process more accurate, transparent and well defined (Higgins and Green, 2011). Furthermore, the protocol provides a clear statement of the research question and anticipates potential limitations. The terms identified on the initial search were used to generate a modified format of a PICO table (Table 5) (P: population, I: indicator, C: context, O: outcome). This alternative format of PICO has been used in systematic reviews which aim to answer non-intervention questions (Pollock and Berge, 2018; Walker, 2014). The databases searched were AMED (EBSCO), EMBASE, ProQuest Nursing & Allied Health Source, ProQuest theses and dissertations, CINAHL Plus (EBSCO), and MEDLINE (Ovid). These databases were selected on the basis of the results of the initial

search, librarian consultation and those used in a systematic literature review which examined nurse turnover (Brazier and Begley, 1996). In addition to the biomedical databases, the psychology literature database (PsycINFO) was searched since the search question concerns psychological and social elements of intention to stay. In accordance with CRD guidelines, prior to the main search, the key search terms were piloted in all the chosen databases (Cowden, Cummings and Profetto-Mcgrath, 2011; CRD, 2009).

The initial search demonstrated that studies reported nursing workforce sustainability using different terms and concepts such as "intent to stay", "intent to leave", "turnover" and "retention." Some studies consider these terms to have the same meaning and do not discriminate between them, whereas others present them as opposing concepts or on a continuum. However, Howe *et al.* (2012); Nancarrow *et al.* (2014) maintain there are significant differences between intention to stay and intention to leave, indicating that predictors of intention to leave are not simply the opposite of predictors of intention to stay. For the purpose of this systematic review all of these terms were used as search terms to avoid missing relevant literature. However, during the screening phases, only studies which examined nurses' intention to stay were retained. Index terms, specifically MeSH, (in Medline) combined with free text words were used and modified for each of the PICO components and Boolean operators were utilised as required (Table 5).

Table 5: PICO table and search terms				
PICO	Question component and search terms	Type of terms		Boolean Operator
		Free text	MeSH	
Population	Nurses	Nurse, nursing	Nurs*	Or
		Nursing personnel		
				And
Indicator	Work environment	Work environment		Or
		Workplace	Workplace, work site	Or
		Work setting		Or
				And
Context	Acute healthcare setting	Health care/Healthcare setting		Or
		Health care/Healthcare facility		Or
		Health care/Healthcare organization/organisation		Or
		hospital	Hospital	Or
				And
Outcome	Intention to stay	Intent* to stay, remain	Intent*	Or
		Intent* to leave, quit, resign		Or
		Turnover, retention		Or

5.3.2 Inclusion criteria

This review included any reports of quantitative studies, including experimental, quasi-experimental, before and after studies, prospective and retrospective cohort studies, case-control studies, case series, individual case reports and analytical cross-sectional study designs. In addition, quantitative data from mixed methods studies were included if the quantitative findings were clearly reported. Grey literature was not included in this review, because of the difficulties of identifying and retrieving such literature, however, published theses and dissertations were included because intention to stay is a relatively new area of research. Although including dissertations/theses is not a common practice in systematic reviews (Benzies et al., 2006), five were included in this review to minimise publication bias. Furthermore, this is a relatively new area of research interest and emerging data can be found in recent doctoral studies that have not yet been published in a peer reviewed journal (Paez, 2017). Interesting emerging data can be found in recent doctoral studies which are available on university websites and repositories (Adams *et al.*, 2016). This review included studies

which contained empirical quantitative data (primary or secondary) and examined the concept of intent to stay (or equivalent term such as intention to remain) and the work environment (modifiable and functional elements of work environment). Non-English language studies were excluded as financial resources were not available for translation services. Additionally, only studies that focused on nurses working in acute healthcare settings were included. If studies involved a mixed staff population, they were included if data related to nurses was reported separately in the findings. This review included studies of qualified nurses of any grade/level including Registered Nurses (RNs), Licensed Practical Nurses (LPNs), Registered Practical Nurses (RPNs) and Licensed Vocational Nurses (LVNs). The search period for the systematic review was of literature published between 1990 and 2017. The reason for this relates to the fact that the chronic global nursing shortage was recognised in the early 1990s. However, since this database search was conducted in the first year of the PhD program in 2017, a short and updated review was conducted at the end of 2020 to retrieve related studies that had been published between 2018 and 2020.

5.3.3 Exclusion Criteria

The aim of this review was to explore if there is a relationship between the work environment and nurses' intention to stay. Qualitative studies, studies not written in the English language and/or those which included a non-nursing population were excluded. Moreover, exclusion criteria were applied to studies which examined intention to stay and the work environment among non-licensed/registered nurses or among nurses who did not provide direct patient care such as nurse managers/charge nurses, ward sisters, and nurses in-charge. Studies that focused only on unlicensed or unregistered nurses working in acute healthcare settings such as nurse assistants and nurse aides were excluded. Also, where a study involved healthcare personnel, but it was not possible to differentiate the data focused on nurses, from the rest of

the workforce, the study was not included. Moreover, studies that focused on qualified nurses working in non-acute healthcare settings such as nursing homes were also excluded. Non-empirical articles such as any type of literature review, discussion papers, commentaries, short communications, expert opinion papers, editorials and letters to the editor were not included. The criteria also excluded studies which examined the intention to leave/quit/resign, intentional turnover, turnover and retention (Table 6).

Table 6: Inclusion and Exclusion criteria	
Inclusion criteria	Exclusion criteria
Published quantitative studies, including quantitative data from mixed-methods studies, were included provided that the quantitative aspect of the study was clearly reported	Qualitative studies and grey literature (expect theses and dissertations)
Theses and dissertations	
Studies containing empirical data (primary or secondary)	Non-empirical articles (including literature reviews [including systematic reviews]), discussion articles, commentaries, short communications, expert opinion articles, editorials and letters to the editor
Studies examined the intent to stay (or equivalent term such as intention to remain), work environment (modifiable and functional elements of work environment)	Studies examined other concept such as intention to leave, turnover and retention
Written in English language	Not written in English language
Examined any grade/level of nursing who provided direct patient care including registered nurses (RNs), licensed practical nurses (LPNs), registered practical nurses and licensed vocational nurses (LVNs)	Examined non-nursing populations or nurses who did not provide direct patient care
Published after 1990	Published before 1990

5.3.4 Screening

The search of individual databases was completed by the primary researcher and the results from each database entered into a bibliography management software package (EndNote 8). The Endnote software was chosen because it provides a single platform where the steps of sorting, appraising, and co-coding references for inclusion and exclusion could all be conducted, stored, and tracked (Bramer *et al.*, 2016). In step two, duplicate papers were removed. In step three, the titles of the remaining papers were screened by one reviewer to

remove papers that were not related to the topic. Screening titles as an individual step was found to be more effective than screening titles and abstracts together (Mateen *et al.*, 2013). In step four, the abstracts of the remaining papers were screened by two reviewers independently. Studies that did not meet the inclusion criteria were excluded. Discrepancies were resolved through discussion (see below "Data extraction"). In step five, the full texts of relevant papers were subjected to further screening to verify eligibility based on the inclusion/exclusion criteria (Moher *et al.*, 2009). In the final step, step six, data was extracted from all the papers using a validated data extraction form (Hoque *et al.*, 2017). The number of studies included at each step is presented in the summary Table 8 and the PRISMA diagram (Figure 5).

5.3.5 Data Extraction

The plan was to use the Cochrane Collaboration data collection form for review of RCTs and non-RCTs interventions (Cochrane, 2014). However, since all the retrieved studies were non-intervention studies, certain sections of the extraction form were deemed inappropriate. A decision was therefore made to use a modified version of the form (see below and Appendix 4) (Hoque *et al.*, 2017). The modified version has been used to extract data from non-intervention quantitative studies (Hoque *et al.* (2017). In order to ensure that the information extracted was standardised and relevant, the data extraction form for the review was piloted and all items discussed prior to the data being extracted by two independent reviewers. The data extraction form was piloted on two of the included studies to ensure that all the relevant information was captured and that resources were not wasted on extracting data that was not required. The form was found to be appropriate, and no further changes were required. During the piloting phase the consistency in terms of the quantity of information recorded was assessed. This increased the reliability of the data extraction process. Information extracted was recorded on an excel spreadsheet and imported to form the summary table (Table 8).

This approach was found to be effective in increasing the external validity of the overall systematic review process (Long, 2014). For the summary , the following information was recorded in table 8: author, publication year, journal, country, design, theoretical framework, sample and population, assessment scales, reliability and validity, response rate, statistical analysis, results, limitations and the quality assessment result. In order to minimise data extraction errors, data was extracted from all studies by two independent reviewers. Any discrepancies between reviewers were discussed and agreement reached. Minor discrepancies were identified between the reviewers in terms of the reliability and validity of the assessment scales used in the included papers. These discrepancies were resolved by obtaining the original validated study published about the tool and extracting more details concerning the validity and reliability of the tools used.

5.3.6 Quality Appraisal

Quality appraisals were conducted using a modified form of the Appraisal Tool for Cross-Sectional Studies (AXIS tool) (Downes *et al.*, 2016). The AXIS tool was developed through an initial scoping review of the published literature where key epidemiological texts were extracted, tested and revised during a Delphi study. The Delphi expert panel discussed and agreed the necessary components to inform the development of a critical appraisal tool appropriate for cross-sectional studies (Downes *et al.*, 2016). Although the tool is newly developed, it has been used in a number of systematic reviews that have assessed the quality of the cross-sectional studies (Weeda and Butt, 2018; Wong, McAuley and Trinh, 2018). Items in the AXIS tool include;

a) The appropriateness of study design for stated aims.
b) Sample size justification.
c) Reliability of survey instruments.

The AXIS tool does not include a numerical scale that can be used to produce a quality assessment score, instead, the tool is designed to assess the individual characteristics of a study cumulatively. The appraisal form has sections where a "yes", "no", or "don't know" response to each question can be recorded and there is room for comments as well. However, the answer "don't know" was replaced with the option of "not clear' and a fourth option of "partially mentioned" was added. The response options were assigned a numerical score as follows: "yes" = 3, "partially" = 2, "not clear" = 1, and "no" = 0. There were 17 appraisal questions and, based on the cumulative score, studies were divided into three categories, which was then transformed to a text value which included poor quality (score 0-16), moderate quality (score 17-33), and high quality (score 34-51) (Appendix 4). This approach of using a numerical scale to 'rate' the quality appraisal of the paper reviewed has been utilised in the nursing literature (Arnold, Walters and Ferrar, 2016; Lartey, Cummings and Profetto-McGrath, 2014; Cowden, Cummings and Profetto-Mcgrath, 2011). The main purpose of these modifications was to add a level of objectivity by assigning a numerical score which equated to a particular quality assessment level. The options "unclear" and "partially mentioned" were added to address inadequate or incomplete reporting of the included studies.

The adapted quality appraisal checklist was piloted and discussed prior to the actual process of quality assessment by two reviewers. The discussion focused on what was acceptable in terms of the specific study characteristics and the acceptable level of detail required to allocate a positive score compared to a negative, or a response of "unclear." The adapted quality appraisal form was found to be 'user friendly' and comprehensive in capturing the required data. Two reviewers conducted the assessments independently. When there was a divergence in scoring or the final decision, reviewers discussed further until agreement was

reached (Downes *et al.*, 2016). There was one difference in the overall decision of the quality assessment between the two reviewers which was resolved by revisiting the study and discussing the quality appraisal items and final agreement was achieved. Only studies rated as moderate to high quality were retained (29 studies). No studies were classified as poor quality. The overall apriori decision of the quality assessment was to include moderate to high quality studies and to exclude poor quality studies.

5.3.7 Data synthesis

A narrative synthesis was undertaken to summarise and analyse the findings of the studies (Ryan, 2013). This was necessary because of the heterogeneity of the study populations, assessment tools used, main concept definitions and varied outcome measurements used. Due to the heterogeneity it was not possible to merge the results and undertake a meta-analysis (Popay *et al.*, 2017; Ryan, 2013). It is recommended that a preliminary synthesis of findings can be achieved by the tabulation of data into a summary table (Popay *et al.*, 2017). The characteristics of each study were extracted and inserted into the table (Table 7). Differences were noted, in the main these related to elements of the nursing work environment. The relationships within and between the studies were explored. Finally, the robustness of the synthesis was assessed by reflecting critically on the synthesis process through focusing on the limitations and biases' which may have influenced the result (Popay *et al.*, 2017).

Two techniques which had been utilised for developing a preliminary synthesis were tabulation and groupings and clusters. Tabulation was particularly useful in developing an initial description of the included studies and to begin to identify patterns across studies. It is typically used to provide details of study design, results of study quality assessment, outcome measures and other results. It provides important building blocks for future elements of the synthesis process (Popay *et al.*, 2017).

The factors which positively or negatively influence the nurses' intention to stay directly or indirectly have been identified. Similar factors and predictors were grouped and clustered to four main categories. In the process of narrative synthesis, organising the identified factors into smaller cluster makes the process more manageable. Clustering the identified factors was a useful way of guiding the process of description and analysis and looking for patterns within and across these factors and grouping them based on the similarities. The intention to stay factors were identified and synthesised into the following groups: individual indicators (personal and professional), organisation/profile, work environment and patient-related factors (Popay *et al.*, 2017).

5.4 Results

5.4.1 Database search results

A total of 4968 records were identified after the completion of the database searches. Following the removal of duplicates, 3956 records were screened by title by the primary researcher. Of these, 3513 were excluded because they were published in a language other than English, were not relevant to the topic, examined a non-nursing population, were qualitative studies or a systematic review. The abstracts of the remaining 443 studies were screened independently by two reviewers and a total of 412 articles was excluded in this round. A total of 31 studies was retained by the reviewers and were subjected to the full-text screening process. Data was extracted from 31 papers by two reviewers. Consistency of approach was maintained as one reviewer (primary researcher) examined all the final included papers (Table 8). However, two empirical papers were removed at full paper review but before the quality assessment and data extraction by two reviewers because one study did not directly examine the concept of the work environment. The focus of this excluded study was to detail an orientation program. The other study was excluded because it was the second publication from one study. Hence, 29 papers were ultimately included in the review for quality assessment and data extraction. (Figure 5).

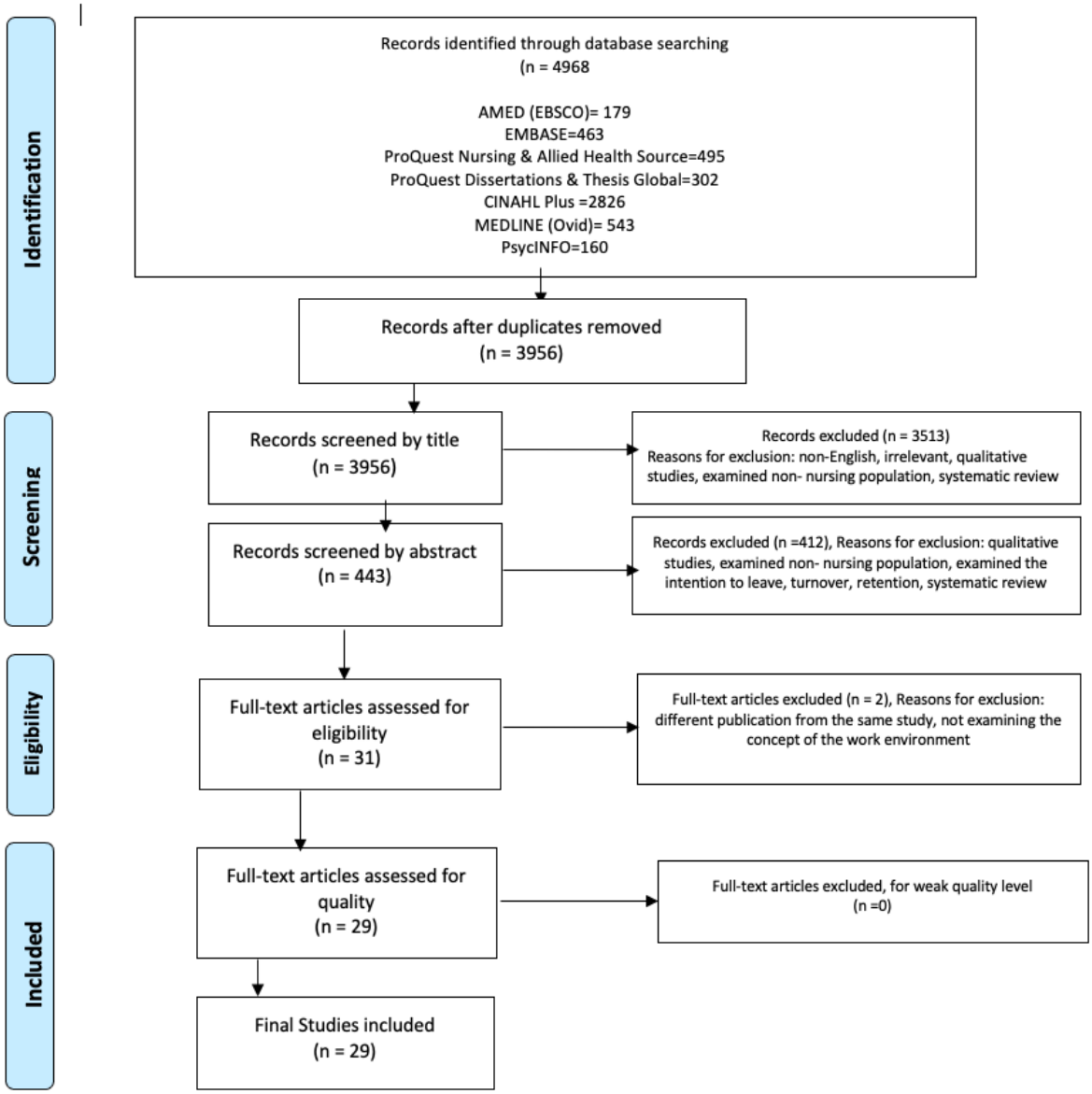


Figure 5: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), (Moher et al., 2015)

5.4.2 Characteristics of the studies

Design

Two of the studies (Cowden and Cummings, 2015; Yarbrough *et al.*, 2017) employed a mixed-method design, however, only the quantitative components were included in the systematic review. The remaining papers included five PhD dissertations which used cross-

sectional research designs to obtain primary data. Twenty-five papers reported on cross-sectional studies in peer reviewed journals. Two papers (Abernathy, 2007; Lacey *et al.*, 2007) reported secondary analysis of a data set.

Temporal and Geographical details

The 29 studies can be divided into two distinct time frames. Ten studies were conducted between 2000 - 2010 and 19 studies were published between 2011 and 2017 (Table 8). More than half of the empirical studies were conducted in North America, with eleven being conducted in the USA (Owens, 2011; Letvak and Buck, 2008; Cram, 2013; Brewer *et al.*, 2016; Manning, 2014; Riegal, 2012; Lacey *et al.*, 2007; Ross, 2016; Nedd, 2006; Yarbrough *et al.*, 2017; Abernathy, 2007). Four studies were conducted in Canada (Tourangeau and Cranley, 2006b; Sourdif, 2004; Gregory *et al.*, 2007; Cowden and Cummings, 2015). The geographical distribution of the remainder of the studies is as follows: seven in Asia (Kaewboonchoo *et al.*, 2014; Liang *et al.*, 2016; Wang *et al.*, 2012; Ya-Ting, 2017; Jiang *et al.*, 2017; Wang *et al.*, 2017), one in Africa (Ghana)(Asamani, Naab and Ansah Ofei, 2016), one in Europe (Switzerland)(Gilles, Burnand and Peytremann-bridevaux, 2014) and five in the Middle East (four in Jordan and one in Lebanon) (AbuAlRub *et al.*, 2016; Mrayyan, 2007; Al-Hamdan, Manojlovich and Tanima, 2017; El-Jardali *et al.*, 2013; Mrayyan, 2008).

Setting

All the studies were conducted in acute healthcare settings including hospitals and public healthcare centres. Several types of hospitals were identified in the papers including public, private, teaching, non-teaching, community, Magnet and non-Magnet recognition hospitals in urban, suburban and rural areas. All but two studies (Sourdif, 2004; Yarbrough *et al.*, 2017) were multi-centre studies. Most of the studies recruited participants directly through

their employing institutions. However, four studies recruited samples through state board or speciality associations (Brewer *et al.*, 2016; Nedd, 2006; Riegal, 2012; Ross, 2016).

Population

The total sample population of the 29 studies was 26,295 staff nurses which ranged between 67(Yarbrough *et al.*, 2017) and 8,456(Tourangeau and Cranley, 2006b). Twenty-five studies included only registered nurses (RN). Three studies involved registered nurses (RN) and Practical registered nurses (PRN)(Cowden and Cummings, 2015; Owens, 2011; Tourangeau and Cranley, 2006b). One study included nurses (RN) (37%) along with other healthcare professionals (Gilles, Burnand and Peytremann-bridevaux, 2014).

Statistical Analysis

In terms of the statistical analysis, twenty-three studies used multivariate analysis including multiple regression, hierarchical linear modelling and structural equation modelling (SEM) to examine the predictive relationship between direct or indirect work environment factors in comparison to intention to stay. Six studies used correlational statistical analysis which focused on the direct relationships between the study concepts (Cram, 2013; Lacey *et al.*, 2007; Mrayyan, 2007; Nedd, 2006; Ross, 2016; Yarbrough *et al.*, 2017). Overall, appropriate statistical tests were used based on the research questions addressed in the studies. However, despite recent recommendations from Akinwande, Dikko and Gulumbe (2015) and Smith (2018) to minimise the use of stepwise regression, four studies used this type of statistical analysis. However, a stepwise regression analysis is appropriate when the independent variable carried more weight in explaining the variance of the dependent variables (Mrayyan, 2008; Nakamura *et al.*, 2010; Wang *et al.*, 2012; Ya-Ting, 2017) and therefore this type of analysis was appropriate in these studies.

Summary of quality review

All 29 studies were rated as moderate to high quality (Table 8). The most frequent limitations identified included use of a cross-sectional designs, self-reported and therefore subjective data. Further limitations included a lack of random samples, low response rates, lack of evidence for measures' validity assessment and a lack of attention to the management of missing data and outliers. Eight studies reported response rates lower than 50% and five studies did not report the response rate at all. Twenty-seven studies used convenience sampling, one study used random sampling (Nedd, 2006) and another used purposive sampling for recruitment (Liang *et al.*, 2016). All of the studies reported how the anonymity of participants was maintained. Most reported that ethical approval was obtained, except the studies completed by Gilles, Burnand and Peytremann-bridevaux (2014) and Nakamura *et al.* (2010). Fourteen studies did not report whether informed consent was obtained from participants.

Theoretical and conceptual frameworks

Seventeen studies (59%) used or developed a theoretical/conceptual framework to guide the research. Six different models were used in the studies which focused on aspects of the work environment and their relationship with intention to stay. Theories used included Kanter's theory of Organisational Empowerment, Herzberg's Two-Factor Theory-Theoretical Framework, Self- Determination Theory (SDT), Social Exchange Theory (SET) and Maslow's Hierarchy of Needs (Abernathy, 2007; Lacey *et al.*, 2007; Manning, 2014; Nedd, 2006; Owens, 2011; Riegal, 2012). In addition, leadership/ management theories also featured in four studies and included Management by Objectives (MBO), Path-Goal Leadership theory, and the Full Range Leadership Model (Asamani, Naab and Ansah Ofei, 2016; Cram, 2013; Nakamura *et al.*, 2010; Manning, 2014). Overall, the theories which guided these studies, were appropriate

and reflected the nursing work environment. These were often categorised into the physical, social, and emotional environment.

However, the inclusive conceptual framework which focused on particular aspects of the work environment such as Cowden and Cummings' (2015) Conceptual Model of Clinical Nurses' intention to stay were better able to explain the variance of the nurses' intention to stay compared to the models which examined one or few aspects related to the work environment, such as theories focusing on empowerment or leadership styles. Higher percentages of explained variance indicated a stronger correlation and indicated that the examined variables were good predictors of the outcome (Rosenthal and Rosenthal, 2011). Where a conceptual framework was used, and it included intention to stay or an equivalent term, such as turnover or intention to leave as a factor, this was also used as the major outcome measure (Table 7).

Overall, three conceptual frameworks were developed to examine the mechanism of intention to stay, and the rest were based on other similar concepts related to workforce stability such as turnover, and retention. The wide range of conceptual frameworks cited in the studies, emphasises the need to further clarify the definition of and increases the justification for and value of the concept analysis (Chapter IV). The findings of the systematic review highlight a growing body of literature focused on building and testing the intention to stay conceptual frameworks such as Cowden and Cummings' Conceptual Model of Clinical Nurses' intention to stay, Conceptual Model of Intent to Stay (CMIS), and Determinants of Nurse Intention to Remain Employed (Cowden and Cummings, 2015; Gilles, Burnand and Peytremann-bridevaux, 2014; Liang *et al.*, 2016; Tourangeau and Cranley, 2006b; Wang *et al.*, 2012).

Table 7: Theoretical/conceptual frameworks	
Theoretical/conceptual framework	Used by
Organizational Dynamics Paradigm of Nurse Retention (Taunton *et al.*, 1997)	(Sourdif, 2004)
Expanded Price Model of Turnover (Price, 2001)	Brewer *et al.* (2016)
Cowden and Cummings Conceptual Model of Clinical Nurses' intention to stay (Cowden and Cummings, 2012)	Cowden and Cummings (2015); Liang *et al.* (2016)
Conceptual Model of Intent to Stay (CMIS) which was adopted from (Boyle *et al.*, 1999)	Gilles, Burnand and Peytremann-bridevaux (2014)
Conceptual Model of Behavioural Intentions (CMBI) which was developed based on an integrated causal model of turnover behaviour (Mueller and Price, 1990)	Gregory *et al.* (2007)
Fishbein and Ajzen's Expectancy–Value Theory (Fishbein and Ajzen, 1974)	Yarbrough *et al.* (2017)
Determinants of Nurse Intention to Remain Employed based on Conceptual Model of Intent to Stay (Boyle *et al.*, 1999)	Tourangeau and Cranley (2006b); Wang *et al.* (2012)

Measurement of independent and dependent variables

Several tools have been developed to measure a wide variety of independent variables defined as attributes of the nursing work environment. The Revised Nurse Working Index (NWI-R) was the most frequently used appearing in five papers (AbuAlRub *et al.*, 2016; Cowden and Cummings, 2015; El-Jardali *et al.*, 2013; Owens, 2011; Tourangeau and Cranley, 2006b). Other tools such as the Individual Workload Perception Scale-Revised was used in three of the studies (Abernathy, 2007; Lacey *et al.*, 2007; Ross, 2016), the Practice Environment Scale of the Nursing Work Index (PES-NWI) in two studies (Al-Hamdan, Manojlovich and Tanima, 2017; Cram, 2013) and Farley's Nursing Practice Environment Scale (NPES) in one study (Mrayyan, 2008). Two studies used only, a number of items from an identified tool to assess certain aspects of the work environment. For example, the autonomy subscale from the NWI-R (Owens (2011) and the inclusion of 29 of the 52 items in the NWI-R in (Cowden and Cummings, 2015) study.

Although two of the measures (NWI-R and PES-NWI) include sub-scales for the measurement of leadership practice, researchers also used specific leadership style and practice measures, such as the Multifactor Leadership Questionnaire, the Path-Goal Leadership Questionnaire, the Transformational Leadership Scale, the Leadership Scale, and the Chinese version of the Transformational Leadership Scale (Asamani, Naab and Ansah Ofei, 2016;

Brewer *et al.*, 2016; Cowden and Cummings, 2015; Liang *et al.*, 2016; Manning, 2014; Wang *et al.*, 2017). Other tools were also used to assess elements of the nursing work environment including: the Teamwork and Safety Climate Survey (TSCS), the Perceived Organizational Support Questionnaire, the Organizational Climate Scale and the Global Empowerment (Cowden and Cummings, 2015; Owens, 2011; Riegal, 2012; Ya-Ting, 2017). The validity and reliability of these measures was established in earlier work and is referred to in some of the studies. However, the assessment of the validity of the tools was reported clearly in only nine of the studies reviewed (AbuAlRub *et al.*, 2016; Al-Hamdan, Manojlovich and Tanima, 2017; Brewer *et al.*, 2016; Cowden and Cummings, 2015; Cram, 2013; Gregory *et al.*, 2007; Jiang *et al.*, 2017; Ya-Ting, 2017; Yarbrough *et al.*, 2017). The tools' validity has been evaluated previously through expert reviews, factor analysis, factor loading, chi-square tests and Pearson's correlation. Cronbach's alpha, a measure of reliability, was evaluated in 25 studies, and three studies reported the tool score in the original study only (Letvak and Buck, 2008; Nedd, 2006; Riegal, 2012). In one of the papers, the tool was developed specifically to evaluate working conditions, however no information was reported concerning the tool's validity and reliability (Nakamura *et al.*, 2010).

The outcome of intention to stay was examined in the 29 papers using several tools either retrieved from previous literature or developed for the purpose of the particular study. Ten studies used single-item measures to assess intention to stay. One study asked participants to indicate how many years they were planning to stay (Yarbrough *et al.*, 2017) and the remainder used either dichotomous or continuous measures. Four studies used a single dichotomous measure to assess the nurses' intention to stay, where participants were asked to give a 'yes' or 'no' response to a question about their intention to stay. The result was reported as the percentage of nurses who were planning to stay (Cram, 2013; El-Jardali *et al.*, 2013;

Letvak and Buck, 2008; Riegal, 2012). Five studies examined intention to stay by asking the participants to indicate their intention to stay using a Likert type scale ranging from 1-4 (AbuAlRub *et al.*, 2016; Gilles, Burnand and Peytremann-bridevaux, 2014; Tourangeau and Cranley, 2006b), from 0-6 (Nakamura *et al.*, 2010) and 1-5 (Jiang *et al.*, 2017). However, these scales consistently assigned the lowest number to the option 'strongly disagree' and the highest number to' strongly agree.' Therefore, as the nurses score increases so does the intention to stay. Using a single item scale reduced the survey length, reduced the participants' burden, and increased their response rate (Fisher, Matthews and Gibbons, 2016). This measurement approach has been widely used in the literature to assess nurses' intentional behaviours to either stay or leave. However, using this approach to measure psychological constructs has been questioned (Fisher, Matthews and Gibbons, 2016). For example, concerns about the use of a single item scale include: low contact validity due to failure to capture the construct, low sensitivity (having fewer points of discrimination) and difficulty when computing the internal-consistency reliability (Fisher, Matthews and Gibbons, 2016; Hoeppner *et al.*, 2011). However, although multiple-item measures are preferable from a psychometric standpoint, in some circumstances single-item measures can provide useful information in measuring some concepts such as behavioural intention and satisfaction (Fisher, Matthews and Gibbons, 2016; Jovanović and Lazić, 2018).

Other instruments used in the studies included the four-item Nurses' Intent to Stay scale developed by Taunton *et al.* (1997); (Sourdif, 2004); the four item intention to stay developed by Kim *et al.* (1996) (Manning, 2014); the Chinese version of the Nurses' Intent to Stay (intention to stay) scale created by Tao and Wang (2010) (Wang *et al.*, 2017; Wang *et al.*, 2012) and the McCain Behavioural Commitment Scale (McCloskey, 1990; Al-Hamdan, Manojlovich and Tanima, 2017; Mrayyan, 2007; Mrayyan, 2008). The validity of these measures has been

demonstrated in the literature (Kim *et al.*, 1996; McCloskey, 1990; Tao and Wang, 2010; Taunton *et al.*, 1997). Cronbach's alpha of the intention to stay scales ranged from 0.695 (Asamani, Naab and Ansah Ofei, 2016) to 0.91(Sourdif, 2004) indicating acceptable to excellent levels of internal consistency (Taber, 2018).

Intention to stay results based on geographical regions

A broad selection of assessment tools and measures has been used to measure nurses' intention to stay and a wide range of mean scores for the nurses' intention to stay have been recorded. Comparing the studies which have used one dichotomous item to assess the percentage of nurses who are planning to stay, the results show that 95% of nurse respondents working in in-patient acute care and ICUs in one Magnet hospital and one non-Magnet hospital in the South West United States reported their intention to stay with their current employer (Cram, 2013). A lower percentage (60%) was found in two other US studies (Letvak and Buck, 2008; Riegal, 2012). The studies conducted in the USA reported the highest level of intention to stay for any single country included in the present review. However, USA nurses' intention to stay varied based on their work setting such as working in suburban or urban areas, or Magnet hospital, aspiring Magnet and non-Magnet hospitals. Nurse members of the American Society of peri-anaesthesia who worked in different healthcare settings across the US reported the highest mean intention to stay scores 4.03 (4.09 for nurses with preceptors and 3.97 among nurses without preceptors) (Ross, 2016). A slightly lower mean score of 3.92 was reported in the study by Lacey *et al.* (2007) which examined the relationship between the work environment and nurses' intention to stay taking account of the influence of Magnet recognition status.

In other countries, there was a more mixed picture. In Canada, Sourdif (2004) found that 50.4% of registered nurses working in a 400-bed university hospital in Montreal reported

they intended to stay in their current job and 29.0% reported their intention to stay in their current hospital. In the three studies which used the McCain scale to assess the nurses' intention to stay in Jordan, the mean score ranged between 2.83 to 3.12, indicating that nurses were likely to stay in their current position. However, a significant difference was identified between nurses working in teaching and non-teaching hospitals (Al-Hamdan, Manojlovich and Tanima, 2017; Mrayyan, 2007; Mrayyan, 2008) where nurses in non-teaching hospitals intended to stay at their current jobs ($\bar{x}$ = 3.22, SD = 0.81) longer than nurses in teaching hospitals ($\bar{x}$ = 2.86, SD = 0.80; p =.01). In China, two studies were conducted five years apart which examined the intention to stay among nurses working in different general hospitals. Both studies used the intention to stay scale developed by Tao and Wang (2010). Wang *et al.* (2012) reported a mean score of 3.85 (SD 0.82) and 3.53 (SD 0.64) respectively which reflected the nurses' strong willingness to stay. Overall, studies conducted in West Asia found that nurses working in Chinese institutions have a relatively higher mean intention to stay score compared to Taiwan and Thailand (3.85, 3.19 and 2.9 respectively) (Kaewboonchoo *et al.*, 2014; Liang *et al.*, 2016; Wang *et al.*, 2017). Nurses working in Africa, particularly in Ghana, had the lowest intention to stay mean score at 2.65. The level of development of the country and the healthcare system seemed to influence workforce stability and nurses' willingness to remain employed in the same healthcare system. However, the factors which contribute to these scores vary from one country to another as well as from area to area in the same country.

5.4.4 Variables associated with Intention to stay

Thirty-one factors were identified in the papers as having an impact on nurses' intent to stay in their current position, or current employer, or indeed in nursing. Although identifying the work environment indicators, was the aim of this review, other factors unrelated to the work environment but which are significantly associated with nurses' intention to stay are recognised. In view of this and consistent with the process of narrative synthesis, these factors were grouped

based on the type of intention to stay indicators. The intention to stay indicators were identified and synthesised into the following groups: individual indicators (personal and professional), organisation/profile, work environment and patient-related factors (Popay *et al.*, 2017).

For the purpose of this study, work environment factors were defined as variables in the workplace which are not part of the physical conditions rather, they are related to the work process, experiences and interactions between the nurses and their surroundings including their managers, co-workers, and organisations. It is crucial to mention that this review focused on modifiable work environmental factors. These are important as they affect nurses' intention to stay with their organisation.

However, the individual factors category was conceptualised in its broadest sense and refers to demographic characteristics of nurses' personally and professionally. ―The organisation/unit profile factors were defined as specific characteristics of status of the healthcare organisations (Magnet, teaching, public) or the type of unit (medical, surgical, ICU) where nurses are currently working, based on the type, speciality or level of care provided (primary, secondary, tertiary). The fourth classification identified was the patient-related factors category which refers to the specific aspects of the nursing care provided and patient response to this care. However, each factor was examined and identified based on the number of times it was cited in the studies, in what context and how important it was in influencing nurses' intention to stay.

Work environment factors

Most attention in the literature reviewed was given to the work environment and working conditions. As stated earlier, the purpose of this review, was to assess the relationship between the work environment attributes and nurses' intention to stay with organisation. The work environment factors were defined as modifiable variables in the nursing workplace and related

to the work process, nurses' experience of the workplace and their interactions with their surroundings.

Overall work environment

AbuAlRub *et al.* (2016) and Al-Hamdan, Manojlovich and Tanima (2017) examined the association between the work environment and nurses' intention to stay, to assess the work environment. Al-Hamdan, Manojlovich and Tanima (2017) utilised the Practice Environment Scale of the Nursing Work Index(PES-NWI) and AbuAlRub *et al.* (2016) used the Nursing Work Index-Revised (NWI-R), both derived from the Nursing Work Index (NWI) originally developed by (Kramer and Hafner, 1989). These tools focus on the extent to which nurses control their environment, receive support from their organisations, have access to effective leadership and report good nurse-physician relationships. These are the main attributes of a supportive nursing work environment (AbuAlRub *et al.*, 2016; Al-Hamdan, Manojlovich and Tanima, 2017).

The results of logistic regression in AbuAlRub *et al.* (2016) indicate that accommodation provided by employers, nurses' job satisfaction and work environment (defined as: autonomy of nurses, control over the nursing activities, relationships between physicians and nurses and support of organisations) were the predicting variables of the level of intention to stay. Al-Hamdan, Manojlovich and Tanima (2017), found the nursing work environment (nurse participation in hospital affairs; nursing foundations for quality of care; nurse manager ability, leadership and support; staffing and resource adequacy; and collegial relationships between physicians and nurses) were positively associated with nurses' intention to stay ($t = 4.83$, $p < .001$). The intention to stay score increased by 3.6 points for every one-unit increase in the total PES-NWI score on average. However, the approach of AbuAlRub *et al.* (2016) and Al-Hamdan, Manojlovich and Tanima (2017) in analysing their data, limits the

understanding of the impact of specific elements of the work environment on the nurses' intention to stay, because neither of them examined the impact of each element of the work environment on the nurses' intention to stay, although both examined the general impact of the work environment on nurses' intention to stay.

Teamwork interactions

Regardless of the terms used to evaluate professional interactions, factors such as teamwork, workgroup cohesion, collaboration and co-workers/peer support were identified as the main predictors of nurses' intention to stay in three studies (Kaewboonchoo *et al.*, 2014; Abernathy, 2007; Tourangeau and Cranley, 2006b), although linear and logistic regression analysis demonstrated the impact of peer support on intention to stay was not constant (Abernathy, 2007). Peer support was positively significant in linear regression only where the intention to stay was measured on a continuous scale. However, the significance was not detected when the intention to stay was converted to a dichotomous scale in a logistic model. Also the impact of the co-worker's support was only identified among nurses with an active job, defined as a nursing role which had a high psychological demand and high decision latitude (Kaewboonchoo *et al.*, 2014).

Leadership practices/ Nursing empowerment

Nine studies investigated the influence of nurse managers' leadership practices, behaviour and styles on several nursing outcomes, mainly in association with workforce stability. Although there were methodological differences in the studies, there was some agreement on the significant, direct or indirect impact of leadership practices on the nurses' intention to stay. Several studies examined leadership-related components such as nurses'

satisfaction with administration and supervisor support which have been identified as significant predictors of nurses' intention to stay (Kaewboonchoo *et al.*, 2014; Sourdif, 2004).

More recently, transformational leadership practices have been widely investigated and implemented as a preferred management style by Magnet hospitals (Wang *et al.*, 2017). Transformational leadership and other leadership styles (transactional and passive-avoidant leadership) were found to be insignificant predictors of staff nurse intention to stay in their current job or hospital for the next one, three or five years (Manning, 2014). However, the effect of transformational leadership on nurses' decisions to stay was indirectly mediated by nurses' perceived empowerment, perceived safety climate and emotional intelligence respectively (Cowden and Cummings, 2015; Liang *et al.*, 2016; Wang *et al.*, 2017).

In contrast, Asamani, Naab and Ansah Ofei (2016) found a weak but significant positive correlation between the supportive ($r = 0.221$), participative ($r = 0.243$) and achievement-oriented leadership styles ($r = 0.184$) and staff intention to stay. In their prediction model, nurse managers' leadership styles amounted to 13.3% of the variant regarding staff intention to stay in their current job position. Similarly, Mrayyan (2008) identified managers' decision-making styles as predictors of the nurses' intention to stay.

One study introduced the concept of Management by Objectives (MBO), a management approach designed to enhance the quality of nursing and to improve hospital management by involving both supervisors and employees in planning and achieving workplace and personal objectives (Nakamura *et al.*, 2010). Using stepwise multiple logistic regression analysis of 44 evaluation items for MBO, five items were recognised as significant independent variables on intention to stay including appreciating the hospital's atmosphere, utilising one's ability, feeling an attachment to one's current organisation, consciousness of personal objectives and motivation (Nakamura *et al.*, 2010).

In addition to the leadership practices, nursing empowerment was examined in two studies and was found to be a significant predictor of the nurses' intention to stay (Cowden and Cummings, 2015; Nedd, 2006). Empowerment and two other variables (organisation commitment and desire to stay) explained 63% of intention to stay variance and empowerment was found to mediate the influence of leadership practices on nurses' intention to stay (Cowden and Cummings, 2015).

Organisational support and climate

One study included in the review examined Perceived Organization Support (POS) which is the employees' perception to what extent the organisation values their contribution and wellbeing (Riegal, 2012). Riegal (2012) found nurses' perception of nursing organisation support predicted 30% of their choices variance to work again for the current organisation. The structural equation modelling analysis used by Gregory *et al.* (2007) provided partial support for the impact of the organisation culture, trust and satisfaction on intention to stay, explaining 31% of the variance. Furthermore, both Mrayyan (2008) and Ya-Ting (2017) examined the influence of the hospital organisation climate on nurses' intention to stay and concluded there was a significant positive correlation between hospital organisation climate rating and nurses' intention to stay. The hospital organisation climate along with other identified predictors explained 12% and 50.8% of the variance of nurses' intention to stay respectively (Mrayyan, 2008; Ya-Ting, 2017). Although, Ya-Ting (2017) did not provide a definition of organisation climate, Mrayyan (2008) defined it as the reported perceptions of nurses about the organisation, administrative support, quality of care, nursing leadership and professionalism. However, the dearth of explanation of the individual influence of these items on the nurses' intention to stay is a limitation of the study (Mrayyan, 2008).

Adequate resourses

Nurses' perception of their workload, staffing and number of working hours per week had a significant impact on their intention to stay (Abernathy, 2007; Gilles, Burnand and Peytremann-bridevaux, 2014; Liang *et al.*, 2016). As did, opportunities for promotion and professional advancement (Brewer *et al.*, 2016; Wang *et al.*, 2012; Yarbrough *et al.*, 2017) and the availability of mentor support (Brewer et al. (2016). Indeed , peri-anaesthesia nurses who worked in different healthcare settings in the US, and who had an assigned preceptor had a statistically significant higher intention to stay score (4.12) compared to those with no assigned preceptor (3.97) (Wang *et al.*, 2012).

Another variable examined in the studies was nurses' perceptions of a safety climate. A safety climate was defined as the individual perception of safe management and the feeling of safety in the work environment. It was presented as a cognitive aspect that emphasises nurses' perceptions of the safety policy and environment in their workplace. Safety climate has been identified as a predictor of nurses' intention to stay and as a mediator of the indirect influence of transformational leadership on nurses' willingness to remain employed (Liang *et al.*, 2016).

Individual factor

In this systematic review, twenty-one studies identified a total of sixteen individual factors defined as unique characteristics which influenced intention to stay. These included personal qualities such as age, educational level and professional characteristics such as position and professional experience. Age and job satisfaction were most frequently identified as strong predictors of nurses' intention to stay (AbuAlRub *et al.*, 2016; Al-Hamdan, Manojlovich and Tanima, 2017; Brewer *et al.*, 2016; Liang *et al.*, 2016; Nedd, 2006; Owens, 2011; Wang *et al.*, 2012; Yarbrough *et al.*, 2017). Two subsets of factors were considered among individual

determinants, and these included sociodemographic characteristics and psychological and cognitive experiences.

Sociodemographic characteristics

Age, years of experience, marital status, and education level were the common demographic characteristics examined in association with the nurses' intention to stay.

Ten studies concluded that older nurses were more likely to stay in their current hospital than younger nurses (Asamani, Naab and Ansah Ofei, 2016; Brewer *et al.*, 2016; El-Jardali *et al.*, 2013; Jiang *et al.*, 2017; Liang *et al.*, 2016; Mrayyan, 2008; Owens, 2011; Tourangeau and Cranley, 2006b; Wang *et al.*, 2012; Ya-Ting, 2017). Owens (2011) concluded that intention to stay was the only outcome variable related to a significant difference between generational cohorts. Owens (2011) compared intention to stay among three nursing generations and the one-way ANOVA conducted was significant [$F(2, 313) = 4.49$, $p < .05$] with a *post-hoc* analysis reporting a significant difference between the Baby Boomers (born between 1946 - 1963) and Millennials (born between 1981 - 2000), with Boomers having a higher intention to stay score. Similarly, Liang *et al.* (2016) concluded that nurses older than 36 years were more likely to stay with their current employer. However, Nedd (2006) concluded that age along with other individual characteristics were not significantly correlated with intention to stay.

The other factor, which also corresponds to age, is the years of employment in the current hospital or in the nursing profession. Gilles, Burnand and Peytremann-bridevaux (2014) concluded that younger nurses with fewer years of experience were less likely to stay in their current position. This was also found by Liang *et al.* (2016), although age-related predictor variables based on the results of structural equation modelling explained only 9% of the variance ($p<0.001$) of nurses' intention to stay. Moreover, a regression analysis conducted by El-Jardali *et al.* (2013) revealed that nurses less likely to report intention to stay were

younger and unmarried, with fewer years of work experience. Sourdif (2004) and Kaewboonchoo *et al.* (2014) concluded that marital status was a strong predictor of the nurses' intention to stay with married nurses more likely to stay in their current position. Nurses' educational level has also been investigated and is presented as a significant predictor of nurses' intention to stay. For example, El-Jardani et al (2013) investigated the retention of nurses who worked in an underserved area in Lebanon and found that nurses who were not currently working toward a higher educational level, were less likely to stay. In contrast, both educational level and marital status were found to be insignificant in explaining the intention to stay among nurses employed in emergency departments in Shanghai, China (Jiang *et al.*, 2017).

Several personal characteristics were identified as positive indicators of intention to stay such as having a higher position, being certified in a nursing speciality, being an LPN, having a full-time job and having made a personal choice to work in a specific organisation (Liang *et al.*, 2016; Ross, 2016; Ya-Ting, 2017; Tourangeau and Cranley, 2006b). Furthermore, ethnicity/race (being white) and lack of local job opportunities were found to be negative predictors of nurses' intention to stay (Brewer *et al.*, 2016) .

Psychological and cognitive characteristics

Job satisfaction was examined in ten studies and correlated positively with nurses' intention to stay (AbuAlRub *et al.*, 2016; Al-Hamdan, Manojlovich and Tanima, 2017; Brewer *et al.*, 2016; El-Jardali *et al.*, 2013; Gregory *et al.*, 2007; Letvak and Buck, 2008; Mrayyan, 2007; Owens, 2011; Tourangeau and Cranley, 2006b; Yarbrough *et al.*, 2017). Although definitions of job satisfaction vary, in the papers reviewed the main focus was on the positive feelings nurses had toward their job (Mueller and McCloskey (1990) (AbuAlRub *et al.*, 2016; El-Jardali *et al.*, 2013; Mrayyan, 2007; Tourangeau and Cranley, 2006b). In the present review, overall job satisfaction was categorised as a personal factor in some of the studies (Al-Hamdan,

Manojlovich and Tanima, 2017; Cowden and Cummings, 2015), as it was used within the context of nurses' emotional response to their job

Organisation commitment accounted for 31% of the variance in the model of clinical nurse intention to stay as developed and tested by Cowden and Cummings (2015). Similarly, Brewer *et al.* (2016) and Riegal (2012) concluded that organisation commitment had a positive predictive relationship with choosing to work again for the current organisation. A variety of definitions of the term 'commitment,' as well as several different types of commitment including organisational, affective, continuous, normative and occupational, have been used in the literature. Commitment has also been defined as a positive mental experience as perceived by nurses of their organisation or profession in three of the studies included in the review (Brewer *et al.*, 2016; Gregory *et al.*, 2007; Wang *et al.*, 2012). The most frequent definition used in the literature was : "a mental state that characterises the employee's relationship with the organisation and has implications for the decision to continue or discontinue membership of the organisation" (Meyer and Allen (1991, p. 67) . Although commitment was identified as a direct indicator of nurses' intention to stay, in some studies, the concept of organisation commitment was considered and examined as a desirable outcome besides intention to stay and job satisfaction (Brewer *et al.*, 2016; Gregory *et al.*, 2007). Burnout and emotional labour were found to have a negative association with nurses' intention to stay (Liang *et al.*, 2016; Tourangeau and Cranley, 2006b). Whereas nurses with higher levels of emotional intelligence were more likely to stay in their current position (Wang *et al.* (2017).

Considering the individual characteristics identified, the relationship between age and job satisfaction as independent variables and nurses' intention to stay was one of the most sustainable relationships found, where age and job satisfaction were identified as significant, positive predictors of nurses' intention to stay (Brewer *et al.*, 2016; El-Jardali *et al.*, 2013;

Owens, 2011; Tourangeau and Cranley, 2006b). Identification of the individual characteristics which have an impact on nurses' intention to stay may seem unhelpful since these factors are not easy to modify. However, together these studies provide important insights into the individual factors which could help in understanding the concept of intention to stay and prioritise what really matters when improving and promoting a higher sense of willingness to remain employed among nurses.

Organisation/unit profile factors

The organisation/unit profile factors were defined as specific characteristics or status of the healthcare organisations or the units where nurses worked based on the type, speciality or level of care provided. As an organisation factor, the hospital classification based on the level of care provided and education affiliation was a predictor of the nurses' intent to stay (El-Jardali *et al.*, 2013; Mrayyan, 2007; Wang *et al.*, 2012). For example, nurses who worked in tertiary hospitals were more likely to report higher intention to stay scores than those working in a secondary or primary level hospital (Wang *et al.* (2012). However, in a study nurses employed in non-teaching hospitals in Jordan were more likely to stay in their position than nurses' working in teaching hospitals (Mrayyan, 2007). Another study conducted in Jordan found significant differences between the intention to stay score among nurses who worked in public hospitals relative to teaching hospitals ($t = -4.29$, $p < .001$) where nurses in the public hospitals reported higher scores of intention to stay (Al-Hamdan et al. (2017). While in a similar study conducted in Lebanon, nurses working in primary care in rural areas were more satisfied with all aspects of work and had a significantly higher intention to stay than their hospital counterparts (El-Jardali *et al.*, 2013).

Another consistent determinant of nurses' intention to stay was working in a Magnet hospital (Cram, 2013, Lacey et al., 2007). The Magnet Recognition Program® is a designation

from the American Nurses Credentialing Centre (ANCC) that recognises nursing excellence. Nurses working in Magnet hospitals report a significantly higher mean score than nurse working in non- Magnet hospitals in all subscales of the work environment (manager support, peer support, unit support, workload and satisfaction) when assessed using the Individual Workload Perception Scale (IWPS) (Lacey *et al.*, 2007).

Two studies examined the relationship between the unit type and nurses' behavioural intention and the major comparison examined was between the intention to stay among nurses working in specific units or wards and nurses working in Intensive Care Units (ICUs). There were significant differences in nurses' intention to stay at their hospitals depending on their working unit ($F(4, 202)=4.09$, $p=0.00$) (Ya-Ting, 2017). Nurses who worked in specialist units (outpatient clinic, emergency room, operating room, dialysis, and psychiatric) had a higher intention to stay at their hospital than those who worked in ICUs (Ya-Ting, 2017). However, the impact of the working unit on intention to stay was insignificant among Jordanian nurses (Al-Hamdan, Manojlovich and Tanima, 2017). Overall, the identification of the organisation or unit factors associated with nurses' intention to stay could help to explain the influence of these characteristics on nurses' perception of their workplace and their decision to remain employed.

Patient- related factors

Patient-related factors reflect the patient response to their care and include nurses' perceptions of the care provided, as well as praise and recognition received from patients and their families. Only two studies referred to patient related factors and these were reported as strong predictors of nurses' intention to stay in their organisation and profession (Letvak and Buck, 2008; Wang *et al.*, 2012). However, little attention was given to the impact of patient-related factors on nursing workforce outcomes such as nursing turnover, because the main

concern was to understand the impact of the nursing workforce on patients' care and satisfaction.

5.4.5 Summary

Overall nurses' intention to stay ranged from low to very high depending on several associated factors. Several working environment variables, identified in this review, were significantly associated with the nurses' intention to stay with a direct or indirect relationship. However, managers' leadership practice, nursing empowerment and overall organisation support culture appeared to be more frequent indicators of the nurses' intention to stay as well as more significant in explaining the nurses' intention to stay variances. Furthermore, additional indicators such as teamwork, co-worker relationships, peer support, adequate staffing, opportunities for professional development and leadership practice were found to be determinants of intention to stay. The four categories of variables identified and summarised as nurses' intention to stay determinants were: work environment, individual, organisation/unit and patient related factors, these provide a means of investigating and predicting nurses' intention to stay. The included studies indicate that nurses' intention to stay can be investigated by examining a broad range of predictors and factors, in each of the four categories, which are related to nurses and their workplace.

Overall, the leadership practice, nursing empowerment, age, job satisfaction, organisation commitment, and hospital status appeared to be the most significant in predicting the nurses' intention to stay. It is crucial to understand the impact of these factors and to translate this knowledge into meaningful action plans and implementation strategies for healthcare managers, organisations, and policymakers. Furthermore, understanding the indirect impact of some variables on nurses' intention to stay is important to develop and enhance the existing conceptual framework of nurses' intention to stay.

Table 8: Summary table for included studies

Author (s) Year/Country	Design	Sample and population/ Setting/ Response rate	Theoretical/Conceptual framework	Data collection tools	Reliability	Validity	Statistical analysis	Results and Quality appraisal score (QS)
Sourdif (2004) Canada	A cross-sectional survey	108 questionnaires were usable of the 221 returned questionnaires of a planned random sample of 900 registered nurses working in a 400-bed university hospital in Montreal RR: 49.90%	Organizational Dynamics Paradigm of Nurse Retention (Taunton et al., 1997)	Nurses' Intent to Stay Questionnaire (Taunton et al., 1997)	Cronbach's alpha ranged between 0.70 and 0.91	The tools had been used in previous studies. There was no confirmation of a formal validation study.	• Descriptive statistics • ANOVA • Pearson's correlation • Linear regression	• 50.4% of the nurses reported that they have the intention to stay in their current job. • 29.0% reported the intention to stay in their hospital. • Only two variables were found to be statistically significant: satisfaction at work ($p = 0.022$) and satisfaction with administration ($p = 0.016$); QS = 38 (high)
Nedd (2006) USA	A descriptive, correlation survey design	206 questionnaires were usable of the 275 returned questionnaires of a planned random sample of 500 from total 147,420 licensed nurses working in different health care settings in Florida, USA RR: 42%	Kanter's Theory of Organizational Empowerment	• Job Activities Scale (JAS) • Organizational Relationships Scale (ORS) • Conditions for Work Effectiveness Questionnaire (CWEQ) • 4 items assessed intention to stay developed by Kim, Price, Mueller and Watson (1996)	JAS: 0.81 ORS: 0.92 CWEQ: 0.96 4 items assessing intention to stay: 0.86	The tools had been used in previous studies. There was no confirmation of a formal validation study.	• Descriptive statistics • Pearson correlation coefficients	• Intent to stay was significantly positively correlated with all empowerment variables. • Individual characteristics, such as age, education and experience, were not significantly correlated with intention to stay. • Tenure was not significantly related to intent to stay. QS = 43 (high)
Tourangeau and Cranley (2006) Canada	A descriptive survey design	8,456 nurses from 75 hospitals - registered nurses (RNs) and registered practical nurses working in acute-care hospitals in Ontario, Canada RR: 65%	Determinants of Nurse Intention to Remain Employed based on the Conceptual Model of Intent to Stay (Boyle 1999)	• Ontario Nurse Survey, which includes the Maslach Burnout Inventory (MBI), the Revised Nursing Work Index (NWI-R) and the McCloskey Mueller Satisfaction Scale (MMSS)	MBI: 0.91 NWI-R: 0.84 MMSS: 0.56 or greater intention to stay: not mentioned	The tools had been used in previous studies. There was no confirmation of a formal validation study.	• Descriptive statistics • Multiple regression	• The regression models explained 34% of the variance in the nurses' intention to remain employed. • The strongest predictors were nurse age, overall nurse job satisfaction and years of employment in the current hospital. • Only four out of six proposed predictors were statistically significant determinants of nurse intention to remain: job satisfaction, personal characteristics of nurses, work group cohesion and collaboration and organizational commitment of nurses. • The other two categories of predictors, nurse burnout and nurse manager ability and support, may be predictors of job satisfaction and have indirect effects on intention to remain employed that are mediated through job satisfaction. QS = 43(high)

Abernathy (2007) USA PhD dissertation	A quantitative analysis approach using secondary data	581 staff nurses working in urban and suburban hospital settings RR: Not mentioned	Herzberg Two-Factor Theory-Theoretical Framework	Secondary data collected by the Individual Workload Perception Scale – Revised	Cronbach's alpha ranged between 0.664 and 0.920.	The tools had been used in previous studies. There was no confirmation of a formal validation study.	• Descriptive statistics • t-test • Regression analyses	• The mean intent to stay score was 3.865 for those working in suburban settings and 3.731 for those working in an urban setting. • Only satisfaction with workload was a significant predictor of intent to stay; however, peer support was marginally significant (p = 0.068, which is very close to 0.05). Both models had a good R-square explaining 52.88% and 34.09% of intent to stay, respectively. • Higher peer support was positively associated with higher intent to stay in the linear regression model but not in the logistic regression model. QS = 37 (high)
Cram (2013)/ USA PhD dissertation	A quantitative study utilizing the survey method	119/150 nurses working in inpatient acute care and ICUs in one magnet hospital and one non-magnet hospital in the southwestern United States RR: Not mentioned	Represented by several leadership theories	Modified PES-NWI	The PES-NWI provided criterion-related validity and authenticates replications, which confirmed based on a study by Warshawsky and Havens (2011) that examined 20 previous studies utilizing PES-NWI.	The PES-NWI provided criterion-related validity and authenticates replications, which both correlate reliability, based on a study by Warshawsky and Havens (2011) that examined 20 previous studies utilizing PES-NWI.	• Descriptive statistics • Independent-samples Mann-Whitney U test • Chi-square test • Related-samples McNemar's Test	• Significant differences existed between the magnet and non-magnet hospitals in term of intention to remain with the organization. • Nurses in the magnet hospital were more likely to indicate their desire to remain with the hospital. QS = 36 (high)

Manning (2014)/ USA PhD dissertation	A descriptive, correlational design with a quantitative approach using survey instruments	441usable responses out of 500 staff nurses working in three acute-care hospitals RR: 31%	• The Theoretical Model of Clinical Nurses Intent to Stay • The Full Range Leadership Model • Kanter's Theory of Structural Empowerment • Schaufeli's Work Engagement Conceptual Framework	• Multifactor Leadership Questionnaire • Conditions of Work Effectiveness Questionnaire • Utrecht Work Engagement Scale • Intent to Stay Questionnaire (Kim et al. (1996))	The validity and reliability of the tools had been established in previous studies ، intention to stay: 0.89-0.90 Multifactor Leadership Questionnaire (MLQ): 0.76-0.89 CWEQ-II: 0.71-0.90 UWES: 0.72-0.84	The validity and reliability of the tools had been established in previous studies.	• Descriptive statistics • Pearson Product Moment statistical analysis • Multiple regression	• Transformational leadership style in nurse managers was not a significant predictor of staff nurse intent to stay in their current job or hospital for the next one, three or five years. • Transactional leadership style in nurse managers was not a significant predictor of staff nurse intent to stay in their current job or hospital for the next one, three or five years. • Passive-avoidant leadership style was not a significant predictor of staff nurse intent to stay. No trends could be concluded from the multiple regression analysis. QS = 42 (high)
Owens (2011)/ USA PhD dissertation	A single-stage design using a prospective, cross-sectional survey	328/1559 RNs and LVNs/LPNs employed by a large not-for-profit hospital system in Texas and nearby states RR: Not mentioned	Self-Determination Theory by Deci and Ryan (1985)	• Teamwork and Safety Climate Survey (TSCS) • 6-item intent to stay survey • Nursing Work Index – Revised: Autonomy subscale (NWI-R)	• The overall reliability of the assessment tool ranged from 0.82-0.93	• All of the tools had been used previously in the literature except intention to stay and the Paths to Change scale.	• Descriptive statistics • ANOVA • Pearson correlation • Multiple regression	The Job Satisfaction scores were significantly correlated with intent to stay scores (r =.77, p <.001). • Intent to stay was the only variable in which a significant difference between generational cohorts emerged in this study. QS = 39 (high)
Riegal (2012)/ USA PhD dissertation	A quantitative, correlational approach using a cross-sectional survey design	231/1000 male and female registered, licensed nurses from North Carolina RR: 21%	Social Exchange Theory (SET)	• Organizational Commitment Questionnaire • Perceived Organizational Support Questionnaire • 3 items assessed intention to stay	The reliability of the assessment tools had been established in previous studies.	A demographic survey had been piloted. Other measures: The validity had been established in previous studies.	• Descriptive statistics • Independent t-test • ANOVA • Linear regression	• The regression model was significant with 40% of the variance for thinking about leaving, 31.5% of the variance for looking for a new job and 30% of the variance for choosing to work again for the current organization explained by the eight predictor variables in the POSQ. • The POC aggregate analysis revealed an inverse relationship between thinking about leaving and looking for a new job and a positive predictive relationship between choosing to work again for current organization. QS = 48 (high)

Cowden and Cummings (2015)/ Canada	A correlational, mixed-method, non-experimental design	Full-time and part-time RNs and LPNs who worked in acute-care study units in nine hospitals (two teaching hospitals and seven community hospitals) RR: Not mentioned	Theoretical model of clinical nurses' intention to stay (Cowden & Cummings, 2012)	Quality Work Environment Study survey which includes: • Leadership Scale (10 items; Estabrooks, Squires, Cummings, Birdsell, & Norton, 2009) • Global Empowerment (2 items; Laschinger & Finegan, 2005) • Areas of Work–Life Questionnaire (29 items; Leiter & Maslach, 1999) • Maslach Burnout Inventory (9 items; Maslach, Jackson, & Leiter, 1996) • Global Job Satisfaction (3 items; Quinn & Shephard, 1974) • Stanford Safety Culture Instrument (16 items; Ginsberg, Norton, Casebeer, & Lewis, 2005) • Revised Nursing Work Index Questionnaire (29 of 52 items; Aiken & Patrician, 2000)	• The Cronbach's alpha reliability coefficients for study items varied between.71 and.94.	• The tools have been used in previous studies. • Survey questions were assessed for clarity, potential for confusion or misinterpretation, context and response options.	SEM	• The final model was estimated to explain 63% of the variance in intention to stay. • Organizational commitment, empowerment and desire to stay were the model concepts with the strongest effects on nurses' intention to stay. • Leadership practices indirectly influenced intention to stay. QS = 40 (high)

El-Jardali et al. (2013)/ Lebanon	A non-experimental cross-sectional survey design	Registered nurses who were working in a total of 103 healthcare facilities (hospitals and PHC) in underserved areas in Lebanon RR: 75.5%	Not mentioned	• McCloskey Mueller Satisfaction Scale • NWI-R • Career plans (intention to stay)	Reliability of the developed tool was not reported.	The content validity of the intention to stay tool had been evaluated.	• Descriptive statistics • Student's sample t-test • Logistic regression	• 35.1% of nurses indicated that they were likely or very likely to stay in their current job for the coming one to three years • Rural nurses working in PHC centres had a significantly higher intention to stay (62.5% compared with 31.5% in hospitals, $p < 0.001$). • The regression analysis revealed that nurses less likely to report intent to stay were younger, unmarried, had fewer years of work experience and were not working toward a higher degree. QS = 41 (high)
Gilles et al. (2014)/ Switzerland	A cross-sectional design	A total of 10,070 hospital employees including 9,108 who belonged to one of the following professional groups: physicians, nurses and care providers, laboratory staff, administrative staff, non-physician researchers, logistics staff (e.g., catering, cleaning personnel, technicians) and psycho-social staff. The remaining 962 employees were in apprenticeship, PhD students or had an external contract. Nurses: 1,228 RR: 49.80%	The Conceptual Model of Intent to Stay (CMIS) adopted from Boyle et al. (1999)	• Copenhagen Burnout Inventory • French Saphora Job Survey • Modified Lausanne University Hospital survey • A single item was used to measure job satisfaction and intention to stay	The Cronbach's alpha was calculated	The tools have been previously used and validated.	• Descriptive statistics • Linear regression • SEM	• For all professional categories, self-fulfilment increased intent to stay (all $\beta > 0.14$, $p < 0.05$). • Burnout decreased intent to stay by weakening job satisfaction ($\beta < -0.23$ and $\beta > 0.22$, $p < 0.05$). • Some factors were associated with specific professional categories: workload was associated with nurses' intent to stay ($\beta = -0.15$), and physicians' institutional identification mitigated the effect of burnout on intent to stay ($\beta = -0.15$ and $\beta = 0\ 19$). QS = 40 (high)

Gregory et al. (2007)/ Canada	A nonexperimental predictive survey design	458/1,173 RNs working in acute-care settings RR: 29.40%	Based on the Conceptual Model of Behavioral Intentions (CMBI)	• The Employee Attitude Survey (EAS) • Revised Impact of Health Care Reform Scale (RIHCRS) • A modified version of the General Job Satisfaction Scale • Organizational Commitment Questionnaire (Mowday, Steers, & Porter, 1979) • The Intent to Stay scale was adapted from the Intent to Quit and Job Search Scales (Turnley & Feldman, 1998)	Emotional Climate: 0.82 Practice Issues: 0.76 Collaborative Relations: 0.86 Psychological Contract Violation: 0.70 General Job Satisfaction: 0.80 Organizational Commitment: 0.92 Intent to Stay: 0.72	The validity of the assessment tools had been established in previous and current studies using a factor analysis.	• Descriptive statistics • SEM	• Despite moderate levels of job satisfaction, RNs were unlikely to stay with their current employers. • Based on the magnitude of their total effects, the determinants of intent to stay may be ranked as follows: satisfaction (B =.46), culture (B =.38) and trust (B =.25). • Structural equation modelling provided support for the impact of culture, trust and satisfaction on commitment and partial support for intent to stay, explaining 45% and 31% of the variance, respectively. QS = 40 (high)
Jiang et al. (2017)/ China	A quantitative, cross-sectional and descriptive design	976/1137 registered nurses employed at the EDs of 78 secondary and tertiary hospitals in Shanghai RR: 86.90%	Not mentioned	• Chinese version of the 'Maslach Burnout Inventory' • One item assessed intention to stay and intention to leave	• Job satisfaction scale Cronbach's α: 0.94 • Burnout scale Cronbach's α ranged between 0.852 and 0.749	The tools had been piloted by a panel of six experts in the field of emergency nursing care.	• Descriptive statistics • Non-paired t-test • Analysis of variance (ANOVA) • Multiple logistic regression	• Among the respondents, 22 5% of the nurses expressed their intention to leave the ED within the following year ($p < 0.05$). • Nurses' satisfaction and burnout were associated with intention to leave. • Salary, nurse–patient relationships, nurse staffing and work environment were areas where nurses were less satisfied, while group cohesion was associated with greater satisfaction. QS = 44 (high)

Kaewbooncho o et al. (2014)/ Thailand	Self-administered cross-sectional design	514/526 female registered nurses (RNs) working in two medium- and large-sized government hospitals in Phranakhon Si Ayutthaya Province, Thailand RR: 97.70%	Not mentioned	• Thai version of the Job Content Questionnaire (JCQ) • Four items measured intention to stay	• Cronbach's alpha coefficient for the JCQ scales and subscales ranged between 0.322 and 0.899 • Cronbach's alpha coefficient for intent to stay at work in this study was 0.861.	The tools had been used in the literature previously.	• Descriptive statics • Independent t-test • Multiple linear regression	• The prevalence of high job strain and low intent to stay at work were 17.5% and 22.4%, respectively. • The mean (SD) scores of the nurses' intent to stay at work were 14.6 (2.9). • The multiple regression analysis indicated that intent to stay at work was significantly correlated with only supervisor support among the nurses with high-strain jobs and with co-worker support in nurses with active jobs. QS = 42 (high)
Lacey et al. (2007)/ USA	A quantitative, cross-sectional and descriptive design, secondary analysis	3,337 RNs from 15 institutions, 11 geographically diverse states, and 292 nursing units from the repository number of nurses who had completed the Individual Workload Perception Scale (IWPS) RR: Not mentioned	Maslow's Hierarchy of Needs.	The IWPS	IWPS Cronbach's alpha ranged from 0.61 to 0.91.	The tool validity had been established previously in the literature.	• Descriptive statistics • ANOVA	• Intent to stay had a statistically significantly higher mean score in magnet facilities (3.92) compared with aspiring magnet (3.72) and non-magnet (3.64) facilities. QS = 30 (moderate)
Letvak and Buck (2008)/ USA	A cross-sectional design	323 RNs employed in direct patient care at three hospitals in a southern U.S. state RR: First hospital, 13% Second hospital, 39% Third hospital, 31%	Not mentioned	• Four items assessed overall job satisfaction • The Health Professions Stress Inventory (Wolfgang, 1988) • Work Productivity and Activity Impairment Questionnaire: • General Health (WPAI-GH) • One item assessed intention to stay	The reliability of the instrument had been established previously by other studies. Cronbach's alpha coefficients of 0.85 and 0.90	The validity of the instrument had been established previously by other studies.	• Descriptive statistics • Linear regression	• Assessment of intent to stay in hospital nursing indicated that 60% of participants plan on staying in nursing over the next five years, 25% were unsure and 15% plan on leaving. • Predictor variables explained only 9% of the variance ($p < 0.001$) and included age (0.214), total years worked in nursing (0.204), quality of care provided (-0.142) and job satisfaction (-0.138). QS = 37 (high)

Liang et al. (2016)/ Taiwan	A cross-sectional design	414/452 RNs working in hospitals in Taiwan RR: 91.60%	Cowden and Cummings (2012) proposed a theoretical model of clinical nurses' intention to stay.	• The MLQ (Bass & Avolio 1997) • The Safety Attitudes Questionnaire (SAQ) (Sexton et al. 2006) • The Emotional Labour Questionnaire (ELQ) (Wu 2003) • Four items assessed intention to stay (Wang et al. 2006)	MLQ: 0.96 SAQ: 0.89 ELQ: 0.89 intention to stay: 0.84	The tools have been previously used and validated.	• Descriptive statistics • SEM	• The proposed model explained 37% of the variance in intention to stay. • intention to stay was positively correlated with age and the safety climate, whereas working hours per week and emotional labour were negatively correlated. • The nursing position and transformational leadership indirectly affected intention to stay; this effect was mediated separately by emotional labour and the safety climate. QS = 44 (high)
Mrayyan (2007)/ Jordan	A descriptive comparative design	433/610 nurses working in teaching and non-teaching hospitals RR: 71%	Not mentioned	MMSS, McCain Behavioural Commitment Scale (MBCS; McCloskey & McCain, 1987)	• MMSS Cronbach's alpha: 0.55-0.91 • MBCS Cronbach's alpha: 0.90	The tools have been used and validated previously.	• Descriptive statistics • Chi-square test • T-test • Pearson product moment correlation	• Nurses in non-teaching hospitals intended to stay at their current jobs ($\bar{x}$ = 3.22, SD = 0.81) longer than nurses in teaching hospitals ($\bar{x}$ = 2.86, SD = 0.80; p =.01). • The total score for nurses' job satisfaction was correlated with the total score of nurses' intent to stay (r =.452, p =.001), teaching hospitals (r =.231, p =.001) and non-teaching hospitals (r =.143, p =.001; Table 6). These correlations were significant at any level of.01. QS = 36 (high)
Mrayyan (2008)/ Jorden	A descriptive design using a survey method	362/550 Jordanian nurses who have been working at hospital settings for at least one year (12 hospitals; three governmental, three teaching and six private hospitals) RR: 66%	Not mentioned	• Farly's Nursing Practice Environment Scale (NPES) • McCain's Behavioural Commitment Scale(MBCS) (McCloskey, 1990)	• NPES Cronbach's alpha: 0.85 • MBCS Cronbach's alpha: 0.75	The validity of the tools had been established by previous studies.	• Descriptive statistics • F-tests • Stepwise regression	• Nurses in the entire sample reported that they plan to keep their jobs for at least two or three years, while the lowest rated mean was that nurses will not leave their present job under any circumstances. • Hospitals' organizational climates, decision-making style, age and organizational structure were predictors of nurses' intent to stay. • These four predictors explained 12% of the variance of nurses' intent to stay. QS = 33(moderate)

Nakamura et al. (2010)/ Japan	A cross-sectional survey design	319/370 full-time female nurses who work in three general hospitals operated by the same parent organization (JA Niigata Koseiren) RR: 86.40%	Developed based on Management by Objectives (MBO)	• Developed survey • One item assessed intention to stay	Not mentioned	Not mentioned	• Student's t-test • Chi-square test • Regression	• Five items were selected as significant independent variables on intention to remain employed by the stepwise multiple logistic regression analysis among 44 evaluation items for working conditions: - Appreciating the hospital's atmosphere - Utilizing ability - Feeling an attachment to one's current job - Consciousness of personal objectives - Motivation QS = 33(moderate)
Ross (2016)/ USA	Online survey design	2,121 American Society of Peri-Anaesthesia Nurses members RR: 22%	Not mentioned	The Individual Workload Perception Scale-Revised (IWPS-R)	Cronbach's alpha ranged between 0.68 and 0.92.	The tool validity had been established previously in the literature.	• Descriptive statistics • Independent t-test • ANOVA • Tukey's post-hoc test	• Those with an assigned preceptor had a statistically significant higher intention to stay score (4.12) compared with those with no assigned preceptor (3.97). • Certified nurses have more positive perceptions of workload (p =.00) and intent to stay (p =.00) than noncertified nurses. QS = 44(high)
Wang et al. (2017)/ China	A cross-sectional descriptive design	535/623 RNs from four general hospitals in Shanghai, China RR: 85.9%	Developed based on a literature review	• Wong and Law Emotional Intelligence Scale (Law et al., 2004) • Chinese version of the transformational leadership scale (Li & Shi, 2005) • Six items assessed intention to stay (Tao and Wang, 2010)	EI scale Cronbach's alpha: 0.86 TL scale Cronbach's alpha: 0.90 intention to stay Cronbach's alpha: 0.79	The validity of the tools has been established by previous studies.	• Descriptive statistics • SEM • Maximum likelihood estimation method	• The score of intent to stay ranged from 1.67 to 5, with a mean of 3.85 and an SD of 0.82. • Transformational leadership had an indirect effect on nurse intent to stay through the mediator of nurse emotional intelligence; the mediator value was.111 (.663*.168 = 111). • Therefore, the total effect of transformational leadership on nurse intent to stay was.486 (.375 +.111 =.486), and the indirect effect comprised 22.8% of the total. • Overall, transformational leadership and nurse emotional intelligence accounted for 34.3% of the variance in nurses' intent to stay. QS = 37(high)

Wang et al. (2012)/ China	A cross-sectional survey	919/1120 nurses who had worked full-time for at least 1 year at the targeted hospitals RR: 82%	Based on Tourangeau & Cranley's (2006) 'theoretical model of determinants of nurse intention to remain employed'.	• Chinese Nurses Job Satisfaction Scale (NJSS) (Tao et al. 2009) • Chinese version of the OCS (Pei 2007) • Chinese version of the Nurses' Intent to Stay (intention to stay) scale (Tao & Wang 2010)	• OCS Cronbach's alpha: 0.784 to 0.812 • NJSS Cronbach's alpha: 0.713 to 0.801 • intention to stay Cronbach's alpha: 0.792	The validity of the tools had been established in a previous study	• Descriptive statistics • Spearman's correlation • Independent sample t-test • A stepwise regression	• Regression models explained 41.3% of the variance in nurses' intention to stay. • Of these, the strongest predictors were normative commitment, economic costs commitment and age, which explained 37.3% of variance in nurses' intention to stay. QS = 42 (high)
Ke and Hung (2017)/ Taiwan	A cross-sectional design	207/214 RNs working in two medical centres and two regional teaching hospitals in southern Taiwan. Hospital A: 48 nursing units and 1,200 nurses. Hospital B: 36 units and 1,175 nurses. Hospital C (teaching unit): 30 units and 687 nurses. Hospital D: 18 units and 361 nurses. RR: 100%	Developed based on a literature review	• Three-item Nurses' Intent to Stay Scale (NISS) • The Organizational Climate Scale was modified from the scale developed by Litwin and Stringer (1968)	The reliability of the tool had been established, NISS: 0.75	NISS - content validity was assessed with eight experts who modified the tool; content validity index value = 1.00	• Descriptive statistics • ANOVA • Stepwise multiple regression	• Significant differences in nurses' intention to stay at their hospitals by working unit ($F(4, 202) = 4.09$, $p = 0.00$). • There was a significant positive correlation ($r = 0.19$, $p = 0.00$) between hospital OC rating and nurses' intention to stay at their hospitals. A higher hospital organizational climate was associated with a stronger intention to stay at the current hospital. • Age, personal choice of working in the current hospital, working in an ICU and OC were predictors of nurses' intention to stay; these factors accounted for 50.8% of the total variance. QS = 42 (high)
Yarbrough et al. (2017)/ USA	A descriptive correlational study, mixed	RNs (n = 67) from a mid-sized hospital in a metropolitan area in the Southwestern United States RR: 56%	Based on Fishbein and Ajzen's Expectancy–Value Theory	• A single item assessed intention to stay • The Nurses Professional Values Scale-Revised (NPVS-R) • Nurse Job Satisfaction Index • Perceived Development Climate	• NPVS-R Cronbach's alpha: 0.94 • NJSI Cronbach's alpha: 0.76 • PDC Cronbach's alpha: 0.91	NPVS-R: 4 judges reviewed and confirmed content validity •NJSI not described but used in a previous study •PDC not described but used in a previous study	• Descriptive statistics • Correlation statistics	• Neither professional values orientation nor its component subscales were significantly correlated with intention to stay. • Both job satisfaction ($r = 0.39$, $p = 0.003$) and career development ($r = 0.29$, $p = 4$ 0.037) were positively correlated with retention. QS = 37 (high)

4.4.6 Rapid review of recent publications

Given the importance of workforce issues globally, there is an increasing amount of research being undertaken in this area and new articles have been published since the original review was conducted in 2017. In view of this, a further search of the databases (AMED) (EBSCO), EMBASE, ProQuest Nursing & Allied Health Source, ProQuest theses and dissertations, CINAHL Plus (EBSCO), MEDLINE (Ovid), and PsycINFO) for papers published between 2018 and 2020 was conducted and five articles were retrieved (Table 9).

The main findings of the rapid update review of the recent literature indicate that the relationship between nurses' intention to stay and leadership style is a key area of concern. Leadership behaviours and nurses' perceptions of staff support were found to be positively associated with intention to stay among Jordanian nurses (Suliman and Aljezawi, 2018). A study conducted in Rwanda, revealed significant weak positive relationships between directive and supportive leadership styles with nurses' intention to stay, however leadership style accounted for only 10% of nurses' intention to stay variance. Ngabonzima et al. (2020) found 38% of the variance of nurses' job satisfaction was explained by the leadership style.

In one paper, three components were examined: the nursing practice environment (including autonomy), control over the environment, and nurse-physicians' relationship. The Partial Least Squares Path Modelling (PLS-PM) analysis revealed the moderate impact of these components on the nurses' intention to stay in their current institution and in the profession (Dorigan and Guirardello (2018). These elements of the work environment accounted for 22 % and 17% of the variance of nurses' intention to stay in their current organisation and in the profession respectively and explained 43% of the variances of nurses' job satisfaction, 42% of safety climate and 36% of nurses' burnout (Dorigan and Guirardello, 2018).

In a two-stage study Satoh et al. (2018) identified 24 intention to stay factors based on the findings of interviews with 16 nurses, which were then further examined in a cross-sectional questionnaire survey which was conducted in 12 hospitals in the Tohoku and Kanto regions of Japan. The variables strengthening intention to stay were grouped into five factors which included: comfortable workplace environment, passive motivational factors, convenience of hospital location, favourable work–life balance, and fulfilment in nursing (Satoh et al., 2018). Among Chinese nurses, job control and perceived organisation support had indirect effects on intention to stay, which was mediated by job satisfaction (Li et al., 2020). Thus, job satisfaction significantly and directly affected nurses' intention to stay (Table 9).

Overall, in the more recent literature, several factors, including leadership behaviour, organisation culture, autonomy, control over the environment, nurse-physicians' relationships and organisation support, have been identified as significant factors, which influence nurses' intention to stay. However, the impact of these factors was more significant on the nurses' satisfaction compared to the intention to stay. Consistent with the review of the literature published between 1990 and 2017, recent work published in the last two years identifies the importance of the impact of leadership on nursing outcomes. The findings of this brief review provide an overall picture about the impact of the leadership practice on the nurses' intention to stay.

Table 9: Rapid review summary

Author(s) Year/Country	Design	Sample and population/Setting/Response rate	Theoretical /Conceptual framework	Assessment tool	Reliability	Validity	Statistical analysis	Results
(Suliman and Aljezawi, 2018)/ Jordan	A cross-sectional and descriptive design.	A sum of 382 out of 500 nurses from three health care sectors in Jordan	Developed based on the literature review	Individual Workload Perception Revised scale (IWPS-R).	The Cronbach's alpha of the original scale ranged from 0.61 to 0.90	Tool's validity had been established earlier	Pearson correlation coefficient	Nurses working in the public hospitals had significantly better perceptions about their work environment than nurses working in private and university hospitals. Older nurses with lower academic qualifications are more likely to be satisfied with their work.
(Li *et al.*, 2020)/ China	A Cross-sectional multicentre survey.	2,352/3,240 clinical nurses from nine tertiary hospitals in eastern, central and western China,	Developed based on the literature	The nurses' Perceived Organizational Support Scale The Chinese version of the Nurses' Job Control Scale The Chinese version of the Nurses' intention to stay Scale	Cronbach's alpha was 0.95. Cronbach's alpha of the total scale and each domain was 0.77–0.92 The Cronbach's alpha was 0.77	Content validity index (S-CVI) was 0.94 Content validity index was 0.97.	Structural equation modelling	Job control perceived organizational support and job satisfaction significantly and directly affected nurses' intention to stay. Job control and perceived organizational support showed indirect effects on intention to stay, which was mediated by job satisfaction.
(Dorigan and Guirardello, 2018)/ Brazil	A correlational study with quantitative approach	465/1516 nurses with active professional registration	Was developed to be tested	Nursing Work Index Revised (NWI-R) Safety Attitudes Questionnaire Maslach Burnout Inventory (MBI)	NWI-R: C alpha 0.80 SAQ 0.77- 0.85 MBI 0.68- o.92	The tools were previously used in the literature and their validity had been established	Partial Least Squares Path Modelling (PLS-PM)	The practice environment showed a strong impact on job satisfaction, safety climate and burnout, with a moderate impact on the intention to stay in the institution and in the profession.

(Satoh, Watanabe and Asakura, 2018)/ Japan	A cross-sectional questionnaire survey was conducted at 12 hospitals in the Tohoku and Kanto regions of Japan.	Of the 1,034 nurses working in those hospitals, 713 returned the questionnaire (response rate: 69.0%).	Was developed based on the previous literature	24 items was developed based on 16 interviews	Cronbach's α = 0.66-0.87		Exploratory factor analysis	Variables strengthening intention to stay at the current hospital could be grouped into five factors: "comfortable workplace environment," "passive motivational factors," "convenience of hospital location," "favourable work–life balance," and "fulfilment in nursing."
(Ngabonzima, Asingizwe and Kouveliotis, 2020)/ Rwanda	A descriptive cross-sectional design with a quantitative approach	185/162 full-time nurses and midwives practicing in five selected hospitals with a minimum of 6 months of experience working with their current direct managers	The modified Path-Goal Theory Conceptual Framework (House, 1971)	Path-Goal Leadership tool	Not mentioned	A pre-test of the data collection tools was conducted with 10 nurses and midwives from a different health facility (hospital) for identification and modification of areas of misunderstanding in the research tools.	Regression analysis	Nurses and midwives managers were more inclined to the directive leadership style followed by a supportive leadership style, and the participative leadership style. The nurse and midwife's managerial leadership styles together significantly explained 38, 10 and 23% of the variance in job satisfaction, intention to stay and service provision, respectively. The study revealed significant weak positive relationships between directive and supportive leadership styles with the intention to stay.

5.5 Main findings of systematic review

To the best of the researcher's knowledge, this is the first systematic review to identify and synthesise quantitative research concerning the relationship between nurses' intention to stay and the work environment. Twenty-nine studies met the inclusion criteria when the review was undertaken in 2017, with five additional papers identified in a rapid review for the years 2018-2020. There was wide variation in the use of the key concepts and tools. Clarification of these concepts and development of a consensus regarding their meaning and application are required if the relationships between them are to be investigated rigorously. Key findings from the review about intention to stay, relate to individual factors, leadership, and organisation support.

The review revealed that the concept of intention to stay is complex and multifaceted. Mediator variables play an important role in illustrating the indirect impact of some independent variables on nurses' intentional behaviour. Thus, for a multifaceted concept such as intention to stay, simple correlation or independent predictor analysis is not sufficient to explain the relationship between intention to stay and its determinants. Therefore, advanced statistical methods including multivariate analyses and structural equation modelling have been used (Brewer *et al.*, 2016; Cowden and Cummings, 2015; Liang *et al.*, 2016; Tourangeau and Cranley, 2006b).

These methods were required to clarify the extent to which the hypothesised variables influenced intention to stay and to illustrate the mediating influence of these variables. Searching the field for the concept of intention to stay and work environment was challenging due to a lack of clarity concerning the definition of the key terms. Further work is required to clarify the definition of these concepts. A significant association between the work environment

and nurses' intention to stay was evident in the review. However, the review revealed that individual and demographic factors require consideration when planning strategic interventions to improve the work environment to enhance intention to stay. Future research should consider exploring the impact of generational differences in relation to intention to stay within the nursing workforce. Additionally, job satisfaction also affected nurses' decision to remain employed. This review identified the importance of nurses' personal attitudes toward their organisations (also known as organisational commitment) in their decisions to remain with their employer.

Furthermore, a consistent finding in all the articles included in the review related to the direct or indirect impact of leadership practice on nurses' intention to stay. Different leadership styles have been studied extensively to identify the best style to increase workforce stability and nurses' intention to stay. However, the findings of this review demonstrate that it is the combination of supportive managers, supervisors and effective administrative processes and staff that collectively increase nurses' intention to stay, rather than the use of a specific or single leadership style which is supported in the literature (Hutchinson and Jackson, 2013; Sosik, Juzbasich and Chun, 2011). Another factor predicting nurses' intention to stay was the level of organisation support. Empowerment along with organisation commitment and desire to stay, accounted for the greatest variance of intention to stay in the study by Cowden and Cummings (2015). This underlines the importance of supportive managers enabling and empowering their staff. The overlap of intention to stay predictors identified in this review and organisation strategies should be recognised. The findings from the systematic review highlight the importance of leadership support, the complexity of the concept of intention to stay, the indirect impact of nurses' satisfaction and organisation commitment (mediating effect) and the

generational differences between nurses. These key features were considered further and informed the conceptual framework of the next phase of the PhD study.

5.6 Limitations of the review

Although a systematic review process was used because of its inherent rigour, this review has some limitations. Variability in the conceptualisations and measurement of the work environment may limit the validity and generalisability of the findings. Indeed, the range of operational and theoretical definitions used in the studies prevented direct comparisons. Also, because the concepts involved overlap and are complicated, some relevant literature may have been missed despite the measures taken to ensure the search was comprehensive, such as piloting the search terms and librarian consultation.

Due to the heterogeneity of the studies included in this review, a narrative synthesis was used to synthesise the evidence, which may have resulted in some unconscious bias and the generation of unsound conclusions. However, this approach provided an overarching framework, which ensured that the process was clear. Furthermore, using specific inclusion criteria and a well-structured review question, piloting proposed processes and use of independent reviewers mitigated potential bias. The inclusion of quantitative studies published in English, may have led to exclusion of some potentially relevant research written in languages other than English, however, resources for translation were not available. Similarly, 'grey literature' was not included as identifying, locating and retrieving the relevant material was beyond the scope of this review. Excluding the grey literature may have increased publication bias and reduced the review's comprehensiveness and timeliness (Paez, 2017). However, some published theses and dissertations were included, because as this is a relatively new area of

research interesting emerging data can be found in recent doctoral studies which are available in university websites and repositories (Adams *et al.*, 2016). This action may have reduced the potential impact of publication bias.

5.7 Conclusion of systematic review and its relevance to Oman

With staffing shortages affecting more healthcare professions and predictions that shortages will increase in the future, there is a broad consensus that leaders at all levels must do more to support, develop and retain current employees. Although, there is a general agreement regarding the impact of some aspects of a healthy work environment on nurses' intention to stay, the variation between countries and sometimes different healthcare settings in the same country is evident. This might be explained by cultural orientation and its impact on nurses' perception of their work environment and its relationships with their intention to stay. Thus, there is a need to evaluate these relationships in the context of Oman due to the potential influence of cultural, and population diversity. The chronic problem of the nurse shortage in Oman has led hospitals to recruit more expatriate nurses which creates a multicultural workforce in many hospitals. Although some of the findings of this review could be transferable to Oman, due to the differences between Oman and other countries in terms of the cultural background and the structure of the nursing workforce, customising and tailoring the strategies to enhance nurses' intention to stay must rely on studies within the intended country to ensure relevance.

Despite the limitations of this review, the evidence indicates that attention to macro-level variables such as organisation characteristics, job characteristics and work environment are vital if the working environment is to improve and intention to stay is to be strengthened.

A limited number of theoretical/conceptual models of nurses' intention to stay are available and include; a conceptual model of clinical nurses' intention to stay (Cowden and Cummings, 2012); The Conceptual Model of Intent to Stay (CMIS) (Boyle *et al.*, 1999), and the Determinants of Nurse Intention to Remain Employed Model (Tourangeau and Cranley, 2006a). Refinement of these models has been achieved by including more variables and explaining direct and indirect relationships between the variables and intention to stay. These models were instrumental in defining the concept of intention to stay from a theoretical and operational perspective and have contributed to explanations of the variance of intention to stay.

Finally, the multifaceted nature of the concept of intention to stay makes it difficult to present definitive conclusions based on the findings of the review. However, elements of the work environment such as effective leadership practice, empowerment culture, effective teamwork, adequate staffing, professional development opportunities and a supportive organisation climate were all reported to be crucial factors in encouraging nurses to stay at their workplace. These work environment factors are modifiable and can be prioritised within organisations. While personal individual characteristics are not easily modified, the interaction between the work environment elements and the individual factors cannot be ignored. However, more attention should now be given to some of the individual variables such as organisation commitment, overall job satisfaction, emotional labour and emotional intelligence, in order to learn more about their impact on intention to stay.

The identified conceptual frameworks in this review are essential in building this thesis's conceptual framework. However, in order to further build the conceptual framework of this project research more extensively, a literature review was conducted to explore the literature for the exiting intention to stay's conceptual framework which would be used for cross-sectional survey among nurses in Oman which is presented in next chapter.

Chapter VI: Cross-sectional Survey

6.1 Chapter overview

Based on the results from the concept analysis and systematic review, an online cross-sectional survey was undertaken. This chapter presents the methodology including details of how the key terms and selected assessment tools contributed to the development of the theoretical and conceptual framework. The chapter then presents the results of the pilot study and online survey.

6.2 Theoretical and conceptual frameworks

Building on the philosophical framework presented in chapter three, this chapter presents the theoretical and conceptual frameworks used to guide the research. Theoretical and conceptual frameworks enhance the credibility of the work undertaken. Though these terms seem similar, they are different from each other in terms of their development and in their role in the research inquiry (Adom, Hussein and Adu-Agyem, 2018). It is important to define them and articulate their differences prior to explaining how they were utilised.

Theory can be described as a generalised statement of a collection of defined concepts and /or constructs that explains or predict relationships or connections between or among phenomena (Kivunja, 2018). Based on all or some of the assumptions of the theory, the theoretical framework is built to illustrate, how theory will be applied to the search inquiry. In essence, theoretical frameworks provide a general or broader set of ideas which inform the nature of the study. A theoretical framework can be based on existing theory/theories in the literature which have been tested and validated by other scholars (Crawford, 2020). It is then

used to test theories, to predict and control the situations within the context of a research inquiry. A theoretical framework can be used as a whole or in part (Yob and Crawford, 2012).

Whereas the conceptual framework (sometimes called conceptual model) is a graphic or narrative tool used to illustrate the researcher's understanding and believe about the best way to explain examined phenomenon by predicting the potential relationship between its concepts (Adom, Hussein and Adu-Agyem, 2018). The conceptual framework is a logical structure, constructed by the researcher to provide a visual display of relationships between the main study variables (Osanloo and Grant, 2016). Variables are the measurable units of any concept. The conceptual framework can be an adaptation of a framework in an existing theory which, researchers adapt to suit their research purpose. Crawford (2020) identified three sources for the conceptual framework. These include the use of ones' experience, the literature and other known theories. Table 10 presents the main differences between a theoretical and conceptual framework. The theoretical framework selected for use in this study is the Social Exchange Theory.

Table 10: Differences between theoretical and conceptual framework

Theoretical Framework	Conceptual Framework
It provides a general or broader set of ideas within which a study belongs. It is based on existing theory/theories in the literature which has been tested and validated by other scholars.	It refers to specific or narrower ideas researcher utilises in his/her study. It adopted from existing theories, literature review and researcher's experience.
It is well developed, designed and accepted.	It is a researcher's own constructed model that used to explain the relationship that exists between the main variables in the study.
It offers a focal point for approaching the unknown research in a specific field of inquiry.	It is defined by the research problem, and it shows logical how the research inquiry is to be undertaken
It consists of theories that seem interrelated with their propositions deduced.	It consists of concepts and their variables interconnected to explain the relationships between them
It is used to test theories, to predict and control the situations within the context of a research inquiry.	It is aimed at encouraging the development of a theory that would be useful to practitioners in the field

Source: adopted from (Adom, Hussein and Adu-Agyem, 2018).

3.5.1 Social Exchange Theory

Social Exchange Theory (SET) is one of the major theories of social interaction in the social sciences. The root of SET was established by the sociologist George Homans, who wrote an essay entitled "Social Behavior as Exchange" (Homans, 1958). Subsequently related theories of exchange based on the fundamental concept of SET have been developed (Figure 6). Consequently, SET is not a single unified and standardised theory framework and combines exchange behaviourism (Homans, 1958), the exchange network theory (Emerson, 1962), exchange structuralism (Blau, 1964) and several versions which are illustrated in figure 6. Overall SET posits that is in the nature of human beings to seek benefits based on incentives as rational beings in an exchange process (Cook *et al.*, 2013).



Figure 6:SET development(Cropanzano et al., 2007)

In SET, costs are the negative consequence of a decision, such as losing time, money, status and energy. Whereas rewards are the positive tangible or intangible results of social exchange such as gaining income, material goods, prestige, and a sense of security. Therefore, the generally accepted idea is that people will subtract the costs from the rewards in order to calculate the value (Cook et al., 2013). The prime assumption underlying social exchange theory is that humans are reasonable beings, which means that wherever and whenever individuals make choices they will make their decision based on subjective cost–benefit analysis, and that people tend to repeat actions rewarded in the past, and the more often a particular behaviour has been rewarded, the more likely it is to recur (Homans, 1958). Although the SET has been used in psychology research, mainly to explore the establishment and termination of social relationships, it has also been applied to economic and organisation psychology research to explain employee interactions with their supervisors and their organisation. Although psychologically, work relationships may be addressed as any kind of interpersonal relationships in the workplace, they relate to both the individual and the organisation. Cropanzano et al. (2007)stated that employees can create social exchange relationships with their co-workers, supervisors, and the employing organisation.

It has been demonstrated that the perception of the social exchange relationships affects employees' attitudes and behaviour which can result in better performance, motivation and lower turnover intention. The organisational social exchange, is defined as employees' experience of long-term investment and trust, and involves a 'give-and-take' social exchange relationship between the two parties(Shore *et al.*, 2009). Davies and Gould-Williams (2005) used SET to examine the impact human of resources management on the employees' desire to stay with their organisation. Consistent with SET, Davies and Gould-Williams (2005)

highlighted the importance of trust in management, teamworking, employees' involvement and empowerment in predicting positive outcomes .

Empirical studies have applied SET to understand the impact of organisation support, leadership support and the impact of the work environment on employees' retention and turnover intention, as well as employee commitment. It is usually the organisation that initiates the exchange process (Kotter, 2012) and the consequence of the exchange includes employees receiving benefit and support that secures their loyalty and commitment (Coyle-Shapiro and Shore, 2007; Eisenberger *et al.*, 2001). On this basis, it could be argued that as nurses engage in interactions with supervisors, coworkers and the organisation, the exchange creates a sense of obligation to the organisation if it is based on commitment and satisfaction, which will result in a greater desire to stay with the organisation. Cropanzano and Mitchell (2005) revealed that social exchange relationships in a workplace setting influence workforce turnover and retention. They concluded that if an employee can establish a unique social exchange relationship with their manager, co-workers and employer organisation, where these distinguishable relationships have implications on their behaviour (Cropanzano and Mitchell, 2005). For example, employees are likely to continue the relationship with their employer when they perceive that the relationship is valuable for them, and the organisation provides adequate incentives to retain them. However, employees terminate the relationship when the costs are more than the rewards gained (Shahid, 2018). For example, when organisation failed to provide the access to adequate recourse, and safe environment to maintain nurse physical and mental wellbeing, employees tend to terminate their relationship with their organisation.

According to Caillier (2016), positive work experiences result from positive interactions at work. This perspective is consistent with the study aims, as the primary goal

was to explore if a relationship exists between a healthy work environment and employee intention to stay. Expanding our knowledge about the variables that influence nurses' intention to stay and exploring if there is a relationship between these variables is important. For the purpose of this thesis, the social exchange relationship between the nurses and the healthcare organisation was seen as type of long-term investment. Both nurses and their organization are involved in mutual relationship where nurses will provide, effort, time and quality care and organisation will establish and maintain the healthy work environment for their nurses. Consequently, based on both perception for the valuably of the exchange relationship, cost and reward assumption from SET is applied (See figure7). The reward for the organistion will be more nurses with higher intention to stay, satisfaction and commitment and eventually, stable workforce and good reputation to attract talents. However, nurses as well are getting more stability and security at their workplace as well as enhanced physical and mental wellbeing as long-term reward.

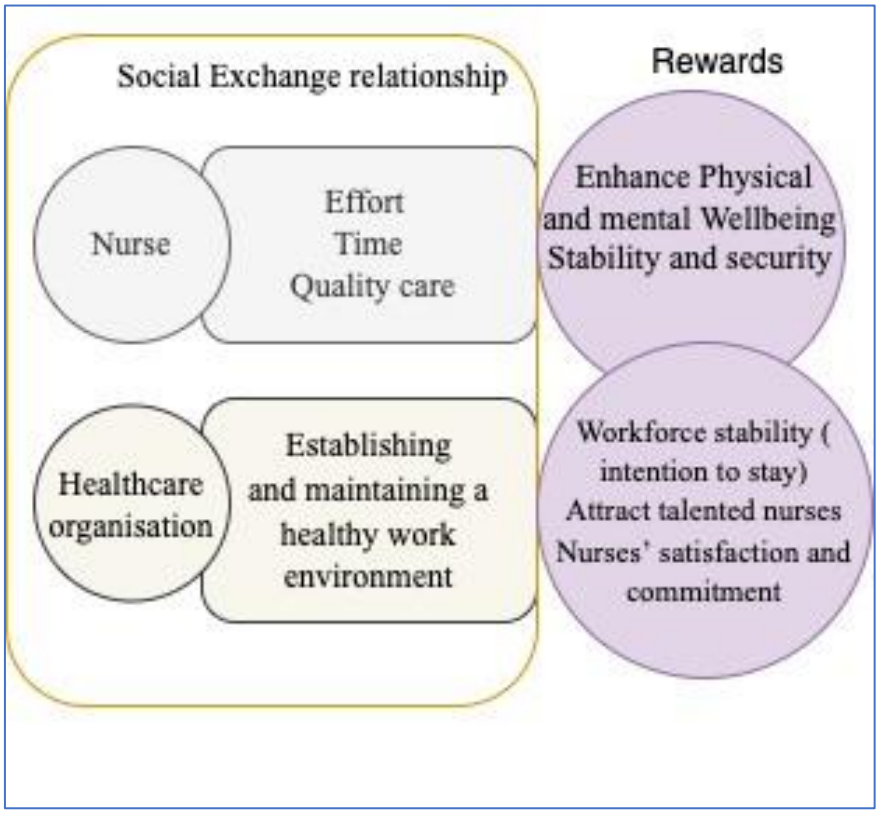


Figure 4: SET application

The next section presented the result of focused review of the literature of the existing conceptual framework of the nurses' intention to stay in the literature. However, the conceptual frameworks continued to evolve, therefore, based on the result of this review and incorporating the result form the concept analysis of the healthy work environment and the systematic review, this thesis's conceptual framework had been developed.

6.2.1 Existing conceptual framework

The first related conceptual framework to appear in the nursing literature examined the impact of leaders' characteristics such as power, influence, and leadership style on nurses' intention to stay in critical care units. It proposed four categories of determinants (managerial, organisational, work, and individual) which affect employees' intent to stay directly or indirectly through, intervening variables such as job satisfaction, organisation commitment and/or job stress (Boyle *et al.*, 1999). The authors purport that by integrating the

variables, the direct and indirect relationship between them, facilitates understanding of intention to stay (Table 11).

Under the main predictor variables, Boyle *et al.* (1999) developed sub-categories which included: manager characteristics including power, influence and leadership style as well as organisation characteristics including distributive justice, promotion opportunities, control over practice and unit characteristics. Furthermore, the authors described work features(subscale variables) as autonomy, instrumental communication, workgroup cohesion, routinisation and individual characteristics including demographic information, external work opportunities and job design priorities (Boyle *et al.*, 1999). Boyle's framework was tested utilising established tools of the framework' variables from published literature based on the work of Price and Mueller (1981) and Hinshaw, Smeltzer and Atwood (1987). Although Boyle had stated that these the reliability and validity of the chosen assessment tool were established previously, it had not been stated the exact tools have been used. Following testing, the conceptual model demonstrated sound reliability and validity to assess the predictors, intervening, and outcome variables, among 255 registered nurses in intensive care units at four urban hospitals in the USA. All measures had prior evidence of sound reliability and validity with reliability coefficients (Cronbach a or split-- half) ranging from .61 to .94(Boyle *et al.*, 1999). Causal modelling and multiple regression path analysis were utilised to estimate the magnitude of the direct and indirect effect of the predictors and intervening variables on the nurses' intention to stay (Boyle *et al.*, 1999).

Table 11: Boyle et al.'s Conceptual model of intention to stay

Predictor variables				Intervening variables	Outcome variable
Manager characteristics	Organisational characteristics	Nurse characteristics	Work characteristics		
Power Position Personal Influence Work coordination Personal resources Leadership Structuring expectations Consideration	Distributive justice Promotional opportunity Control over practice Unit characteristics Filled to budgeted FTE ratio Full-time FTE ratio RN/filled FTE ratio BSN/filled FTE ratio Graduate nurse/filled FTE ratio Unit workload	Opportunity elsewhere Job decision priorities Age Nursing education Tenure expectations at employment Years in position Years in hospital Years in profession Marital status	Autonomy Instrumental communication Work group cohesion Routinisation	Job stress Personal Situational Job satisfaction Enjoyment Administration Commitment	Intent to stay

BSN indicated Bachelor of Science in nursing; FTE, full time equivalent; RN, registered nurse.
Unit characteristics variables were used as correlates
Nurse characteristics were used as correlates except for opportunity elsewhere, which was treated as exogenous variables.

Boyle *et al.* (1999) framework explained 52% of the variance in intention to stay among ICU nurses, where the managers' characteristics alone accounted for 12% of the variance in intention to stay. Boyle *et al.* (1999) were able to identify nurses' satisfaction, promotion opportunities, manager power and influence over coordination, availability of work opportunities elsewhere, as direct contributory factors to nurses' intention to stay (Boyle *et al.*, 1999). However, while well-established instruments had been used to assess the study's variables, two of the shorter scales had lower reliability than the generally accepted standard of .70 which may increase the chance of type II error. Additionally, although Boyle's framework was focusing on the impact of the manager's leadership on intention to stay among nurses working in intensive care units, it has provided an initial conceptual framework about the nurses' intention to stay which has helped other researchers to enhance and enrich their research work in this area. This was evident by both Tourangeau and Cranley (2006a) and (Cowden and Cummings, 2015) who built their conceptual framework based modification of Boyle *et al.* (1999) framework and their frameworks had explained higher percent of the intention to stay' variances.

Based on Boyle's previous work, Tourangeau and his collegues developed the 'Determinants of Nurse Intention to Remain Employed' conceptual model (Tourangeau and Cranley, 2006a). The model was tested by inviting 13,000 nurses from Canada to complete the Ontario Nurse Survey which included instruments and items that measure job satisfaction, burnout, professional nursing practice environment, demographic characteristics and items relating to intention to remain employed (Tourangeau and Cranley, 2006a). Utilising multiple regression, they concluded that 'job satisfaction, manager ability and support, organisation commitment, burnout, workgroup cohesion and collaboration, as well as personal characteristics of nurses' were significant predictors of nurses' intent to stay employed. Four

categories of determinants were found to predict 34% of the variance in nurses' intention to stay(figure 8). These included job satisfaction, personal characteristics of nurses, work group cohesion and collaboration, and commitment of nurses to stay with the organisation. Furthermore, conceptual model testing reported that nurse burnout and nurse manager ability and support are predictors of job satisfaction and have an indirect effect on intention to stay (Tourangeau and Cranley, 2006a). In 2010, Trourangeau conducted thirteen focus groups involving 78 nurses in two Canadian provinces and developed a further conceptual model relating to nurse intention to stay. Eight themes emerged from the focus groups which identified the determinatants of nurses' intention to remain employed. These included relationships with co-workers, the conditions of the work environment, relationships with and support from one's manager, work rewards, organisation support and practice, physical and psychological response to work, patient relationships and external factors such as payment incentive (Figure 9). Unlike the previous conceptual model which, was tested in 2006, the overall job satisfaction which appeared as a significant predictor of intention to stay in the previous conceptual model was not identified as a main theme in the focus groups (Tourangeau *et al.*, 2010). However, the hypothesised conceptual model was not tested to determine its reliability, validity and application in the clinical setting.

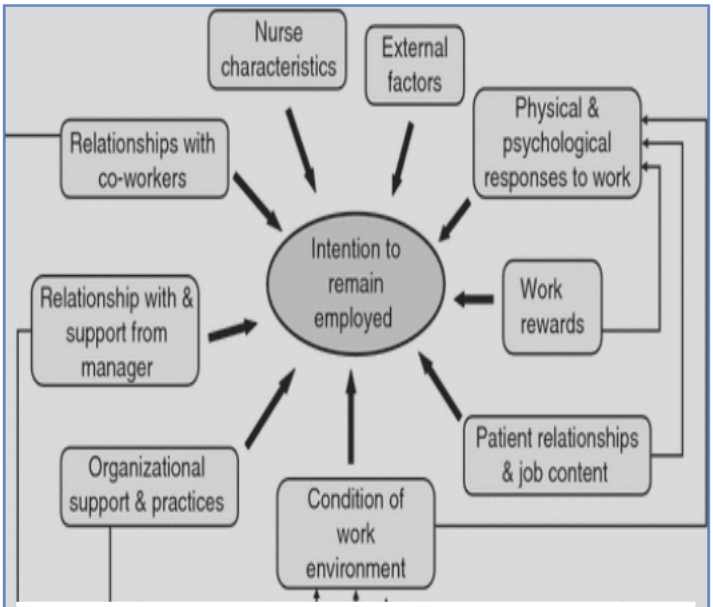


Figure 8: Conceptual framework of Tourangeau and Cranley, (2006)

Figure 9: Conceptual Framework of Tourangeau and Cranley,(2010)

Finally building on the frameworks discussed earlier (Boyle *et al.*, 1999; Tourangeau and Cranley, 2006a; Tourangeau *et al.*, 2010), Cowden and Cummings (2012) developed a conceptual model of clinical nurses' intent to stay (See figure10). Cowden and Cummings (2012) conceptual model reflects the complexity of intention to stay and includes a large number of hypothesised relationships among varaibles. Although, the varaibles in Cowden and Cummings (2012) conceptual model differ from prevoius conceptual frameworks in terms of the number of variables and how to catogrise them. Cowden's and Cummings (2012) conceptual model is based on a review of the existing literature and includes four sets of predictors of intention to stay. The management characteristics in the Cowden's and Cummings (2012) frameowrk included; leadership, praise and recognition, shared decision making and supervisor support. The organisation characteristics include career development, staffing and

time to nurse. In addition, Cowden's and Cummings (2012)suggested that work features should include abuse, autonomy and workgroup cohesion. Furthermore, Cowden and Cummings (2012) proposed that is two types of nurses' response to the work should be considered in their conceptual framework which included; cognitive and effective responses. The 'cognitive response to work' was assessed measuring nurses' perception of empowerment, organisation commitment, quality of care and availiability of work opportunities elsewhere. The 'effective response to work' assesses nurses' desire to stay, job satisfaction, joy at work and moral distress. The model was tested using a correlational, mixed method, non-experimental design combined with structural equation modelling (SEM). The model was based on a sub-sample of the quality work domain and involved 415 nurses (Cowden and Cummings, 2015). In this model, 23 predictors were tested, however only three variables (organisation commitment, empowerment and desire to stay) were found to be significant and contributed to nurses' intention to stay. In addition, leadership practice indirectly influenced intention to stay by affecting the nurses' perception of their workplace and perceived role empowerment (Cowden and Cummings, 2015). Although, nurses' job satisfaction was identified as a direct predictor of intention to stay in other models (Boyle *et al.*, 1999; Tourangeau and Cranley, 2006a), Cowden and Cummings' (2015) model reported that the impact on nurses' intention to stay was indirect and mediated by organisation commitment and desire to stay. Moreover, a new concept of 'desire to stay' had been introduced, defined as the positive feelings one has towards, remaining in one's current position Cowden's and Cummings (2015, p 171). However, similarity is noted between deire to stay definition and the definition of job satisfaction presented by Price (2001)as affective orientation that an employee has towards his or her work. Cowden and Cumming's (2015) model rationalised 63% of the variance in intention to stay among nurses (Cowden and Cummings, 2015). Furthermore, the results indicated that nurses'

emotion and cognition influenced how nurses evaluate and respond to their work environment. They further report that organisation commitment, empowerment and desire to stay were found to be significant predictors that impact nurses' intention to stay.

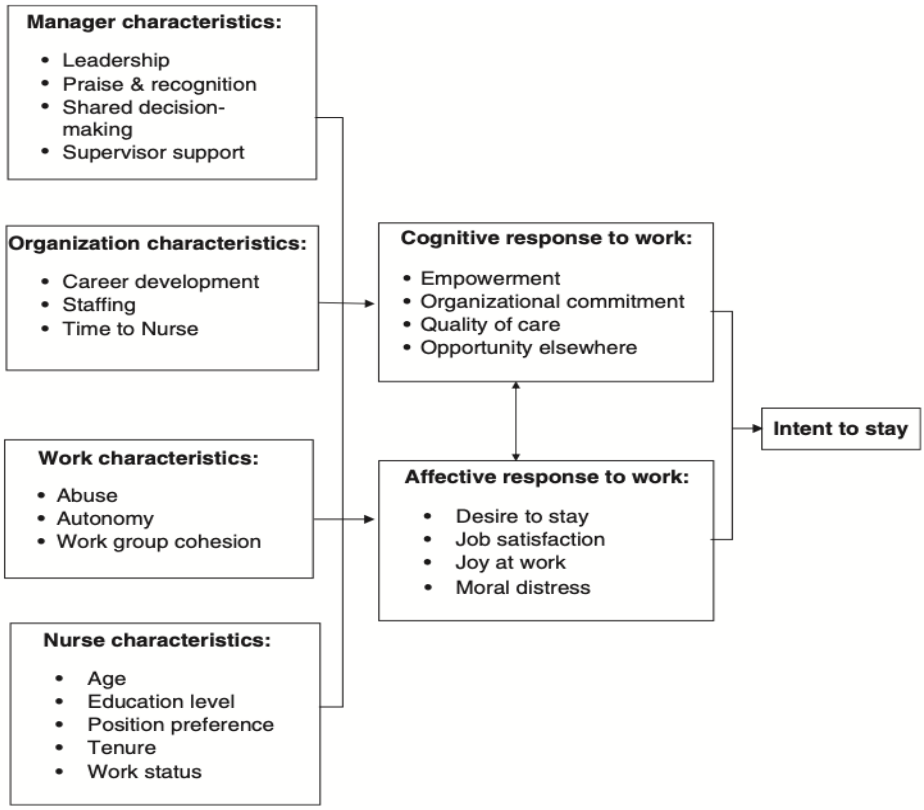


Figure 10: Cowden and Cummings's Theoretical Framework of clinical nurses' intent to stay

Generally, a tremendous work had been done by researchers to develop, enhance and test these frameworks. However, while these frameworks were reviewed some limitations were identified in in terms of development or the testing stages. The Boyle (1999) and Cowden (2012) models agree on the primary categories of predictors for intention to stay. Although, Cowden's model (2012) also includes more sub-category predictors. However both models of Tourangeau and Cranley (2006a) and Tourangeau *et al.* (2010) used the predicting variables to build the conceptual framework without categorised them as illustrated

in figure 8 and 9. Three of the existing models focus mainly on cognitive predictors of intention to stay by including the variable of nurses' orgnisational commitemnt , and ignore the impact of the emotional response of nurses to and reflection on their work(Boyle *et al.*, 1999; Tourangeau and Cranley, 2006a; Tourangeau *et al.*, 2010). Only Cowden and Cummings's (2012) model incorporated both responses in their model and examined their impact on nurses' intention to stay. However, Cowden and Cummings's (2012) model is more complicated in terms of including variables to assessing nurses' responses to their work and how they influence their intention to stay. For example, Cowden and Cummings assessed the emotional response by measuring 'desire to stay,' 'joy at work' and 'job satisfaction.' These three concepts describe positive feelings and pleasures nurses' experience about their workplace (Cowden and Cummings, 2012). Statistically what Cowden and Cummings did from using some variables which assess similar concepts might affect the framework development (variables inclusion) or testing it statistically through the impact of multicollinearity which would be explained later in data analysis. However, the way these concepts were measured did not reflect the operational definitions that were used, for example the desire to stay was measured using one item scale which asked nurses to determine on 5-point Likert scale "If it is up to them, they will be working in this Unit one year from now" which was adopted organisational commitment scale developed by Meyer and Allen (1991). This assessment does not reflect any evaluation for nurses' emotional response toward their work.

In the study of Boyle *et al.* (1999) a predictive model based on assumptions about the independent variables and their impact of the nurses' intention to stay has been developed, however, the statistical model fit was not reported. Tourangeau and Cranley (2006a) used multiple regression analysis however, they were unable to make conclusive assertions about

the causal impact of the studied variables which illustrated earlier in their framework. The Cowden and Cummings (2012) model was tested using a structural equation model (SEM), which leads to more valid conclusions regarding the direct and indirect impact of the independent variables on the intention to stay. However, the complexity of SME comes with statistical and interpretational challenges and potential problems that relate to the model and its parameters (Schiller, 2003). Although intention to stay models vary in their complexity, type and number of predictors, and predictor categories, they all suggest that intention to stay involves attitudinal, decisional and behavioural elements (Cowden and Cummings, 2012; Tourangeau and Cranley, 2006a). Furthermore, there was a consensus regarding the importance of the following variables: opportunities elsewhere, organisational commitment, age, professional opportunities, education level, job satisfaction, autonomy, leadership/management practice, teamwork cohesion and full/part time status of employment as mediators of intention to stay.

Indeed, the models have limited capacity in explaining determinants of nurses' intention to stay. The existing frameworks of Boyle *et al.* (1999), Tourangeau and Cranley (2006a), and Cowden and Cummings's (2015) were able to explained 52%, 34% and 63% of the variance of nurses' intention to stay respectively. . However, given the complexity and multifactorial nature of the concept of nurses' intention to stay and the magnitude of unexplained variance, there are clearly unknown factors influencing nurses' intention to stay. Overall four models have been developed, three of which have been tested (Boyle *et al.*, 1999; Tourangeau and Cranley, 2006a; Cowden and Cummings, 2015). The differnces and similarties have been summerised in table 12. Researchers have tried to investigate this phenomenon and have developed helpful conceptual models to make researching this complex area more feasible. However, given the complexity of the intention to stay concept

and the deficits that have been identified, a new and iterative model has been developed based on previous models and systematic review and the literature review result.

Table 12: Summary of existing conceptual frameworks

Models	Variables studied	How the model was tested	Direct predictors	Indirect predictors	Variance	What is the difference
Boyle *et al.1999*	Managers' characteristics power Influence leadership styles Organisational characteristics distributive justice, promotional opportunity, control over practice, unit characteristics Work features autonomy, instrumental communication, workgroup cohesion routinisation Individual characteristics including demographics information work opportunity elsewhere job design priorities.	Distributing survey among 255 registered nurses in intensive care units at four urban hospitals in the USA.	Manager's positional power and influence over work coordination, Nurses' satisfaction (as the most significant contributor to intent to stay) promotion opportunities opportunity elsewhere	Mangers' leadership style Control over nursing practice situational stress	52% of the variance in intention to stay	Focus on the impact of the managers, characteristics on the ICUs nurses' intention to stay since that was the main purpose of the study Some feature of nursing job was included in the model such as autonomy, routinisation
Tourangeau and Cranley, 2006	• Job satisfaction, manager ability and support • organisational commitment • Burnout • work group cohesion and collaboration • personal characteristics of nurses (age, years of experience, career satisfaction, educational preparation, sex, category of nurse, and full-time or part-time employment status)	Developed based on Boyle's models and tested by inviting 13000 nurses from Canada to complete the Ontario Nurse Survey	job satisfaction, personal characteristics of nurses, work group cohesion and collaboration, and organisational commitment of nurses	Nurse burnout and nurse manager ability and support,	34% of the variance in intention to stay	nurse manager ability and support were found to indirectly affect the nurses' intention to stay through the overall satisfaction
Tourangeau and Cranley, 2010	• Relationship with co-workers, • condition of the work environment, • relationship with and support from one's manager, • work rewards, • organisational support and practices, • physical and psychological responses to work, • patient relationships and • other job content,	was developed by conduction thirteen focus groups including 78 nurses in two Canadian provinces. Howver, the model had not been tested.	Relationships with co-workers, condition of the work environment, relationship with and support from one's manager, work rewards, organisational support and practices, physical and psychological responses to work, patient			The themes were qualitatively identified from 13 focus groups The model was not tested Overriding concept of job satisfaction was not found.

Cowden and Cummings, 2012	Manager characteristics: • Leadership • Praise & recognition • Shared decision-making • Supervisor support Organisation characteristics: • Career development • Staffing • Time to Nurse Work characteristics: • Abuse • Autonomy • Work group cohesion Nurse characteristics: • Age • Education level • Position preference • Tenure • Work status Cognitive response to work: • Empowerment • Organisational commitment • Quality of care • Opportunity elsewhere Affective response to work: • Desire to stay • Job satisfaction	A subsample of the Quality Work Environment Study survey data 2009 (n = 415 nurses) was used to test our theoretical model of clinical nurses' intention to stay as a structural equation model.	Organisational commitment, empowerment, and desire to stay	Leadership practices indirectly influenced intention to stay.	The model explained 63% of variance in intention to stay	Includes nurses' affective and cognitive responses to work and their effects on nurses' intent to stay. Introduce the concept of desire to stay	

6.2.2 Developing this thesis conceptual framework

The findings from the concept analysis, systematic review and review of existing intention to stay conceptual frameworks guided the development of the evolving conceptual framework and the design of the cross-sectional survey in the present study. Guided by this thesis main question about the relationship between the healthy work environmnrt and nurses' intention to stay and based on the previous conceptual framework, three main catogried of intention to stay varibales were included which are healthy work environemnt varaibles, job (nursing profession) charctersivs and nurses' individual charcterstics. In the this thesis conceptual framework, management practice and organisation characteristics from previous frameworks were clustred into one category called the Healthy Work Environment. It includes six varaibles identified earlier in the concept analysis as the healthy work environemt attributes. These variables include supportive leadership practice, effective teamworkand collaboration, empowerment, education and training opportunities, career advancement and staffing and workload. In terms of job characteristics, the previous framework included autonomy, communication and group work cohesion as variables . Among the available reliable and valid models relating to job characteristics is the model developed by Hackman and Oldman (1975) and updated in 1980. This instrumental model asseses job characteristics based on several core aspects which relate to skill variety, task identity, task significance, autonomy, physical demand and payment satisfaction. However and based on the literature review, this category was presented in the proposed model as nursing profession characteristics defined as the worker perceptions about the job in terms of its nature and content. The framework specifies the conditions under which the individual will become internally motivated to perform certain behaviors in their job. The Job Characteristics Model (JCM) emphasises the importance of the employees' psychological

status when invoking certain behaviors or level of performance (Edgar, 1999; Hackman and Oldham, 1976).

In addition, based on the systematic review findings, nurses' individual characteristics were incorporated in the conceptual framework of this thesis which included both demographic and professional characteristics such as age, gender, education, nationality, years of experience in the same unit, hospital, and nursing profession, marital status, number of children, mangement role and availability of work opportunities elsewhere. Based on the findings from Cowden and Cummings (2015) the affective response of nurses toward thie work was included. It was mentioned earlier thet some similer (in defention) concepts such as desire to stay, joy at work and job satisfaction were utlised to assess this response. However, the framework in this thesis considered the nurses' affective and cognitive responses towards their work by assessing the job satisfcation as emotional response and organisational commitment as cognitive response e of the nurse toward their work (figure 11). As a summary, the main issues addressed by the frameworkinclude:

- Based on the result of the concept analysis, a leadership and management variable of the healthy work environment with a specific focus on leadership and management was included.
- Based on the result of the concept analysis, the degree of empowerment is included as a component of the healthy work environment domain
- The subscales of autonomy, task variety, task significance, physical demand and payment satisfaction were identified in the literature and have an impact on nursing action behaviour. Thus these elements were incorporated into the model under the category of nursing profession characteristics.

- Nurses' affective response is incldued as part of overall nurse satisfaction and cognitive response as demonstrated by organisation commitment.

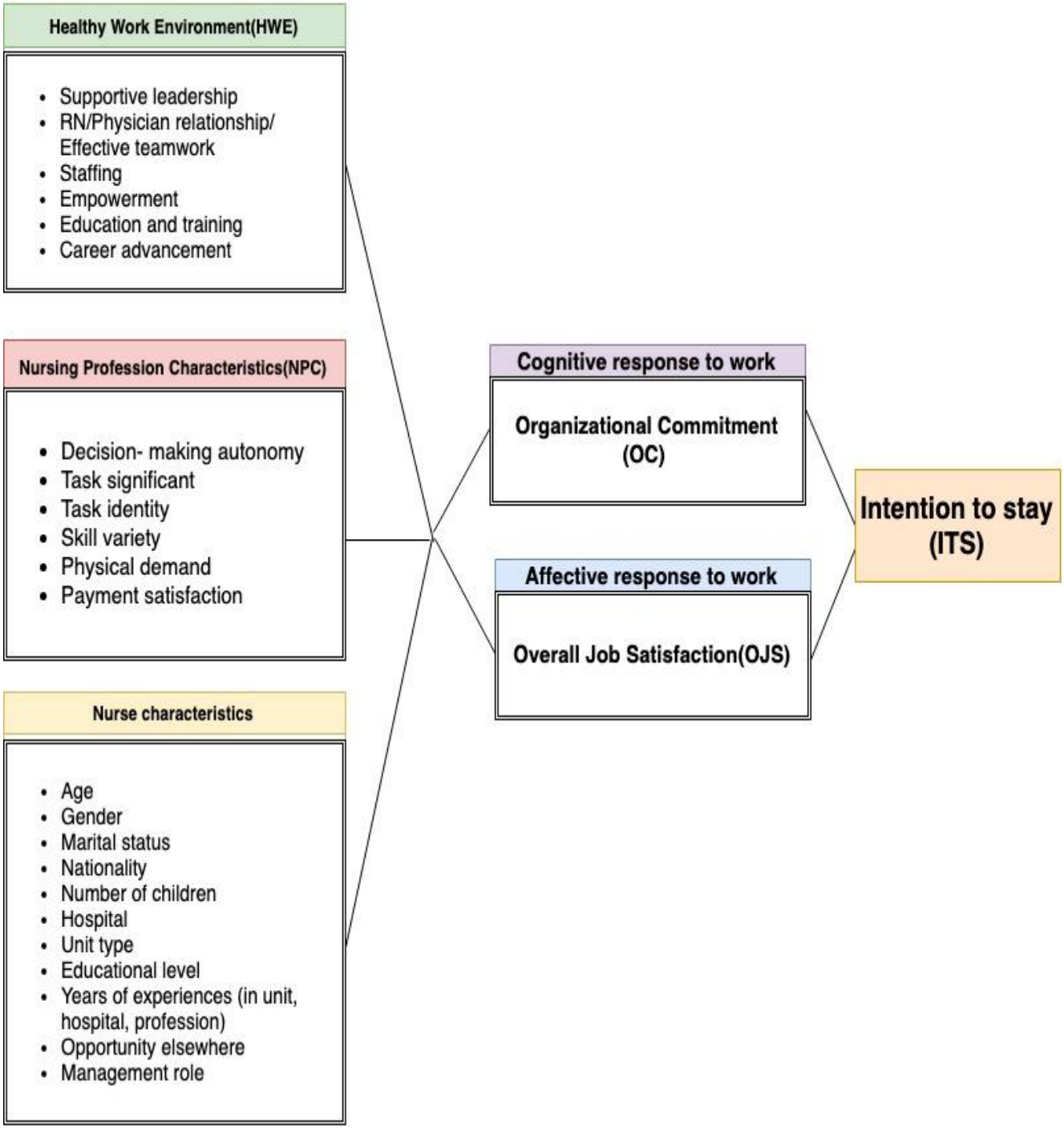


Figure 11: The proposed Conceptual Framework

6.3 Assessment Tools

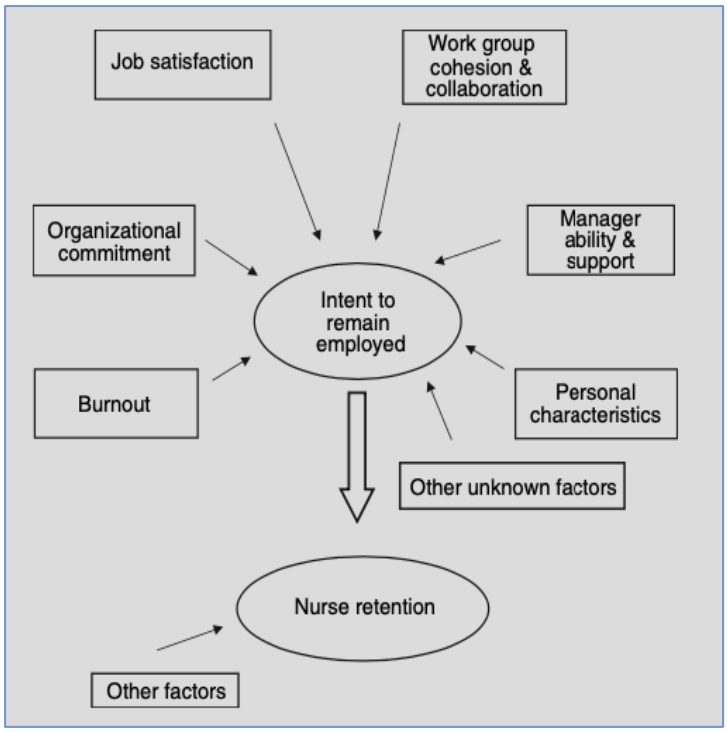
The following validated tools were identified in the literature and considered for use in this survey, which measure the concepts of Healthy Work Environment, Nursing Profession Characteristics, Nurse Characteristics, Organisational Commitment, Overall Job Satisfaction and Intention to Stay (Table 13). In addition, the survey included several demographic and profession related questions. After the development of the intention to stay conceptual framework for this thesis, a focused review of the literature was conducted to identify the suitable tool to assess the included variables. However, prior to that the result of the systematic review and concept analysis helped to identify some of the most common scales to assess healthy work environment and intention to stay.

6.3.1 Healthy work environment

The healthy work environment will be assessed using selected items from the Nursing Context Index (NCI), developed by Slater and McCormack (2007). The NCI was developed in three phases: the first phase involved conducting a systematic literature review to identify the essential characteristics used in related assessment tools reported in the literature; the second phase identified items to be included in the instrument using two focus groups were conducted with a randomly selected sample of nurses (n = 14) from different clinical settings; and confirmation of the instrument's face and content validity via panel feedback of the proposed instrument. The instrument was then piloted (n=23) and measures of internal consistency were produced using the Cronbach's alpha test. Criterion-related validity of the instrument was assured through comparison between factors contained in the instrument (Slater, McCormack and Bunting, 2009).

Findings confirm that the NCI is an accurate measure of healthy work environment factors that are influenced by the clinical setting. Initial testing of the tool and statistical

correlation of its constructs confirm the validity and usability of the NCI. The original instrument was designed to assess the nursing context by evaluating the nurses' perceptions of several related constructs including nursing work stress, job satisfaction, intention to leave and the elements of the practice work environment. The nature of the practice environment is assessed by using subscales which measure staffing and support, the doctor/nurse relationship, as well as nurse management and empowerment. Eight items related to development and training opportunities are included in the job satisfaction section. The reliability of all the subscales has been confirmed by a Cronbach's alpha score between 0.69 and 0.91 (Slater, McCormack and Bunting, 2009). In the original version of the scale, when completing the online survey, participants were asked to rate their response from 1 to 7,



where 1 = strongly disagree and 7 = strongly agree.

6.3.2 Job characteristics

In cross- sectional survey phase, the 'Work Design Questionnaire' (WDQ) was selected to be used to assess the job characteristics. WDQ was developed by Morgeson and Humphrey (2006) and is considered to be a comprehensive tool for measuring job

characteristics(Bayona, Caballer and Peiró, 2015; Gorgievski *et al.*, 2016; Ríos *et al.*, 2017). The tool was developed based on a comprehensive literature review which identified items reported in the literature. Some were then modified and new ones added. The selected items were validated by 540 incumbents holding 243 distinct jobs demonstrating excellent reliability with internal consistency score of .87. Convergent and discriminant validity were established through the confirmatory factor analysis (CFA). The WDQ has been translated into 11 languages and has been tested and validated in different settings(Gorgievski *et al.*, 2016; Ríos *et al.*, 2017). The instrument contains four major categories consisting of 18 subscales and a total of 77 items Morgeson and Humphrey (2006). For the purpose of this study, five subscales were used: decision making-autonomy, task variety, task significance, task identity and physical demand. Subscales which measure the social context were excluded since similar items of team-work interaction, and leadership support were included as healthy work environment subscales. Participants were asked to rate their response from 1 to 5 where 1 = strongly disagree and 5 = strongly agree. In addition, the nurses' pay satisfaction was measured using a single item question, where nurses were asked to rate their satisfaction with their payment and job financial position. The scale is from 1 to 5, where 1 = mostly dissatisfied and 5 = mostly satisfied. A high mean score indicates a positive perception of nurses toward their profession, and low mean score indicates a negative perception of their profession except for the physical demand subscale.

6.3.3 Individual nurse characteristics

Individual characteristics include personal and professional characteristics and were measured in this study using items identified in the systematic review and previous framework. Items relate to the ward, age, gender, marital status, nationality (Omani or Non-Omani), number of children, educational level, years of experience (in the unit, the hospital and the profession), opportunity elsewhere and the management role. Although, the previous

frameworks have not considered a generation differences, the result form the systematic review in phase two highlighted the importance of customizing the retention strategies based on generations. Thus, the age groups was designed to assess the generational differences as describe by a report published by Paw Research Center (Dimock, 2019) and as illustrated in the figure 12.

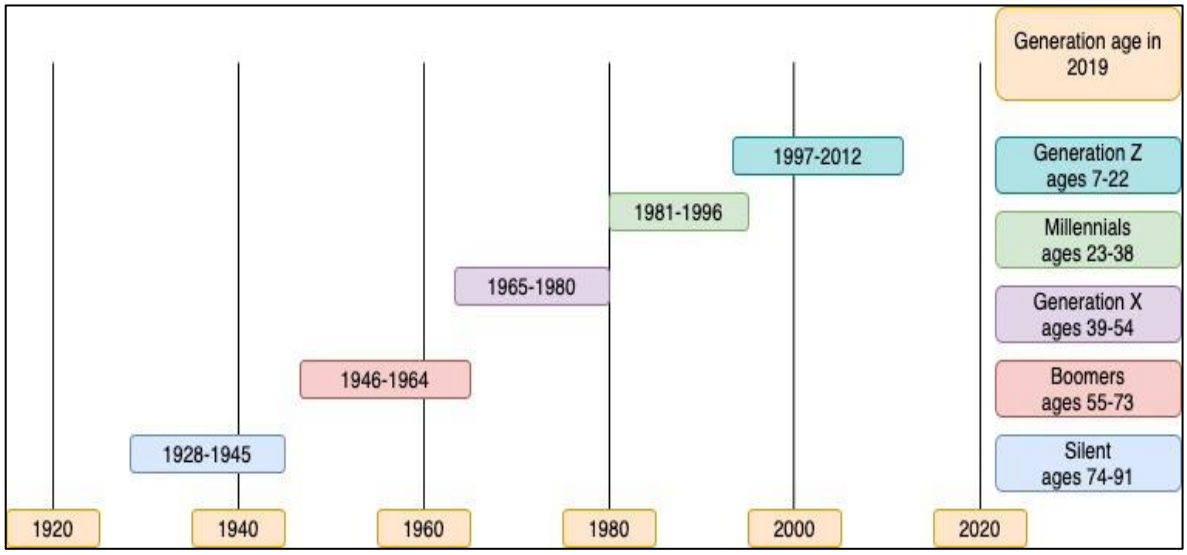


Figure 12: Generations' grouping, Pew Research Center (2019)

6.3.4 Organisation commitment

Organisational commitment was measured using six items from the National Organisation Study (NOS), which is a survey based on business organisations across the United States in which the unit of analysis is the actual workplace at organisation level (Kalleberg *et al.*, 1994). Items one to five closely resemble items 1, 3, 4, 5, and 6 respectively of the 15- item organisational commitment questionnaire (OCQ) developed by Mawday (1979). Kalleberg and his colleagues believe the six items capture the major aspects of commitment as measured by the OCQ. This is similar to Porter *et al.* (1974) definition of organisational commitment, as incorporated in the NOS, and is defined as the willingness to

allocate effort to the organisation, identification with the values of the organisation and seeking to maintain affiliation with the organisation. The items selected focused on the respondents' stance about the hospital as nurses' cognitive response to the work they do. The six items were preceded by the following lead-in statement: "Please tell me how much you agree or disagree with the following statements, or would you say that you strongly agree, agree, disagree or strongly disagree?" To obtain a factor score, the scores of the individual items are summed and divided by six. The index has a mean of 2.79 and a standard deviation of 0.49. The validity and reliability of the NOS measure are acceptable with a Cronbach alpha .73. (Kalleberg *et al.*, 1994). Low and high scores respectively represent low and high levels of organisation commitment.

6.3.5 Overall nurse satisfaction

The job satisfaction of the respondents was measured using the modified 6-item version of the Global Job Satisfaction Survey(Quinn and Shepard, 1974), Pond and Geyer (1987), and Farrell and Rusbult (1981) It includes five items which assess an employee's general affective reaction to his or her job without reference to any specific facets of the employee's job. In addition, there is a sixth item which measures the overall job satisfaction by asking "How do you feel about your job overall?" Responses are rated on a 5-point Likert-type scale with the anchors varying by item (5 = more satisfied). The composite scale score was calculated by summing responses to the six items. A mean of the six items on this scale serves as a job satisfaction score for each employee. Low and high scores respectively, represented low and high levels of job satisfaction. The Scale's validity has been established by Quinn and Shepard (1974). The coefficient α reliability estimates for this measure was 0.93 in a study of 295 blue-collar industrial workers (Farrell and Rusbult, 1981) and 0.90 for

hospital employees (Pond and Geyer, 1987). However, the reliability of the tool had been confirmed by Cowden and Cummings (2015)

6.3.6 Intent to stay

The McCain Behavioural Commitment Scale (MBCS), later renamed the McCain Intent to Stay Scale (McCloskey, 1990) was used in this study to determine the factors affecting nurses' intent to stay within the hospital setting. The MBCS is comprised of questions about the employee's intent to remain in the present job as a measure of behavioural intention to continue working in their current unit. The dependent variable, intent to stay, is an individualised internal perception of the probability that the nurse will remain employed with the organisation (Price and Mueller, 1981). It represents the individual intentional behaviour rather than an actual organisation measurement of employees' retention. It is seen as a meditative stage connecting the attitudinal component of nurses about their job and work environment as opposed to the actual behaviour of remaining employed (Alexander *et al.*, 1998). Although the instrument is called the behavioural commitment scale, it has been used to measure intention to stay in the organisation in the nursing literature (AbuAlRub *et al.*, 2016; Al-Hamdan, Banerjee and Manojlovich, 2018).

Intention to stay was measured using a five-point Likert scale with five items focusing on nurses' attitudes and intention behaviour toward their current position; the scale ranged from 1 indicating "strongly disagree" to 5 indicating "strongly agree." The overall Cronbach alpha score was reported as 0.88. The content validity of the McCain's Behavioural Commitment Scale was based on the literature and the judgment of a panel of experts (McCloskey, 1990). The mean score of MBCS indicates the level of intention to stay, where the mean score within agree and strongly agree indicates high intention to stay, a mean score within neutral level indicates a moderate level of intention to stay and a mean score within

disagree and strongly disagree indicates a low level of intention to stay (Abualrub and Al-Zaru, 2008; Al-Hamdan, Manojlovich and Tanima, 2017; McCloskey, 1990).

In summary, a 74-item questionnaire was developed, consisting of questions from five validated questionnaires. In addition, 12 of demographic questions were included and summerised in table 13. The survey was written in English and the original versions of the assessment tools were included without translation into Omani. This was appropriate for the study because the main language used in all Omani nursing educational institutions is English and competency in English language is required by nurse education institutions, where students are required to pass English test based on the institutional requirements. Furthermore, the international recruited nurses in Oman must all pass an English language test to ensure they are English proficient as requirement for their recruitment (Al Salmi, 2018). Consequently, the use of English for the survey was a means of ensuring it was accessible to all participants.

Table 13: Assessment tools

The concept	The name of the tool	Number of items	Reference/s
Healthy work environment	Nursing Context Index (NCI)	26 items	(Slater, McCormack and Bunting, 2009)
Job characteristics	Work Design Questionnaire' (WDQ) and payment satisfaction	19 items	Morgeson and Humphrey (2006)
Individual nurse characteristics	Demographic information	12 items	(Boyle *et al.*, 1999; Cowden and Cummings, 2015)
Organisation commitment	Organisation commitment items from the National Organisations Study (NOS)	6 items	(Kalleberg *et al.*, 1994)
Overall nurse satisfaction	Global Job Satisfaction Survey	6 items	(Quinn and Shepard, 1974; Pond and Geyer, 1987)
Intent to stay	The McCain Behavioural Commitment Scale (MBCS) further developed into the McCain Intent to Stay Scale	5 items	(McCloskey, 1990)
Total		74 items	

6.4 Pilot phase (Phase 3)

6.4.1 Introduction

The terms "pilot study" have been used to describe a 'mini' version of a full-scale study(Arain *et al.*, 2010). Pilot studies broaden the researcher's' perspective and can enhance the likelihood of success of the main study (Van Teijlingen and Hundley, 2002). In the current study, a pilot phase was conducted using two methods: an expert panel review; and a pilot of the proposed survey to check acceptability in terms of length, content and understanding. The main aim of this phase was to identify potential limitations regarding the tool's suitability and acceptability in the Omani healthcare setting. The pilot study had two main aims a) to identify potential difficulties participants may have when completing the survey and b) to engage and sense check with a small number of experts working in Oman. The following section includes a description of the methods and results of the pilot study.

6.4.2 Expert Review

Method

A purposive sampling strategy was used to identify three experts on in healthcare workforce management. They all had academic positions in different academic institutions in Oman. All had previous clinical/management experience in the Omani healthcare system. An invitation letter and participants' information leaflet (appendix 5) were emailed to the three participants. All agreed to participate and interview appointments were arranged. All papers including the study's aims, research questions, proposed conceptual framework and the 74-item questionnaire were sent to the three experts two weeks before the interview due date. The interviews took place in different locations based on the participants' preference. On the day of the interview, all experts were asked to sign a consent form prior to the interview. The participants were asked to review the questionnaire prior to the interview and

were asked during the interview to identify any limitations in terms of acceptability, appropriateness and understanding of the questionnaire items in the Omani setting. Further interview round and modification in the interview questions was anticipated based on the result of the first round.

Result

The three experts highlighted that using mixed method with more focus on the qualitative data collection to assess both the perception of the work environment and intention to stay. Their feedback revealed that the conceptual framework of this thesis is well structured, comprehensive and informative in terms of the variables, inclusion, and planned statistical analysis. One expert suggested that it would be good to incorporate the Organisational Career Management (OCM) validated tool (Kong, Cheung and Song, 2012). The OCM was originally designed to assess career development among employees from the tourism and hotel management industry (Kong, Cheung and Song, 2012). The expert felt that the OCM tool comprehensively assess organisations' efforts to enhance the career development via training and education opportunities among their employees. Additionally, the tool evaluates the culture of career management in the organisation. The OCM is a precise measurement tool that has been developed and used to test the complex relationship between employees' career development perception and several outcome measures, such as satisfaction, organisation and job commitment. The tool recommends use of an advance statistical procedure called structural equation modelling (SEM) (Kong, Cheung and Song, 2012; Uysal Bayraktar *et al.*, 2015).

The suggested tool was retrieved from the literature, along with all the information about the development and testing of the tool. A comprehensive discussion between the primary researcher and supervisors was conducted, and a clear comparison made between the

NCI's items and the previously selected items. The research team agreed to incorporate the OCM tool, as it was felt that perceptions related to career development were important. The lead researcher contacted the author of OCM and obtained permission to use the tool. The OCM tool has been developed and tested by Kong et al. (2012). The development process of the tool followed procedure of Churchill J (1979) which included four main phases including a) identifying domain of the concepts, b) establishing the initial items, c) gathering data based on the developed items and finally d) evaluation of the validity and reliability of the proposed tool. The procedure involves conducting a comprehensive literature review and in-depth interviews, pilot testing to assess the reliability and wording and finally collecting the main data. The final version of the OCM scale consisted of 13 items which assess, organisation career development using three domains (career appraisal, career development and career training). Each item is rated using a seven-point Likert scale (1= strongly disagree, 7= strongly OCM included as healthy work environment attributes. The results from the expert interviews confirmed that there were no further specific limitations in the proposed conceptual framework or proposed assessment tools. The final list of assessment tools that were used in the survey are presented in table 14 and the full survey is in appendix 8.

Table 14: Final list of identified assessment tools

The concept	The name of the tool	Number of the items	References
Healthy work environment	Nursing Context Index(NCI)+ Organisational Career Management (OCM)	18+ 9= 27 items	(Slater, McCormack and Bunting, 2009) Kong, Cheung and Song (2012)
Job characteristics	Work Design Questionnaire' (WDQ) and payment satisfaction	19 items	Morgeson and Humphrey (2006)
Individual nurse characteristics	Demographic information	12items	(Boyle *et al.*, 1999; Cowden and Cummings, 2015)
Organisation commitment	Organisation commitment items form National Organisations Study (NOS)	6 items	(Kalleberg *et al.*, 1994)
Overall nurse satisfaction	Global Job Satisfaction Survey	6 items	(Quinn and Shepard, 1974; Pond and Geyer, 1987)
Intent to stay	The McCain Behavioural Commitment Scale (MBCS) or the McCain Intent to Stay Scale	5 items	(McCloskey, 1990)
Total		75	

6.4.3 Survey pilot

Method

A total of 22 participants were purposively selected to fulfil a sampling matrix (Appendix 6) based on the type of clinical area, seniority, and job role. The sample matrix included variables related to gender (male or female), Nationality (Omani or non-Omani) and literacy (ability to read and write in English). All participants had a clinical role that was patient facing. Senior hospital approval from the chief nurse as well as from the head nurses was obtained. Following the approvals, I approached staff working within the clinical ward/departments and asked if they were prepared to look at the selected questionnaires and give comments. Participants were given an invitation letter and were asked to provide written informed consent. Participants were asked to comment on the questionnaire layout, clarity of the wording, spelling, identify if there were any ambiguous statements, time needed to complete the questionnaire and their thoughts about length of the questionnaire. Comments were recorded in written form.

Result

Data was analysed using descriptive statistics of the responses concerning the instructions, language, layout and survey length (actual time required to complete the questionnaire). The feedback from the 22 nurses indicated that the questionnaire was clear, with no ambiguous meanings and had a comprehensive layout. Although only one participant reported that the actual time needed to complete the questionnaire exceeded the estimated time of 15-20 minutes, only 30% of the respondents considered the 75-item questionnaire to be too long. The average time taken to complete the survey was 17 minutes (range 15-25). Twenty minutes to complete a questionnaire is acceptable in research terms (Fan and Yan, 2010; Greenlaw and Brown-Welty, 2009). All proposed items were retained.

In conclusion, the suggestions received from the experts and survey pilot participants were considered to enhance the reliability of the study. No comments were received about the survey's clarity and language and therefore, the researcher was ready to move to the final phase of the study and to start data collection with the cross-sectional survey.

6.5 Cross-sectional survey (phase 4)

The aim of phase four was to examine the complex relationship between the healthy work environment and intent to stay among nurses working in public hospitals in Muscat, Oman. Participants were invited to complete an online self-completion questionnaire. This section of the thesis presents information about the method used (study setting, population, sample recruitment, inclusion criteria, sample size, plan for data analysis, ethical considerations) and results.

6.5.1 Method

Setting

During phases three and four, data was collected from nurses employed by three large, tertiary, public funded teaching hospitals in Muscat, Oman (Sultan Qaboos University Hospital (SQUH), Royal Hospital (RH), and Khawlah Hospital (KH). SQUH, is a government institution located on the campus of the Sultan Qaboos University, it was established in 1990 and has 425 beds. RH was established in December 1987 and has 630-inpatient beds and 26 wards/units. KH was established in 1974 and has 517 beds and was the first surgical hospital in the Sultanate. Nurses working in these three hospitals represent 27% of the total nursing workforce in Oman. In addition, RH, and KH represent typical Minister of Health (MoH) hospitals whereas the SQUH is typical of non-MoH government hospitals.

Study population and inclusion criteria

Approximately 4,873 full-time registered nurses work in the three hospitals (SQUH= 1277 nurses, RH=1936 nurses, and KH=1228 nurses) (MoH, 2019c). Although, a total population sample was proposed, the inclusion criteria included all nurses who had at least one-year of experience in their current position, were providing direct patient care, were willing to participate and able to speak and read English. The inclusion criteria included

female and male nurses as well as Omani, and Non-Omani nurses. Potential participants who were not providing direct patient care were excluded. Nurses who have managerial role were included unless they were not invovled in any direct patient care. A total of 3,100 nurses met the inclusion criteria and were invited to participate in the online survey.

Ethical approval and ethical considerations

Ethical approval from the University of Birmingham Research Ethics Committee was obtained prior to starting the pilot and main survey. The research protocol was then submitted to the Medical Ethical Committee at Sultan Qaboos University Hospital and the Centre of Studies and Research within the Ministry of Health and local ethical approval was obtained from both committees. After obtaining ethical approval for phase three and four, the primary researcher sent letters to the General Hospital Director of the KH and RH and the Deputy Director of Nursing Affairs of SQUH requesting access to the hospital and its employees. The primary researcher was then contacted by a hospital research representative(focal points) who agreed to be a link between the research population and the researcher.

Following this, the potential participants (3,100 nurses) were emailed the Participant Information Leaflet (PIL) and the online survey link. Participants were asked to complete the survey within three weeks. Prior to answering an online survey, participants were informed by means of a Participants Information Sheet (PIS) about study aims, significance, procedures, risks, study benefits, and voluntary participation. Participants were informed that their participation was voluntary, and they could withdraw/quit at any point or choose not to answer any question. Participants were advised that if they required any further information about the study, they could contact the principal investigator whose contact details were provided in the Participant Information Leaflet. The Participant Information Leaflet invited the nurses to click on an accept icon to start the survey, once they had read and understood the

information provided in the leaflet. The participants' decision to complete the survey was considered to be implied consent. The participants completed the study surveys voluntarily and could choose whether or not to answer any questions without any adverse consequences. Participants' anonymity and confidentiality were assured and maintained by removing all identifying information from all study documents. Completed surveys were labelled using unique study identifiers only and did not contain any recognisable information that would identify the respondent. The participants were informed their responses could be removed from the dataset until their emails were deleted, then it is not possible to identify their answers. In this way the principles underpinning ethical research practice with human participants were adhered to. Non-maleficence was assured through the maintenance of confidentiality, and anonymity, and informed consent was achieved.

A reminder email was sent every two weeks after the first email. In addition, verbal announcements were made by the head nurse of each ward where nurses were informed about the study and its purpose. Reminders were also placed on the hospital websites. Once the returned questionnaires had been checked for duplicates, all email addresses were deleted, therefore assuring anonymity during data analysis and report writing. Data was imported into a statistical analysis software (SPSS v 26) for data analysis. All paper source documents were kept in a locked cabinet in a locked office that could only be accessed by members of the research team.

Digital files were stored at UoB Research Data Storage (RDS) and all computer/USB devices were encrypted and password protected (UOB, 2017). Access to the electronic data was restricted to the research team members. No participants were individually named in any reports or publications arising from the study findings (UOB, 2017). The recruitment email detailed the study aims, significance, procedure, and potential benefits. The nurses were

informed that their participation was voluntary, and they could withdraw at any point or choose not to answer any specific question. Should participants require further clarification of study aims and procedures, the contact details of the principal investigator were provided in the Participant Information Leaflet (PIL). Implied informed consent was assumed based on respondents' decision to complete and submit the survey.

Recruitment

The data for the online survey was collected over a four-month period, the pilot phase lasted for a month. Participants were recruited using two methods. Initially, verbal announcements were made by the head nurse of each ward where nurses were informed about the study and its purpose. However, no pressure was exerted on the nurses by the head nurse to participate. Then, invitation emails were sent to the 3,100 nurses working in the selected hospital sites. The email included a link to the survey. Reminders were sent to the potential participants and posted on the hospital website pages every two weeks (total of eight reminders) from the beginning of the data collection procedure.

Data capture

The online questionnaire was designed utilising REDCap, which is a secure web-based application for building and managing online surveys and databases. REDCap provides a secure environment and easy management of the data. It offers daily backups, basic support and an audit trail feature which enhances security of the storage of participants' information (Patridge and Bardyn, 2018).

Sample size

Using Gpower software a sample size of 166 nurses was identified as necessary for the path analysis based on a medium effect size ($f2 = 0.15$), a significance level of 0.01 and 0.80 power. Previous studies of nursing populations using self-completion questionnaires suggest

that a good (68-86%) response rate can be achieved from nurses working in the same targeted hospitals (Al-Hamdan, Shukri and Anthony, 2011; Ammouri *et al.*, 2014; Al-Mandhari *et al.*, 2016; Raddaha, 2017).

Data cleaning and missing data

The collected data was exported from the REDCap software as excel sheets and then imported into SPSS v26 for data analysis. Duplicates were identified by entry of a duplicate email address, should this occur then the plan was to remove the latter entry. Data was screened for missing data and where the majority of data was missing (=>50%) then the case would be deleted. In the event of minor missing data and where possible, the method of mean imputation would be used (Tabachnick, Fidell and Ullman, 2007). This method has the benefit of not changing the sample mean of the variable. For categorical data, the equivalent method of mean imputation known as frequent category imputation was applied (Fox-Wasylyshyn and El-Masri, 2005; Van Buuren, 2018).

Data Analysis

The primary aim when undertaking statistical analysis is to summaries collected data and present it in numerical figures, calculate any correlations, associations and variations, and generalise and predict the occurrence of phenomena and their relationships (Hogg, McKean and Craig, 2005). Thus, it is crucial to select the most suitable statistical test consistent with the study aims and objectives. This section provides the detailed plan for the statistical analysis and the specific test selected to analyses the data and summarized in Table16.

In preparation for the data analysis, the data set was screened for missing values. A large number of missing values has a negative impact on the quality of statistical analysis and can lead to unreliable and biased results (Tabachnick, Fidell and Ullman, 2007; Hair *et al.*, 2017). Enders (2010) points out that missing values are relatively common in data sets used

in the social, behavioural and medical sciences and that some statistical tests cannot be performed when values are missing. One option for managing missing data is to delete the cases or variables affected, provided these variables are not critical to the study. This method is recommended when the sample size is large and/or when the respondents have not answered all the questions in the survey (Tabachnick et al., 2007). However, alternatives include mean imputation which has the benefit of not changing the variable sample mean. The equivalent method of mean imputation which is known as frequent category imputation is used to replace the missing value of categorical data by use of the most frequent entry for that category (Fox-Wasylyshyn and El-Masri, 2005; Van Buuren, 2018).

The next step is the assessment of normality and outliers of the study variables. Kline (2015) define normality when the shape of each variable data distribution follows a bell-shaped formation. It is important to assess data for normal distribution as this predicts which statistical tests can be used. In this study, a skewness–kurtosis approach was adopted to test univariate normality for each variable (Kline, 2015). This approach is recommended when the sample size is >300 (as is the case in this study) (Kim (2013). Either an absolute skewness value ≤2 or an absolute kurtosis (excess) ≤4 may be used as reference values for determining data normality (Kim, 2013; Mishra *et al.*, 2019).

Osborne and Overbay (2004) define outliers as survey responses that have unusually high or low values that make them distinctly different from other responses within the same variable (univariate outliers). Tabachnick, Fidell and Ullman (2007) characterize outliers as values that are extreme compared to the rest of the study data. Generally, outliers are classified into two types: univariate and multivariate. Univariate outliers represent cases with an extreme value in one variable, while multivariate outliers are cases with an unusual combination of scores on two or more variables (Tabachnick, Fidell and Ullman, 2007).

Outliers can be a unique combination of several responses that stand out from other responses across multiple variables, as in the case of multivariate analysis (multivariate outliers) (Osborne and Overbay (2004). Outliers can distort the results of a statistical analysis by increasing error variance, reducing the power of statistical tests and biasing estimates of substantive interest. Therefore, outliers must be detected and resolved to achieve adequate data quality. There are several possible ways of dealing with outliers. One option is deletion; if there are a few outliers, those values may simply be deleted, especially if the item is not well constructed or if many outliers are found for this variable (Tabachnick, Fidell and Ullman, 2007). As an alternative to deletion, the value may be changed to the next highest or lowest non-outlier value. Transformation of the entire variable is a further way of dealing with outliers. The plan in the current study was to screen the data for outliers using Tabachnick et al's. (2007) criteria (cases with standardised scores in excess of 3.29 ($p =< 0.001$, two-tailed test) and to use the illustrating graphical method as applied to a boxplot (see appendix7) (Tabachnick, Fidell and Ullman, 2007).

Although reliability of the tools used in the cross-sectional survey has been established in previous studies, the reliability was re-evaluated and compared with the results of the original studies. Reliability is concerned with the ability of an instrument to measure a particular construct consistently. Internal consistency reliability is the consistency of the score of individual items on an instrument, with the scores of a set of items, or subscale, which typically consists of several items that measure a single construct. Cronbach's alpha is one of the most common methods for checking internal consistency reliability (Adamson and Prion, 2013). Thus, Cronbach's alpha for all the scales was used to assess the scales reliability in this thesis. Cronbach's alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0

and 1, with higher values indicating greater internal consistency. A general accepted rule is that an α score of 0.6 to 0.7 indicates an acceptable level of reliability, and 0.8 or greater indicates a very good level. However, values higher than 0.95 are not necessarily good, since they might be an indication of redundancy (Tavakol and Dennick, 2011).

Based on the analysis plan, the demographic characteristics of the study sample were summarised using descriptive statistics, including frequency counts and percentages for categorical variables and means, standard deviations and range for numerical variables. Descriptive statistics of the main study's variables (healthy work environment, intention to stay, nurses' satisfaction, organisational commitment, and nursing profession characteristics) including the frequencies, percentage, mean and standard deviation were computed to illustrate the status of intention to stay, perception of healthy work environment, perception of nursing profession, level of satisfaction, and level of organisational commitment of nurses to answer the thesis' question number four.

Furthermore, bivariate analysis was conducted. A correlation matrix was created between the main study variables. This analysis was planned for two reasons: (1) to assess the potential direct correlations between the main study variables and the subscales and (2) to address the potential issue of multicollinearity. Multicollinearity is the linear relationship between two or more independent variables(Samuels and Gilchrist, 2014). Hosmer, Lemeshow and Sturdivant (2013) suggest that a high correlation between each potential predictor and the outcome variable should be examined prior to their inclusion in a multivariate model. Multicollinearity reduces the precision of the estimate coefficients, which weaken the statistical power within a regression model. Thus, the Pearson correlation coefficient was planned to be used to measure the direct correlation between the study's main variables and their subscales. Pearson's correlation coefficient is a statistical measure of the

strength of a linear relationship between paired data. The strength of the correlation was determined based on Evans (1996) suggestion that the absolute value of r between 0.00-0.19 indicates a very weak correlation. Results between 0.20 and 0.39 are considered "weak," a score between 0.4 and 0.59 as "moderate," a result between 0.60 and 0.79 as "strong" and a value between 0.80 and 1.0 indicates a "very strong" correlation. However, the cut off level of 0.60 to 0.70 as suggested by Munro (2005) can identify potential intercorrelation between variables which may cause problems with multicollinearity. Additionally, and for more validation, the Variance Inflation Factor (VIF) and collinearity tolerance were used to further assess for multicollinearity. Should the VIF value exceed 4.0, or be less than 0.2, it is suggested that multicollinearity is not an issue(Hair *et al.*, 2017). ANOVA and t-tests were also selected to assess the significant difference between groups based on the individual characteristics and because a post hoc test may be performed (if appropriate) to investigate where the differences between groups exist.

Finally, considering the complexity of the relationship between the included variables and the main outcome of interest in this study, the utilisation of path analysis and model fit was appropriate. A path analysis is used to test the hypothesised associations among the endogenous (dependent) and the exogenous (independent) variables in a particular model. A path analysis is a structural model that includes regression equations designed to test theoretically based causal relationships among a set of observed variables (Stage, Carter and Nora, 2004; Kline, 2011). On the other hand, mediating hypotheses present a scenario where we may know that X leads to Y, but the mediation hypothesis proposes a mediating, or intervening variable (that is, X leads to M, which in turn leads to Y)(Westfall, Judd and Kenny, 2015). An advantage of this statistical technique is that it allows the simultaneous analysis of complex models and affords the decomposition of correlations among variables,

thereby enhancing the interpretation of relations as well as the pattern of the effect of one variable on another. From the path analysis, the total effect, the direct effect and indirect effect via mediation can be demonstrated. The results of goodness of fit are a matter of how well the submitted data fit the proposed model and these results may support the tested causal relationships. The final decision, however, must not rely on only the results of the path analysis, and should involve consideration of relevant theory and findings from previous research (Stage, Carter and Nora, 2004).

- The significance level of 0.01 was adopted for the following reasons: The measures in this study have been relatively reliable (i.e., internal consistencies > 0.80).
- This study was conducted using self-report measures, and variance could contaminate some of the findings which require smaller significant levels to produce stronger evidence (Royall, 1986).
- The study sample size was calculated using G*Power analysis software and furthermore, which identified the need to conduct multiple statistical tests in order to answer the research questions (Kim and Choi, 2019; Samuels and Gilchrist, 2014).

The path analysis and model fitting were designed to examine the hypotheses relationship between the included variables in the conceptual framework as following;

H1. The healthy work environment is associated with nurses' intention to stay.

H2. The nursing profession characteristics are associated with nurses' intention to stay.

H3. Nurses' individual characteristics are associated with nurses' intention to stay.

H4. Nurses' satisfaction is associated with nurses' intention to stay.

H5. Nurses' organisational commitment is associated with nurses' intention to stay.

H6. Job satisfaction and organisational commitment mediate the relationship between healthy work environment and nurses' intention to stay.

H7. Job satisfaction and organisational commitment mediate the relationship between nursing profession characteristics and nurses' intention to stay.

H8. Job satisfaction and organisational commitment mediate the relationship between nurses' individual characteristics and nurses' intention to stay.

Assumptions for Path Analysis

There are particular assumptions which underpin a path analysis (Stage, Carter and Nora, 2004) which include:

- The relationship between variables is linear and additive.
- There is only a one-direction causal flow system, which means no direction of causality is reversed.
- Independent variables should be presented as interval scale. (Although when using ordinal data, creating dummy variables can overcome this assumption and it does not distort the stability of the regression or path coefficients (Boyle, 1970).
- Adequate sample size: The sample size should be at least equal to 10 cases for each parameter to be estimated in the model (Kline, 2011). Small sample size and/or large number of variables may reduce the accuracy of path analysis.
- The variables studied can be observed directly.
- The model analysed is correctly specified and based on relevant theories and concepts that mean theoretical models are examined or tested based on a theoretical framework that can explain the causal relationship between the variables studied.

- Low multicollinearity: No perfect multicollinearity is assumed in path analysis. Including multicollinear independent variables in a model will result in an inflated standard error of the path coefficient and possibly type II errors (Garson, 2014).

Kline (2011) recommend using at least four fit indices to report a model fit.

The following statistics were used to test the goodness of fit of the four models which were summarised in table 15:

- Chi-square statistics and degree of freedom (DF): A non-significant chi-square statistic indicates a good model fit. However, the chi- square is sensitive to the sample size and if the sample exceeds 200 the chi-square is almost always significant. Thus, other fit indices are necessary. The degrees of freedom (df) are defined as $(K^2 + K) /2 – t$, whereby K is the number of manifest variables in the path model and t is the number of independent variables to estimate the model implied covariance matrix.
- Absolute Fit Index: The root mean square error of approximation (RMSEA): contrary to the chi-square, RMSEA is insensitive to the sample size. An absolute fit index using 90% confidence interval for RMSEA should be less than 0.08 for a goodness of fit model.
- Increment Fit Index: Comparative Fit Index (CFI) which compares the existing model fit with a null model which assumes uncorrelated variables in the model. It is interpreted by percent of covariation in the data which can be explained by the given model. A very good fit result is when the CFI is between 0-1 (Bentler and Mooijaart, 1989).

- Tucker-Lewis Index (TLI) or Non-Normed Fit Index (NNFI) is relatively independent of sample size (Marsh et al. 1988, 1996). NNFI >= 0.95 indicates a good model fit and <0.9 indicates a poor fit.
- Standardised Root Mean Square Residual (SRMR): The SRMR is sensitive to the sample size. When considering the result, a SRMR value of 0 indicates a "perfect" fit, and < 0.05 indicates a "good" fit, compared to < 0.08 which indicates an adequate fit.

Table 15: Cut off Criteria for model fit (Hu and Bentler, 1999)

Measure	Unacceptable	Acceptable	Excellent
CMIN/DF	> 5	> 3	> 1
CFI	<0.90	<0.95	>0.95
SRMR	>0.10	>0.08	<0.08
RMSEA	>0.08	>0.06	<0.06

SmartPLS ® version 3 and AMOS 24 ® were planned to be used to explore the path coefficients of the relationships and to check the overall model accuracy (based on model fit indices). To test these causal relationships, several models were included to link the study variables differently. The intention was to create dummy variables to represent the 12 categorical variables: nationality, gender, marital status, number of children, age, educational level, work unit (ward), experience in current ward, experience in current hospital, experience in specialty, managerial role and the availability of opportunities elsewhere.

The following plan defines the key terms and explains the planned procedure for data analysis.

- Variables: (outcomes, mediators, covariates)
- Outcomes of intention to stay.
- Potential mediators – overall nursing satisfaction, and organisational commitment.

- Endogenous variable: overall nursing satisfaction, organisational commitment, and intention to stay (explanation: receive influence, but can affect each other).
- Exogenous variables: 11 individual factors relating to the healthy work environment and nursing profession characteristics (explanation: affect other and do not receive influence).

1. Proposed Pathways:

a. Direct Effects

Individual Factors (IF) (12) ---------- Intent to stay (ITS)

Nursing professional characteristics (NP)-- Intent to stay (ITS)

Healthy work environment (HWE) --------- Intent to stay (ITS)

Overall nursing satisfaction (NS)---------- Intent to stay (ITS)

Organisational commitment (OC)---------- Intent to stay (ITS)

b. Indirect Effects (mediation)

Individual Factors (IF) (12) ----------	Overall nursing satisfaction (NS------	ITS
Individual Factors (IF) (12) ----------	Organisational commitment (OC)----	ITS
Nursing professional (NP)----------	Overall nursing satisfaction (NS)-----	ITS
Nursing professional (NP)----------	Organisational commitment (OC)----	ITS
Healthy work environment (HWE)------	Overall nursing satisfaction (NS)-----	ITS
Healthy work environment (HWE)------	Organisational commitment (OC)----	ITS

Statistical Procedure

Path analysis was to be used to assess the relationships between individual factors (IF), a healthy work environment (HWE), organisation commitment (OC), overall nursing satisfaction (NS), nursing profession characteristics (NP) and nurses' intention to stay (ITS). The potential relationships among variables were to be tested and the overall model fit to be determined from multiple fit indices, such as the chi-square test and degree of freedom for model fit, CFI, RMSEA, and SRMR.

The plan was to test several models in order to find the best model. The major criteria for model selection were: (1) the model has a correct theoretical basis (accurate model specification); (2) the model has an adequate or good fit index; and (3) the directionality of the path coefficients of the model are confirmed by bivariate logistic or linear regression analysis. Table 16 lists the tests planned to answer the research questions

Table 16: Data analysis plan including all planned statistical tests			
Analysis	Statistical test	Purpose	References range
Normality and outlier	Data skewness and kurtosis Tabachnick et al. (2007) criteria/Graphic figure(boxplot)	Select the appropriate statistical test (parametric or non-parametric tests)	skewness value ≤2 kurtosis (excess) ≤4 score the 3.29 standard deviations from the mean
Instrument reliability	Cronbach's alpha	Assess the internal consistency of the used instruments	α of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater a very good level.
Participants' profile (Individual characteristics)	Descriptive statistics Count, frequency, percentage	Illustrate the demographics and professional characteristics of the study's sample.	
Main study variables (healthy work environment, intention to stay, NS, OC and NP)	Descriptive statistics Mean and standard deviation	Describe the nurses' perception of the main study's variables	
Association between study's variables	Pearson's correlation ANOVA and t- test	Assess for Multicollinearity between variables prior to their inclusion in a multivariate model	r: 0.00-0.19 "very weak", 0 .20-0.39 "weak", 0.40-0.59 "moderate", 0.60-0.79 "strong" and 0.80-1.0 "very strong".
Direct and indirect effect of the included variables on the main outcomes (intention to stay)	Path analysis and model fit index	Assess the complex relationship between independent variables and dependent outcome (intention to stay)	CMIN/DF >3 CFI <0.95 SRMR >0.08 RMSEA >0.06

It is crucial to explain how the Likert scale data were managed as all the data from the survey instruments except individual characteristics utilise a Likert scale. As mentioned earlier, the attributes of the healthy work environment were assessed using a seven point Likert scale, in contrast the rest of the variables used a five point Likert scale. Likert scales were developed in 1932 by Rensis Likert to measure attitudes. The typical Likert scale is a five or seven point ordinal scale used by respondents to rate the degree to which they agree or disagree with a statement (Sullivan and Artino, 2013). The main argument in the literature regarding the Likert scale is whether it should be treated as ordinal data where it is analysed by calculating frequency, percentage and median or whether it should be managed as interval data where it is analysed by use of the mean and standard deviation (Awang et al., 2016). Subedi (2016) suggests that there is a need to differentiate between a Likert item and a Likert scale. According to Subedi (2016) a "Likert item" is a statement that the respondent is asked to evaluate in a survey. Whilst a "Likert scale" is the sum of responses to several Likert items. Subedi (2016) suggests that one treats Likert items as ordinal data, whereas the sum of the items should be managed as interval data. However, most of the research based on Likert items and scales reviewed in the literature treat Likert items and scales as interval data. In the present study, it was planned to undertake a path analysis, and so Likert scale data was considered as interval data for analysis (Awang et al., 2016, Subedi, 2016, Sullivan and Artino, 2013). Thammanu et al. (2020) suggest the Likert scale should be broken down into equal mean intervals of 0.80 in a five point Likert scale and 0.086 in a seven point Likert scale in order to provide a weighted mean(Table 17). Based on the original analysis of the used instruments and how it has been managed in literature when treated as interval data, the weighted mean for Likert scale had been used to interpret the findings from the survey instruments.

Table17: Weighted mean for Likert scale			
Weight mean	Level	Weight mean	Level
Five point Likert scale		Seven point Likert scale	
from 1 to 1.79	Strongly disagree	from 1 to 1.85	Strongly Disagree
from 1.80 to 2.59	Disagree	from 1.86 to 2.71	Disagree
from 2.60 to 3.39	Neutral	from 2.72 to 3.57	Disagree somewhat
from 3.40 to 4.19	Agree	from 3.58 to 4.43	Neither
from 4.20 to 5	Strongly agree	From 4.44 to 5.29	Somewhat agree
		From 5.30 to 6.15	Agree
		from 6.16 to 7	Strongly Agree

6.5.2 Results

This section presents the analysis of the survey including the response rate, management of missing data, assessment of normality and outliers, evaluation of the reliability of the instruments, participant profiles, univariate analysis, bivariate and multicollinearity analysis and the path analysis and modelling fit.

Response rate

A total of 3100 participants in three hospitals met the inclusion criteria and were invited to participate. The response rate was low with 21.3% (677) participants completing the survey. The response rate varied between the three hospitals, with the highest response (32.2%) from the Khaoula Hospital, followed by the Royal Hospital (21.1%) and the lowest response (10.1%) from Sultan Qaboos University Hospital (SQUH). Most of the surveys returned were fully completed with only five missing data.

Missing Data

Initially, three questionnaires were removed as the participants did not meet the inclusion criteria of at least one-year experience in their unit. After excluding ineligible participants, the remaining records had a total of five missing values (0.044%). Three questionnaires were missing the participant's age, thus mean imputation was used to deal with these missing values and the missing values were replaced by statistical estimates of the missing values which in these cases was the mean (Tabachnick, Fidell and Ullman, 2007). In

two cases the name of the hospital was missing. These were replaced by the most frequent category(Royal hospital) (Fox-Wasylyshyn and El-Masri, 2005; Van Buuren, 2018).

Normality and outlier

Based on the criteria of Tabachnick, Fidell and Ullman (2007) to define outliers and the illustration of a boxplot, no univariate outliers were identified. After cleaning the data, all measured primary variables were examined for skewness and kurtosis. Results confirm that the skewness and kurtosis values for all measured variables were within the acceptable range of ±2 (see table 18)

Table18: Study variables' Skewness and Kurtosis

Subdomains	Skewness	Kurtosis
Overall ITS	-1.028	1.098
Overall NS	-0.931	1.488
Overall OC	-0.685	1.761
Overall STAFF	-0.701	1.681
Overall DNR	-1.063	1 281
Overall MS	-0.869	0 909
Overall NE	-0.558	0.845
Overall CD	-0.547	1 104
Overall TE	-1.083	1.745
Overall DM	-0.799	0 582
Overall TV	-0.698	0.089
Overall TS	-0.548	0 502
Overall TI	-0.884	1.016
Overall PD	-0.681	1.435
Overall HEW	-0.738	1 344
Overall NP	-0.959	0 229
a. Lilliefors Significance Correction OC = organisational commitment, ITS= intention to stay; NS = nurse satisfaction; NP = Nursing professional characteristics; HWE = Healthy work environment, Staff= staffing, DNR= Doctor-nurses relationship, MS Management support, NE= nursing empowerment,		

Reliability

The Cronbach's alpha test was used to assess reliability. The Cronbach's alpha score for all five instruments was high, indicating good internal consistency (Table 19)

Table19: Reliability test for main scales and subscales							
The concept	The name of the scale	No. items	Subscales	No. items	Overall Cronbach's alpha	Cronbach's alpha in this study	Cronbach's alpha in previous study
Healthy work environment	Nursing Context Index and Career Management Scale	27	Staffing	4	0.90	0.9	0.82
			Doctors-nurses' relationships and teamwork	3		0.89	0.84
			Management support and Leadership	7		0.84	0.70
			Nursing empowerment	4		0.87	0.80
			Career development	5		0.79	0.81
			Training and Education	4		0.70	0.84
Nursing Profession characteristics	Work Design Questionnaire' (WDQ) and payment satisfaction	19	Decision-Making Autonomy	3	0.80	0.84	0.85
			Task Variety	4		0.87	0.95
			Task significance	4		0.83	0.87
			Task identity	4		0.82	0.88
			Physical demand	3		0.94	0.95
			Payment satisfaction	1		NA	
Organisational commitment	Organisation commitment items form National Organisations Study (NOS)	6		6	0.73	0.73	0.74
Overall nurse satisfaction	Global Job Satisfaction Survey	6		6	0.88	0.88	0.98
Intent to stay	The McCain Behavioral Commitment Scale(MBCS) or the McCain Intent to Stay Scale	5		5	0.82	0.82	0.90

Profile of Participants

Participants' demographic and professional characteristics are presented in Table 20. The majority of respondents were female (81.2%), Omani citizens (63.8%) and married (77.6%). One third (35.0%) had two children. The mean age of participants was 36 (SD ± 7) years old with a range of 21 to 56 years old. More than half of the participants (56.2%) were

aged between 23 and 38 years old. Participants were employed by the three major hospitals in Oman with 45.4% employed by the Khaoula hospital, 43.8% worked in the Royal Hospital, and 10.8% were employed by SQUH. In terms of qualifications, most (59.2%) had a Diploma followed by 38% who had a bachelor's degree. Participants reported a wide range (1 to 25) of years of clinical experience since qualifying as a nurse. More than half (55.6%) of the participants had more than 10 years of experience as a qualified nurse, with an overall mean of 13 years (SD ± 7). In terms of years of experience in the current hospital, one third (34.9%) of respondents had more than 10 years of experience working in the same hospital. Most respondents worked in an acute nursing area with one third (34.9%) of respondents working in critical care areas (ICU/A&E/ OT), a quarter (25.7%) in surgical wards and (24.2%) in medical wards. Less than half (40.4%) worked in a managerial role (Table 20).

Table 20: Participants demographic and professional characteristics			
Variables		Frequency	Percent (%)
Gender [a]	Male	127	18.8%
	Female	547	81.2%
Nationality [a]	Omani	430	63.8%
	Non-Omani	244	36.2%
Hospital [b]	Khaoula	306	45.4%
	Royal	295	43.8%
	SQUH	73	10.8%
Age [a] **(years) (Mean ± SD) (36 ± 7)**	21–22	120	17.8%
	23–38	379	56.2%
	39–54	146	21.7%
	55 years old or older	29	4.3%
Educational level [a]	Diploma	399	59.2%
	Baccalaureate Degree	256	38.0%
	Master's degree	17	2.5%
	PhD	0	0.0%
	Other, Specify	2	0.3%
Marital status [a]	Single	143	21.2%
	Married	523	77.6%
	Divorced	8	1.2%
	Widowed	0	0.0 %
Children [a] **(Mean ± SD) (2 ± 1)**	None	174	25.8%
	One	126	18.7%
	Two	236	35.0%
	Three or more	138	20.5%
Number of years in the same clinical area [b] **(Mean ± SD) (7.8 ± 5.3)**	1-2	82	12.2%
	2 to 5 years	202	30.0%
	6 to 10 years	206	30.6%
	More than 10 years	184	27.3%
Number of years in the same hospital [b] **(Mean ± SD) (9 ± 6)**	1-2	61	9.1%
	2 to 5 years	164	24.3%
	6 to 10 years	214	31.8%
	More than 10 years	235	34.9%
Number of years as a qualified nurse[b] **(Mean ± SD) (13 ± 7)**	1-2	32	4.7%
	2 to 5 years	66	9.8%
	6 to 10 years	201	29.8%
	More than 10 years	375	55.6%
Available opportunity to work somewhere else [b]	Yes	186	27.6%
	No	488	72.4%
In a managerial role [b]	Yes	272	40.4%
	No	402	59.6%
Area of work[b]	Surgical	173	25.7%
	Delivery Ward	42	6.2%
	Critical Care units (ICU/A&E/ OT)	235	34.9%
	Medical	163	24.2%
	Obstruction and Gynecology (OBS/GYN)	14	2.1%
	Outpatient Units	22	3.3%
	Pediatric	25	3.7%
a Demographic characteristic, b Professional characteristic			

Univariate analysis

This section reports the univariate statistical analysis of nurses' intention to stay, overall satisfaction, organisation commitment as well as how nurses perceive their work environment and the profession. The frequencies and percentages were computed (see appendix 9) and mean and standard deviation ware calculated for all the variables (illustrated in table 21). In

terms of overall score for each main variable, the mean score for the healthy work environment was 4.55(SD 0.84) where most of the participants (44.67%) 'somewhat agreed' and 'agreed' that their work environment is healthy. Within the subscales of the healthy work environment, the majority of the nurses (84.9%) agreed that their environment enhanced teamwork and collaboration with doctors with a mean score of 5.42(SD 1.08). Furthermore, 73.3% of the nurses agreed that their work environment provided them with the training and education they needed with a mean score 5.03(SD 0.98). However, the majority disagreed with the statement that a clear career development and promotion plan was available, with a mean 3.43(SD 1.30) and 39.8 % did not agree staffing levels were adequate with mean of 4.17(SD 1.61).

In terms of the nurses' intention to stay, 31.64% agreed to stay with their current hospital. However, 20.04% of the nurses were neutral in their decision and 22.24% of the sample disagreed. The sample mean score of intention to stay was 3.25 (SD 0.92) indicating a moderate level of intention to stay. The score of the nurses' satisfaction showed highest percent of the sample (37.82%) were moderately satisfied with mean score of 3.61(SD 0.76). In terms of organisational commitment, 33% of the sample agreed with the organisational commitment statement, whereas 24.8% of the sample were neutral about the organisational commitment. The mean score of 3.54 and 3.61 for organisation commitment and nursing satisfaction respectively were moderate to high indicating a high level of commitment and satisfaction.

The majority of the sample agreed that their profession provided autonomy (50.70%), task variety (80.45%), task significance (81.63%), task identity (67.76%) and high payment (63.70%). However, 94.4 % of the sample nurses perceived their profession as high physical demand profession.

Table 21: Mean and SD of main tools and sub-scale items			
Variables			
Intention to stay	Sub-domain Item	Mean	SD
	Under no circumstances would I leave my ward	2.88	1 18
	Even if this ward does not meet all my expectations, I will stay	3.11	1 19
	I will probably spend the rest of my career on this ward	3.23	1 24
	I plan to keep working on this ward for at least two or three years	3.50	1 17
	I plan to work on my present ward as long as possible	3.55	1 24
	Overall score of intention to stay	3.25	0 92
Organisational commitment	I would turn down another job for more pay in order to stay with this organisation	2.78	1.05
	I would take almost any job to keep working for this organisation	3.22	1.03
	I find that my values and the organisation values are very similar	3.45	0.84
	I feel very high loyalty to this organisation	3.76	1.02
	I am proud to be working for this organisation	3.91	0 92
	I am willing to work very hard in order to help this organisation succeed	4.18	0 92
	Overall score of organisation commitment	3.54	0.63
Nurse satisfaction	All things considered, how satisfied are you with your current job?	3.31	0 93
	How does your job measure up to the sort of job you wanted when you took it?	3.46	0.87
	How does this job compare to your ideal job?	3.54	1.00
	In general, how much do you like your job?	3.56	0.85
	If a friend asked if he/she should apply for a job like yours with your employer, what would you recommend?	3.90	1.07
	If you had to decide again whether to take the job you now have, what would you decide?	3.93	1.07
	Overall score of nurse satisfaction	3.61	0.76
Healthy work environment	Staffing	4.17	1.61
	Doctors-nurses' relationships and teamwork	5.42	1.08
	Management support and Leadership	4.93	1.08
	Nursing empowerment	4.53	1 31
	Career development	3.43	1 30
	Training and Education	5.04	0 98
	Overall score healthy work environment	4.55	0.84
Nursing profession characteristics	Decision-Making Autonomy	3.37	0.72
	Task Variety	3.90	0 54
	Task Significance	3.97	0 55
	Task Identity	3.70	0 54
	Physical Demands	4.24	0 56
	Payment satisfaction	3.50	1 12
	Overall score nursing profession characteristics	3.82	0 33

Bivariate Analysis

This section includes the result of the bivariate analysis including the association between the nurses' individual characteristics and the main study variables. Additionally, relationships between the heathy work environment and its sub-scales and nurses' intention to stay is illustrated. Finally, the result of the multicollinearity assessment is presented.

The association between individual nurse characteristics and intention to stay, organisation commitment and overall nurse satisfaction

The aim in this part of the analysis was to explore if there was an association between demographic variables, intention to stay, healthy work environment, organisation

commitment, overall nurse satisfaction and nursing profession characteristics. To assess this the t-test and ANOVA test were performed (table 22). Where significant relationships were identified, post hoc tests were computed to confirm, where the differences occurred, between groups. Table 23 reports the test results and provides a summary of the significant and non-significant associations between the nurses' individual characteristics and their intention to stay.

Table 22: The association between individual nurse characteristics and other study's variables						
			ITS	NS	OC	HWE
Gender	Female	(n= 547)	3 20	3.59	3.53	4.51
		SD	0.89	0.77	0.61	0.82
	Male	(n= 127)	3.48	3.74	3.65	4.75
		SD	1.00	0.75	0.71	0.88
	P-value *		**0.003**	0.041	0.055	**0.00**
Nationality	Non - Omani	(n= 244)	3.68	3.95	3.79	4.78
		SD	0.75	0.69	0.51	0.74
	Omani - mean	(n =430)	3.01	3.43	3.41	4.43
		SD	0 92	0.74	0.66	0.86
	P-value *		**0.000**	**0.000**	**0.000**	**0.000**
Age group	21 - 22 yrs	(n= 120)	2.80 [b, c, d]	3.22 [b, c, d]	3.20 [b, c, d]	4.22 [b, c, d]
		SD	0.88	0.75	0.68	0.93
	23 – 38 yrs	(n = 379)	3.14 [a, c, d]	3.55 [a, c, d]	3.54 [a, c]	4.53 [a, c, d]
		SD	0.89	0.73	0.63	0.78
	38 – 54 yrs	(n = 146)	3.85 [a, b]	4.00 [a, b]	3.83 [a, b]	4.82 [a, b]
		SDT	0.75	0.66	0.49	0.79
	55 yrs +	(n = 379)	3.63 [a, b]	4.11 [a, b]	3.68 [a]	4.99 [a, b]
		SD	0.70	0.64	0.50	0.71
	P-value *		**.000**	**.000**	**.000**	**.000**
Education level	Diploma	(n= 399)	3.40 [b]	3.67 [c]	3.67 [b]	4.67 [b]
		SD	0 93	0.78	0.60	0.81
	BSc	(n = 256)	3.04 [a]	3.55	3.37 [a]	4.3[8a]
		SD	0.88	0.73	0.65	0.86
	MSc	(n = 17)	3 15	3.28 [a]	3.47	4.52
		SD	0.83	0.90	0.52	0.65
	Other	(n = 2)	3 30	3.92	3.5	4.96
		SD	0 14	0.35	0.24	0.42
	P-value *	P-value *	**.000**	0.072	**.000**	**.000**

Ward	**Surgical**	**(n= 173)**	**3.41** [c,d]		**3.62** [c,d,g]		**3.57**		**4.66** [c,d,e,f]	
		SD	0.91		0.81		0.67		0.842	
	Delivery	(n = 42)	3.60 [c,d]		4.04 [a,c,d,f]		3.63		4.85 [c,d,f]	
		SD	0.65		0.58		0.463		0.693	
	ICU	(n = 235)	3.22 [a,b,d]		3.62 [b,d,g]		3.51		4.49 [a,b,e]	
		SD	0.98		0.73		0.661		0.84	
	Medical	(n = 163)	3.01 [a,b,c,e]		3.39 [a,b,c,g]		3.57		4.45 [a,b,e]	
		SD	0.95		0.76		0.609		0.765	
	OBS / GYN	(n = 14)	3.55 [d]		3.88 [d]		3.69		5.14 [a,c,d,e,f,g]	
		SD	0.70		0.75		0.55		1.051	
	OPD	(n = 22)	3.28		3.60 [b]		3.38		4.19 [a,b,e]	
		SD	0.60		0.86		0.679		1.092	
	Paediatric	(n = 25)	3.27		4.00 [a,c,d]		3.45		4.58 [e]	
		SD	0.61		0.53		3.57		0.71	
	P - value	0.001	**.000**		0.608		**0.001**		**0.001**	
Do you have available opportunity to work somewhere else?			NO (n = 488)	YES (n = 186)	NO (n = 488)	YES (n = 186)	NO (n = 488)	YES (n = 186)	NO (n = 402)	YES (n = 272)
	Mean		3.24	3.28	3.63	3.58	3.57	3.51	4.54	4.62
	SD		0.97	0.79	0.78	0.73	0.64	0.61	0.88	0.70
	P - value *		0.64		0.477		0.266		0.247	
Do you have any managerial role in your unit?			NO (n = 402)	YES (n = 272)	NO (n = 402)	YES (n = 272)	NO (n = 402)	YES (n = 272)	NO (n = 402)	YES (n = 272)
	Mean		3.30	3.19	3.64	3.57	3.52	3.60	4.53	4.60
	SD		0.93	0.91	0.78	0.74	0.65	0.61	0.86	0.79
	P - value *		0.123		0.228		0.098		0.271	

			ITS	NS	OC	HWE
Number of children	None	(n= 174)	2.84 b, c, d	3.33 c, d	3.4 c	4.35 c
		SD	0.85	0.72	0.69	0.78
	One	(n = 126)	3.14 a, c	3.49 c, d	3.36 c, d	4.52 c
		SD	0.93	0.81	0.66	0.92
	Two	(n = 236)	3.58 a, b, d	3.84 a, b	3.70 a, b, d	4.70 a, b
		SD	0.82	0.72	0.58	0.80
	Three and >	(n = 138)	3.33 a, c	3.71 a, b	3.56 b, c	4.61 a
		SD	0.95	0.72	0.58	0.85
	P-value *		**.000**	**.000**	**.000**	**.000**
Hospital	KH	(n= 306)	3.41 b, c	3.62	3.61 c	4.57
		SD	0.88	0.78	0.63	0.88
	RH	(n= 295)	3.22 a, c	3.63	3.58 c	4.60
		SD	0.93	0.76	0.61	0.74
	SQUH	(n= 73)	2.75 a, b	3.55	3.19 a, b	4.34
		SD	0.87	0.72	0.66	0.98
	P-value *		**.000**	0.751	**.000**	0.060
Exp. Ward	1-2	(n= 82)	3.22	3.74	3.56 d	4.64
		SD	0.85	0.76	0.63	0.84
	3-5	(n = 202)	3.19	3.58	3.44 d	4.49
		SD	0.94	0.78	0.67	0.88
	6-10	(n = 206)	3.28	3.54	3.45 d	4.54
		SD	0.94	0.73	0.64	0.89
	More than 10	(n = 138)	3.32	3.67	3.78 a, b, c	4.61
		SD	0.91	0.78	0.52	0.72
	P-value		0.534	0.156	**.000**	0.383

Exp. Hospital	**1-2**	**(n= 61)**	**3.15**	**3.80** [b, c]	**3.54**[d]	**4.71**
		SD	0.85	0.71	0.64	0.4
	3-5	(n = 164)	3.15 [d]	3.56 [a]	3.46 [d]	4.46
		SD	0.95	0.78	0.71	0.90
	6-10	(n = 214)	3.22	3.53 [a, d]	3.40 [d]	4.54
		SD	0.93	0.75	0.64	0.87
	More than 10	(n = 235)	3.38 [b]	3.68 [c]	3.75 [a, b, c]	4.61
		SD	0.90	0.77	0.52	0.75
	P-value		0.051	0.034	**.000**	0.167
Exp. As nurse	1-2	(n= 32)	2.86 [d]	3.57[b]	3.30 [b]	4.53 [b]
		SD	0.84	0.70	0.69	0.91
	3-5	(n = 66)	2.67 [c, d]	3.10 [a, c, d]	3.14 [c, d]	4.02 [a, c, d]
		SD	1.00	0.68	0.73	0.92
	6-10	(n = 201)	3.12 [b, d]	3.50 [b, d]	3.41 [b, d]	4.53[b, d]
		SD	0.86	0.79	0.67	0.88
	More than 10	(n = 375)	3.46 [a, b, c]	3.77 [b, c]	3.72 [a, b, c]	4.67 [b, c]
		SD	0.88	0.72	0.53	0.75
	P-value		**.000**	**.000**	**.000**	**.000**
Marital status	Single	(n= 143)	2.77 [b]	3.27 [b]	3.46	4.29 [b, c]
		SD	0.80	0.69	0.69	0.71
	Married	(n = 523)	3.39 [a]	3.71 [a]	3.58	4.62 [a, C]
		SD	0.91	0.76	0.62	0.85
	Divorced	(n = 8)	3.18	3.67	3.40	5.22 [a, b]
		SD	0.92	0.49	0.32	0.76
	P-value *		**.000**	**.000**	0.116	**.000**

Table 23: Non-significant and significant individual characteristics	
Non-significant Variables	Significant Variables
Length of work in the same ward	Gender Females are less likely to stay
Length of work in the same hospital	Nationality Omani are less likely to stay
Available opportunity to work somewhere else	Hospital Nurses' working at SQUH are less likely to stay Nurses' working in Khaoula hospital are more likely to stay
Managerial role	Age Age group 21-22 is less likely to stay Age group 39–54is more likely to stay
	Educational level Baccalaureate Degree holders are less likely to stay Diploma degree holders are more likely to stay
	Marital status Single nurses are less likely to stay Married nurses are more likely to stay
	Children Nurses with no children are less likely to stay Nurses with 2 children are more likely to stay
	Length of work as a nurse Nurses with 2-5 years are less likely to stay Nurse with more than 10 years are more likely to stay
	Ward Nurse working in medical wards are less likely to stay Nurse working in delivery ward are more likely to stay

The relationship between the healthy work environment and nurses' intention to stay

The Pearson correlation test was performed to explore the relationship between a healthy work environment (healthy work environment) and nurses' intention to stay (intention to stay) (Table 24). Results confirmed a statistically significant correlation between healthy work environment and intention to stay (r= 0.52; p=0.000). Results also confirm a weak to moderate correlation between intention to stay and healthy work environment sub-domains. A stronger correlation was identified between nurses' intention to stay and staffing (r=0.49), management support and leadership(r=0.49) and nursing empowerment (r=0.37). However, a weak correlation was found between nurses' intention to stay and career development (r=.18), training and education (r=.24) and doctor-nurse relationship and teamwork (r=.27).

Table 24: Correlation between healthy work environment and Intention to stay									
Subdomain		ITS	ST	DNR	MS	NE	CD	TE	HWE
Intention to stay (ITS)	R	1	0.49**	0.27**	0.49**	0.37**	0.18**	0.24**	0.52**
	P-value		.000	.000	.000	.000	.000	.000	.000
Staffing (ST)	R	0.49**	1	0.36**	0.46**	0.38**	0.27**	0.22**	0.69**
	P-value	.000		.000	.000	.000	.000	.000	.000
Doctor - Nurse relationship and teamwork (DNR)	R	0.27**	0.36**	1	0.31**	0.28**	0.13**	0.23**	0.49**
	P-value	.000	.000		.000	.000	.001	.000	.000
Management support and Leadership (MS)	R	0.49**	0.46**	0.31**	1	0.64**	0.33**	0.38**	0.82**
	P-value	.000	.000	.000		.000	.000	.000	.000
Nursing empowerment (NE)	R	0.37**	.038**	0.28**	0.64**	1	0.37**	0.36**	0.76**
	P-value	.000	.000	.000	.000		.000	.000	.000
Career development (CD)	R	0.18**	0.27**	0.13**	0.33**	0.37**	1	0.33**	0.64**
	P-value	.000	.000	.001	.000	.000		.000	.000
Training and Education (TE)	R	0.24**	0.22**	0.23**	0.38**	0.36**	0.32**	1	0.57**
	P-value	.000	.000	.000	.000	.000	.000		.000
Health work environment (HWE)	R	0.52**	0.69**	0.49**	0.82**	0.76**	0.64**	0.57**	1
	P-value	.000	.000	.000	.000	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).									

The association between the main study variables (job satisfaction, organisation commitment, healthy work environment, nursing preofession characteristics and nurses' intention to stay)

The Pearson correlation test demonstrated a moderate correlation between intention to stay, healthy work environment, NS and OC (table 25). However, the relationship is significantly weak between the nursing profession (NP) characteristics and the other study variables (intention to stay, healthy work environment, NS and OC).

Table 25: Correlation matrix between intention to stay and healthy work environment , NS, OC and NP						
Subdomain		ITS	HWE	NS	OC	NP
Intention to stay (ITS)	r	1	0.52**	0.55**	0.57**	0 26**
	P-value		.000	.000	.000	.000
Healthy Work Environment(HWE)	r	0.52**	1	0.53	0.43	0 25**
	P- value	.000		.000	.000	.000
Overall nurses' satisfaction (NS)	r	0.55**	0.53	1	0.53**	0 35**
	P-value	.000	.000		.000	.000
Organisational commitment (OC)	r	0.57**	0.43	0.53**	1	0 35**
	P-value	.000	.000	.000		.000
Nursing profession (NP)	r	0.26**	0.25**	0.35**	0.35**	1
	P- value	.000	.000	.000	.000	
**. Correlation is significant at the 0.01 level (2-tailed).						

Multicollinearity

As explained earlier multicollinearity simply refers to the linear relationship between two or more independent variables. Multicollinearity reduces the precision of the estimate coefficients, which weakens the statistical power in a regression model. Therefore, a correlation matrix was developed and explored to see if there were relationships between the main independent variables which were proposed in the conceptual framework (section framework development), including a healthy work environment, nursing satisfaction, organisation commitment and nursing profession characteristics. The correlation matrix showed that the bivariate relationship between the independent variables did not exceed 0.570 (Table 25). Additionally, and for more validation, the Variance Inflation Factor (VIF) and collinearity tolerance were assessed. Findings from the test confirmed the values for this model to be below 4 and that the tolerance statistics were above 0.2 (Table 26). Based on the multicollinearity criteria (section data analysis), findings confirm that multicollinearity is not an issue for the variables tested. Thus, all the independent variables were included in the path analysis.

Table 26: Variance Inflation Factor (VIF) and Collinearity Tolerance								
Coefficients [a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	SD. Error	Beta			Tolerance	VIF
1	(Constant)	-1.697	.410		-4.135	.000		
	Organisational commitment	.524	.065	.295	8.001	.000	.712	1.404
	Job satisfaction	.117	.093	.039	1.256	.210	1.000	1.000
	Healthy_work_environment	.058	.007	.315	7.787	.000	.590	1.696
	Job Characteristics	.289	.090	.114	3.208	.001	.764	1.309

Path analysis and the model testing

Path analysis and model testing was the final statistical step in this study to assess the direct and indirect effect of the independent variables on intention to stay. Several models were tested to find the best model. The analysis was based on a sample size of 674. Table 27 lists the variables and their type of data.

Table27: Study variables included in the path analysis		
Variables in the model		
Continuous	Ordinal/Nominal	Dichotomous
NP **HWE** **NS** **OC** **ITS (Main outcome)**	Marital status Number of children Age Educational level Work Unit Experience in current ward, current hospital, and in specialty	Nationality Gender Managerial role
Note: OC = organisational commitment, **ITS= intention to stay; NS = nurse satisfaction; NP = Nursing professional characteristics;** **WE = Healthy work environment score at nurse level**		

Based on the proposed model, the initial path model (model 1) had the following three equations:

$$ITS = \beta HWE + \beta NS + \beta OC + \beta NP + \beta IFs$$

$$NS = \beta HWE + \beta NP + \beta IFs$$

$$OC = \beta HWE + \beta NP + \beta IFs$$

Where intention to stay = intention to stay, healthy work environment = Health working environment, NS = Nursing satisfaction, OC = organisation commitment, NP = nursing professional characteristics and β IF = individual factors = β Nationality + β Gender + β age + β marital status + β number of children + β age + β educational level + β work unit +

β exp. in ward + β exp. Hospital + β exp. In specialty + β managerial role. The second model built upon the first model but without the NP score, while in the third model the healthy work environment was omitted. Model 4 was built as model 1 but without the direct effect of healthy work environment and NP on intention to stay. The fifth model was created as model 1, but added the path from OC to NS, and finally model six added in the path from NS to OC, with deletion paths that were not significantly considered, and some individual factors that could not be considered as confounding control variables. Therefore, to understand the underlying mediating effects of nursing satisfaction and organisation commitment on intention to stay, the indirect effects of NP, healthy work environment and of individual factors were measured in each model.

Models Results

Table 28 shows the six models tested prior to selecting the final model. Models had a significant chi-square statistic, denoting that the data did not fit the model adequately. However, the chi-square test is almost always sensitive to models that have a large sample size, and therefore, the significant result here does not necessarily reflect the actual model fit and other fit indices required (Kline, 2011) and so several fit indices were explored. As stated earlier, a good fit model is one with CMIN/DF ≤ 3; CFI ≥ 0.90, RMSEA of ≤ 0.05, and SRMR ≤ .08. Table 44 shows that model six had the best fit indices with CMIN/DF = 3.281; CFI = 0.930; RMSEA = 0.050; and SRMR = 0

Table 28: Summary of the tested models, and their fit indices							
Model	Model's Equations	Fit Indices					Findings
		Chi-Square	CMIN/DF	CFI	SRMR	RMSEA	
Model 1 With healthy work environment and NP	intention to stay = healthy work environment + NP + NS + OC + IFs NS = healthy work environment + NP + IFs OC = healthy work environment + NP + IFs	2149.122 DF = 656 P-value = 0.000	3.276	0.865	0.057	0.058	Model identified however, F2 > 0.35 with large effect size in path healthy work environment -> NS and OC only. 62.2% from intention to stay variance was identified, NS = 46.4%, and OC = 51.4%. Model is not highly fit. Signs of NP and some of individual factors are not consistent with the bivariate regression
Model 2 Without NP	intention to stay = healthy work environment + NS + OC + IFs NS = healthy work environment + IFs OC = healthy work environment + IFs	1501.089 DF = 453 P-value =0.000	3.314	0.897	0.053	0.059	Model identified however, F2 > 0.35 with large effect size in only path NP -> NS and OC, and low effect size in only path OC-> intention to stay. As well as 61 2% from intention to stay variance was identified, NS = 55.5%, and OC = 42.6%. Even model identified, however NP as an important dimension need to be tested.
Model 3 Without healthy work environment	intention to stay = NP + NS + OC + IFs NS = NP + IFs OC = NP + IFs	1543.898 DF = 453 P-value =0.000	3.408	0.883	0.054	0.060	Model well identified, most of paths were have low effect size < 0.15 except F2 > 0.15 with medium effect size in path NP-> NS only. 62.8% from intention to stay variance identified, NS = 55%, and 50.5% for OC. Even model almost identified, however healthy work environment as an important dimension need to be tested, and Signs of NP and some of individual factors are not consistent with the bivariate regression in intention to stay path.
Model 4 With healthy work environment and NP, and no direct path to intention to stay	intention to stay = NS + OC + IFs NS = healthy work environment + NP + IFs OC = healthy work environment + NP + IFs	2158.445 DF = 658 P-value = 0.000	3.284	0.864	0.057	0.058	Model well identified, most of paths were have low effect size < 0.15 except F2 > 0.15 with medium effect size in path NP-> NS, OC->intention to stay. 60% from intention to stay variance identified, NS = 55%, and 50.5% for OC. Model did not improve as direct effect of healthy work environment and NP into intention to stay deleted.
Model 5 like model 1 just added path from OC to NS	intention to stay = healthy work environment + NP + NS + OC + IFs NS = healthy work environment + NP + IFs + OC OC = healthy work environment + NP + IFs	2131.563 DF = 655 P-value = 0.000	3.254	0.866	0.058	0.058	Model well identified, most of paths were have low effect size < 0.15 except F2 > 0.15 with medium effect size in path NP-> NS, OC->NC 60% from intention to stay variance identified, NS = 62%, and 50.5% for OC. Model did not improve, but it has Empirically added path from OC to NS. No sign for improve.
Model 6 Based on trials from model 1 to 5, added path from NS to	intention to stay = healthy work environment + NS + OC + IFs NS = healthy work	2034.224 DF = 620 P-value =0.000	3.281	0.930	0.068	0.050	Model highly identified, most of paths were have low effect size < 0.15 except F2 > 0.15 with medium effect size in path NP-> NS, NC->OC, and healthy work environment ->OC.

OC, direct path of NP into intention to stay deleted, covariances were added and confounding variables were determined (individual control variables)	environment + NP + IFs OC = healthy work environment + NP + IFs + NS						62.8% from intention to stay variance identified, NS = 55%, and 58.3% for OC. Model improved and it over identified and has a good fit indices. All path coefficients are in the right direction, consistent with bivariate regression results.

Note. For simplicity, *Individual factors* in the table refer to a group of variables: nationality, Gender, marital status, Child groups, Age, education, experience, unit, and managerial rule; OC = organisational commitment, intention to stay= intention to stay; NS = nurse satisfaction; NP = Nursing professional characteristics; healthy work environment = Healthy work environment score at nurse level; DF= degrees of freedom; RMSEA= Root Mean Square Error of Approximation; CFI= Comparative Fit Index; SRMR= Standardized Root Mean Square Residual

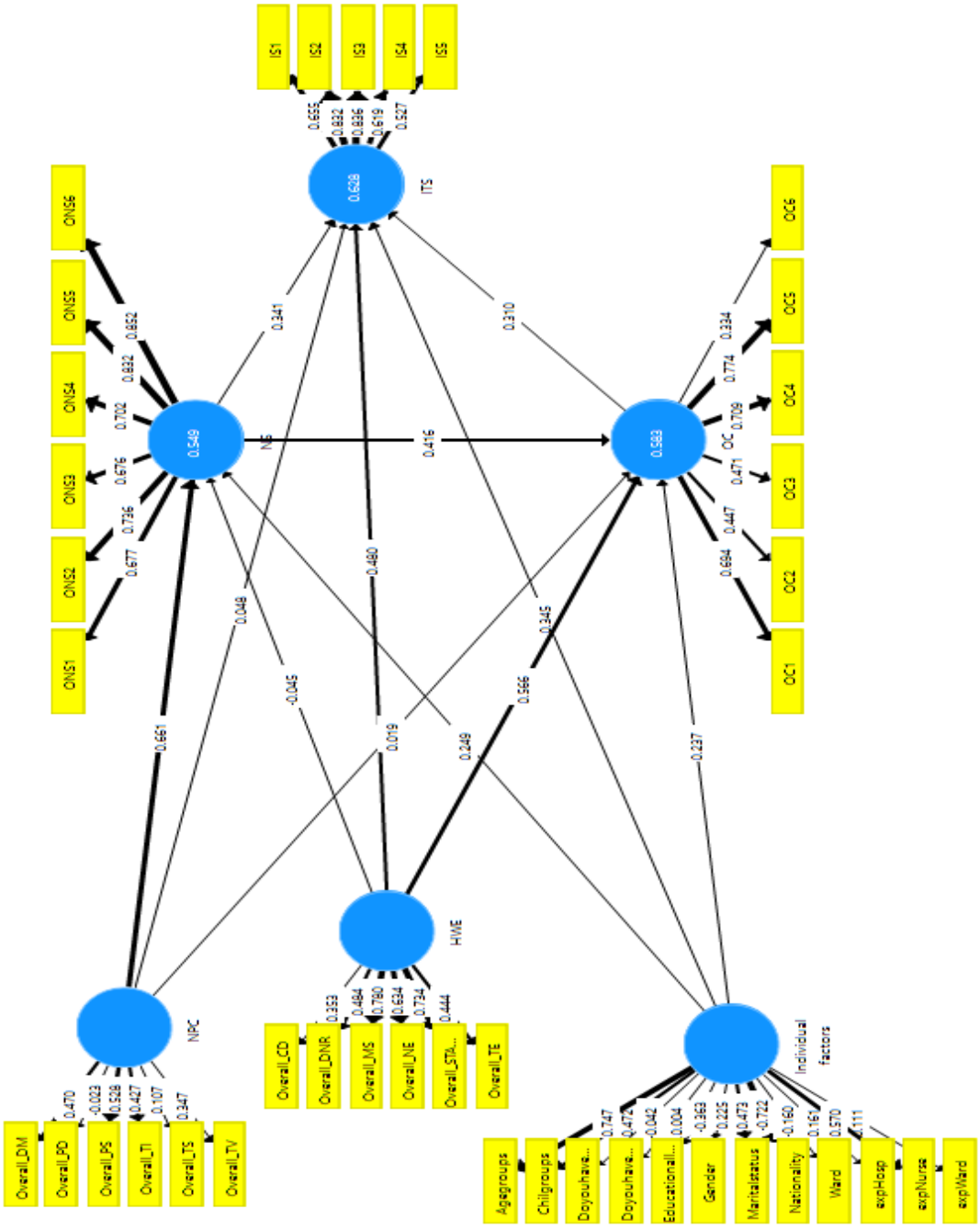


Figure 13: Summary of the tested models, and their fit indices

The effects of main study variables

The last step of the path analysis was based on the results of the model testing, where the path coefficient for direct and indirect effect was measured. Table 29 and 30 display the standardised path coefficients of the direct effects of the study variables and their significance in the final model. It was found that the healthy work environment as the main independent variable was mostly significant at all three equations in the model. The healthy work environment had a significant positive effect on nurses' intention to stay with a beta value of 0.25. This result indicates that the nurses' intention to stay score increased by 0.25 points for every one-unit increase in the total healthy work environment score on average. The results also revealed the significant positive impact of a healthy work environment on nurses' overall satisfaction as well as on their organisation commitment (Beta= 0.31, p-value= 0.000, Beta= 0.17, p-value= 0.000 respectively).

All the healthy work environment attributes indicate a positive impact on nurses' intention to stay. However, although the direct effect of the nursing profession characteristics on nurses' intention to stay was non-significant (Beta=1.33, P value= 0.185), it is interesting to note that its major impact goes indirectly through overall nurses' satisfaction and organisational commitment (Beta= 2.43, P-value= 0.015, Beta =2.20, P-value= 0.028, respectively). Both organisational commitment and nurses' satisfaction are mediating variables between the independent variables (healthy work environment, NP and individual characteristics) and the nurses' intention to stay. Model six was identified as a good fit, with all path coefficients in the right direction and consistent with bivariate regression results. The final model six explained 62.8% of the variance of nurses' intention to stay.

The effects of individual factors

Some individual characteristics had a direct effect on intention to stay whereas, job satisfaction and organisational commitment appeared to mediate the relationship between some nurses' individual factors and intention to stay. Among the individual factors, being an Omani nurse aged between 23-38 years had a direct significant negative effect on nurses' intention to stay. Whereas 6-10 years of experience in the same ward and no managerial role had a significant positive effect on intention to stay.

While there is no direct impact of the other individual characteristics on intention to stay, there is an indirect significant positive effect of been married, being 39 years old or older, working in delivery suite or the paediatric ward, with no opportunities to work elsewhere. This indirect impact was mediated through the overall nurses' satisfaction. Similarly, through the mediating effect of the nurses' satisfaction, a negative indirect effect was found among nurses who were working in the medical ward and did have an opportunity to work elsewhere. Other mediating factors in the final model (6) was model six was organisational commitment, which mediated a positive relationship between nurses who are non-Omani, aged between 23-38 years, with a diploma degree, no children with more than 6 years of experience in same ward and their intention to stay. Whereas the negative indirect effect through organisational commitment was identified among nurses who were Omani, age 55 years or more, had a BSc degree and had one child or more children.

In summary the positive, direct predictors of the nurses' intention to stay are the healthy work environment components, level of commitment and satisfaction, having 6-10 years of experience in the same ward with no managerial role. However, being an Omani, aged between 23-38 has a negative direct impact on the nurses' intention to stay. The nursing

profession characteristics failed to predict the nurses' intention to stay, although they enhanced nurses' satisfaction and organisational commitment.

Table 29: Summary of Path coefficient and indirect effect.								
Path coefficient	Beta	P Values	Path coefficient	Beta	P Values	Path coefficient	Beta	P Values
healthy work environment -> intention to stay	3.34	0.001	NP -> intention to stay	1.33	0.185	Individual factors -> intention to stay	4.84	0.000
healthy work environment -> NS	21.36	0.000	NP -> NS	14.69	0.000	Individual factors -> NS	10.73	0.000
healthy work environment -> OC	7.89	0.000	NP -> OC	2.35	0.019	Individual factors -> OC	3.80	0.000
NS -> intention to stay	4.04	0.000	NS -> intention to stay	2.50	0.013	NS -> intention to stay	5.11	0.000
NS -> OC	7.16	0.000	NS -> OC	5.68	0.000	NS -> OC	14.20	0.000
OC -> intention to stay	5.31	0.000	OC -> intention to stay	7.06	0.000	OC -> intention to stay	6.69	0.000
Specific indirect effect								
healthy work environment -> NS -> intention to stay	3.939	0.000	NP -> NS -> intention to stay	2.43	0.015	Individual factors -> NS -> intention to stay	4.60	0.000
healthy work environment -> OC -> intention to stay	4.429	0.000	NP -> OC -> intention to stay	2.20	0.028	Individual factors -> OC -> intention to stay	3.17	0.002
NS -> OC -> intention to stay	4.07	0.000	NS -> OC -> intention to stay	4.27	0.000	NS -> OC -> intention to stay	5.95	0.000
healthy work environment -> NS -> OC -> intention to stay	4.09	0.000	NP -> NS -> OC -> intention to stay	4.23	0.000	Individual factors -> NS -> OC -> intention to stay	5.44	0.000
healthy work environment -> NS -> OC	7.14	0.000	NP -> NS -> OC	5.36	0.000	Individual factors -> NS -> OC	8.18	0.000

Table 30: In details Path coefficient and indirect effect.								
intention to stay as DV	Beta	P-value	NS as DV	Beta	P-value	OC as DV	Beta	P-value
healthy work environment	0.25	0.000	healthy work environment	0.31	0.000	healthy work environment	0.166	0.000
Doctor - Nurse relationship and teamwork (DNR)	0.42	0.000	Doctor - Nurse relationship and teamwork (DNR)	0.28	0.000	Doctor - Nurse relationship and teamwork (DNR)	0.20	0.000
Staffing (ST)	0.34	0.000	Staffing (ST)	0.35	0.000	Staffing (ST)	0.02	0.000
Management support and Leadership (MS)	0.20	0.000	Management support and Leadership (MS)	0.22	0.000	Management support and Leadership (MS)	0.03	0.000
Nursing empowerment (NE)	0.43	0.000	Nursing empowerment (NE)	0.42	0.000	Nursing empowerment (NE)	0.41	0.000
Career development (CD)	0.35	0.000	Career development (CD)	0.01	0.000	Career development (CD)	0.33	0.000
Training and Education (TE)	0.37	0.000	Training and Education (TE)	0.23	0.000	Training and Education (TE)	0.20	0.000
NP	-0.14	0.123	NP	0.32	0.000	NP	0.22	0.001
NS	0.20	0.000				NS	0.27	0.000
OC	0.48	0.000						
Individual factors			Individual factors			Individual factors		
Gender			Gender			Gender		
Male	0.09	0.214	Male	0.04	0.502	Male	0.04	0.466
Female	-0.07	0.270	Female	-0.01	0.911	Female	-0.04	0.383
Nationality			Nationality			Nationality		
Omani	-0.16	0.020	Omani	-0.28	0.000	Omani	-0.23	0.000
Non-Omani	0.11	0.170	Non-Omani	0.22	0.002	Non-Omani	0.19	0.001
Age			Age			Age		
21–22	-0.09	0.546	21–22	-0.17	0.150	21–22	-0.09	0.351
23–38	-0.33	0.000	23–38	-0.13	0.013	23–38	0.10	0.016
39-54	-0.08	0 566	39-54	0.24	0.001	39-54	-0.06	0.341
55 and more	0.07	0.593	55 and more	0.31	0.012	55 and more	-0.22	0.033
Educational level			Educational level			Educational level		
Diploma degree	0.08	0.169	Diploma degree	-0.05	0.340	Diploma degree	0.19	0.000
BSc Degree	-0.08	0.210	BSc Degree	0.01	0.903	BSc Degree	-0.19	0.000
Master's degree	0.07	0.674	Master's degree	-0.28	0.072	Master's degree	-0.04	0.744
Other, Specify	-0.12	0.799	Other, Specify	-0.10	0.813	Other, Specify	-0.25	0.484
Marital status			Marital status			Marital status		
Single	-0.12	0.367	Single	-0.22	0.065	Single	-0.08	0.438
Married	0.14	0.260	Married	0.32	0.004	Married	0.09	0.317
Divorced	-0.07	0.767	Divorced	-0.19	0.375	Divorced	-0.32	0.071
Children			Children			Children		
None	-0.15	0.205	None	0.07	0.521	None	0.23	0.006
One	0.08	0.535	One	-0.14	0.258	One	-0.27	0.004
Two	0.15	0.247	Two	0.04	0.768	Two	-0.15	0.110
Three or more	0.02	0.897	Three or more	-0.07	0.554	Three or more	-0.20	0.038
Experience ward			Experience ward			Experience ward		
1-2 years	0.08	0.594	Less than 2 years	0.05	0.708	Less than 2 years	0.30	0.010
2 to 5 years	0.00	0.969	2 to 5 years	-0.05	0.612	2 to 5 years	-0.04	0.322

6 to 10 years	0.14	0.024	6 to 10 years	-0.13	0.026	6 to 10 years	0.17	0.041
More than 10 years	-0.30	0.012	More than 10 years	-0.03	0.781	More than 10 years	0.24	0.013
Experience hospital			Experience hospital			Experience hospital		
Less than 2 years	-0.37	0.086	Less than 2 years	0.27	0.166	Less than 2 years	-0.12	0.451
2 to 5 years	-0.15	0.329	2 to 5 years	0.18	0.193	2 to 5 years	0.09	0.407
6 to 10 years	-0.10	0.390	6 to 10 years	0.02	0.866	6 to 10 years	-0.16	0.065
More than 10 years	0.06	0.454	More than 10 years	-0.11	0.147	More than 10 years	0.09	0.407
Experience ward			Experience ward			Experience ward		
1-2	-0.22	0.322	1-2	0.07	0.745	1-2	-0.19	0.249
2 to 5 years	-0.27	0.123	2 to 5 years	-0.12	0.454	2 to 5 years	-0.05	0.678
6 to 10 years	-0.05	0.514	6 to 10 years	-0.09	0.244	6 to 10 years	-0.01	0.908
More than 10 years	0.06	0.415	More than 10 years	0.02	0.866	More than 10 years	0.01	0.815
opportunity to work somewhere			opportunity to work somewhere			opportunity to work somewhere		
Yes	0.06	0.281	Yes	-0.17	0.002	Yes	-0.06	0.176
No	-0.08	0.153	No	0.12	0.028	No	0.08	0.071
Managerial role			Managerial role			Managerial role		
Yes	-0.14	0.056	Yes	0.08	0.240	Yes	0.09	0.111
No	0.18	0.009	No	-0.06	0.364	No	-0.078	0.139
Ward			Ward			Ward		
Surgical	0.11	0.121	Surgical	-0.08	0.193	Surgical	-0.02	0.737
Delivery Ward	0.14	0.224	Delivery Ward	0.26	0.014	Delivery Ward	-0.05	0.563
ICU/A&E/ OT			ICU/A&E/ OT	0.00	0.935	ICU/A&E/ OT	-0.00	0.949
Medical	-0.07	0.328	Medical	-0.14	0.030	Medical	0.07	0.204
OBS/GYN	0.15	0.441	OBS/GYN	0.11	0.531	OBS/GYN	0.12	0.385
Outpatient units	0.20	0.197	Outpatient units	0.18	0.210	Outpatient units	-0.08	0.478
Pediatric	0.04	0.771	Pediatric	0.41	0.002	Pediatric	-0.09	0.384

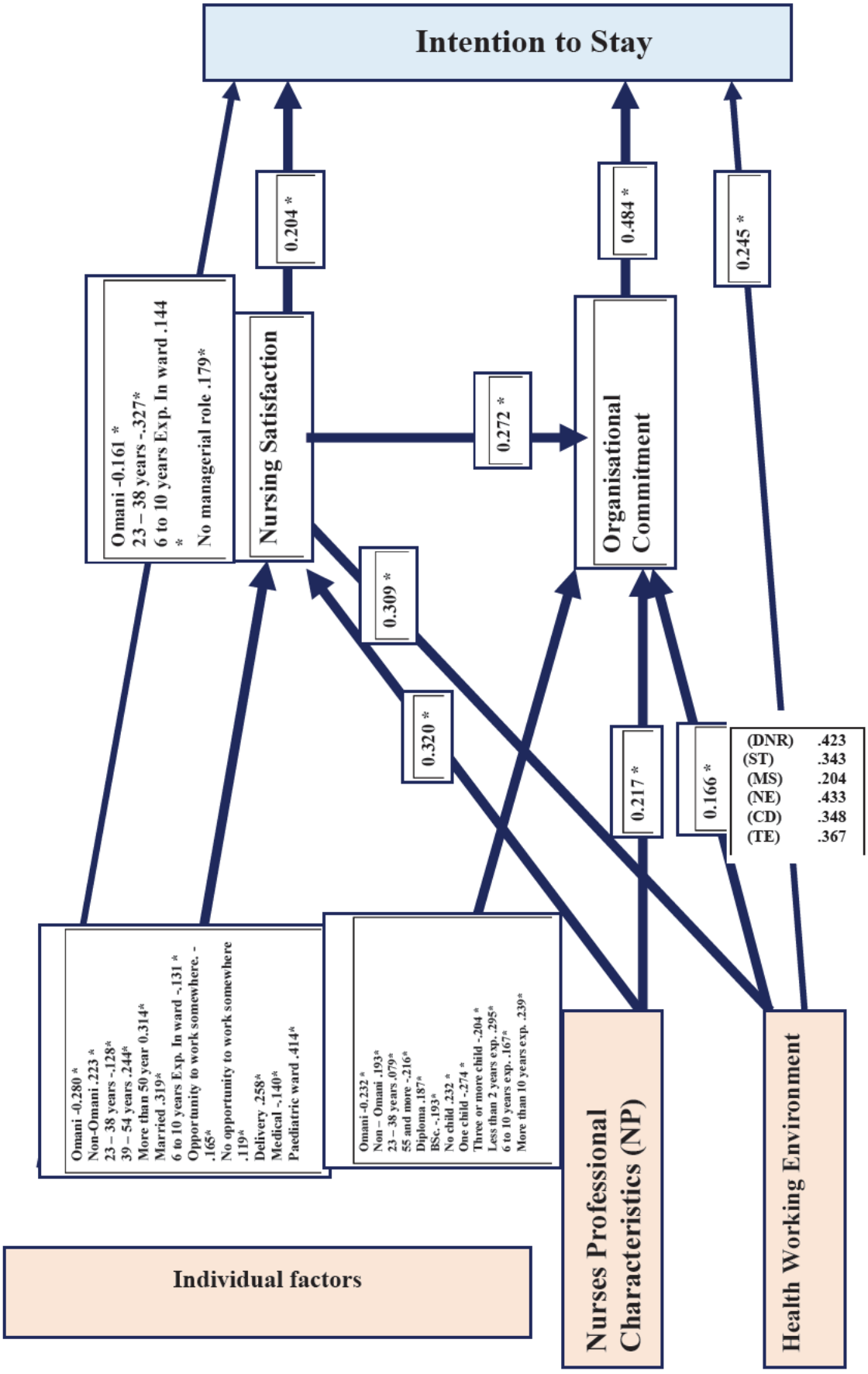


Figure 14: Final model

Chapter VII: Discussion

7.1 Chapter overview

In this chapter the key findings are considered with a particular focus on novel aspects. Detail is presented regarding the process and how each phase informed the study including the theoretical framework. The findings from the four phases are considered in light of the existing literature. Additionally, the current international initiatives to improve the healthy work environment (healthy work environment) and enhance nurses' intention to stay and their applicability to Oman are explored. Furthermore, the chapter evaluates the methodological strengths and limitations of the study and highlights the implications of the findings for workforce policy and practice and makes recommendations for future research.

7.2 Main findings

Within this research the construct of the healthy work environment was analysed and the term was conceptualised using the available literature. Specific attributes were identified and utilised. The concept analysis confirmed that the healthy work environment is a dynamic process rather than a noun or fixed notion. The key elements were building and maintaining effective teamwork relationships based on effective communication and collaboration. The healthy work environment has supportive leaders and managers who empower staff and provide them with opportunities for professional career growth.

The systematic review identified the determinants of nurses' intention to stay. These can be grouped into four main categories: individual indicators (personal and professional), organisation/profile, work environment, and patient related. Several work environment

variables were identified in the review and were significantly associated with nurses' intention to stay, such as leadership practice, empowerment, nursing workload and teamwork interaction. The evidence indicates that attention should focus on macro-level variables such as organisation characteristics and the work environment. Existing literature suggests there is a relationship between the healthy work environment and nurses' intention to stay. However, the multifaceted nature of intention to stay as a concept makes it challenging to present definitive conclusions based on the findings of the systematic review.

The survey which had analysed the responses of 766 nurses working in the largest public hospitals (number of beds and nursing workforce) in Oman, suggests that nurses in Oman perceive their work environment as moderately healthy. In terms of the healthy work environment subscales, the highest scores were noted in the doctor-nurse relationship, teamwork, and training and education. The lowest scores were reported for career development and staff availability. Using path analysis, one of the models tested (model 6) explained 63% of the variance in intention to stay. This model suggests that organisation commitment, nurses' satisfaction, and the healthy work environment' attributes, have the most substantial effect on nurses' intention to stay. Among the healthy work environment attributes, leadership practice and nursing empowerment were the strongest positive predictors. In addition, individual differences in terms of age, years of experience in the same ward and residence status played a significant role in influencing nurses' intention to stay with the current organisation. The nursing profession characteristics (autonomy, task variety/significance/identity, payment and physical demand) were identified as indirectly influencing factors through nurses' satisfaction and organisational commitment.

7.3 Novel aspects

This PhD includes the first international concept analysis of the nursing healthy work environment. The analysis provides an operational definition of the concept of the nursing healthy work environment using the identified attributes. The conceptual framework for the thesis was developed using the identified antecedents, attributes, and consequences identified in the concept analysis. Phase two of the PhD details the first systematic review that examines the relationship between the healthy work environment and nurses' intention to stay in an acute healthcare setting. Additionally, this is the first time that a path analysis has been used to examine the impact of the healthy work environment and nurses' intention to stay. Direct and indirect effects of the independent variables of nurses' intention to stay were explored. The conceptual framework explained the highest percentage of the intention to stay variance compared to previously reported frameworks. The intention to stay model grouped the study's factors in three main variables (individual, work environment, and profession factors) and identified the importance of nursing profession characteristics in enhancing the nurses' intention to stay in their organisation.

7.4 Interaction between the phases of the thesis

I believe this thesis is the first of its kind to use a multi-method, multi-phased approach to examine the impact of the healthy work environment on nurses' intention to stay in their work setting in Oman. The intention was to answer two research questions "Did nurses in Oman intend to stay and continue to work with their current organisation as a direct result of employer organisation investment by providing them with a healthy work environment?" and "Is there a relationship between intention to stay and the healthy work environment in the acute healthcare setting in Oman?" However, when exploring these

concepts in detail, it became clear that these questions were complex and multifaceted. There was a need to explore and operationalise the main concepts prior to examining their relationships. Thus, a concept analysis was executed to explore and further understand the concept. It became clear that the concept of the healthy work environment had been frequently utilised in the literature, yet there was inconsistency in its definition and use. As it is a relativity new term, it lacks definition consistency and therefore undertaking the concept analysis was appropriate.

To answer whether there is a relationship between the healthy work environment and nurses' intention to stay in the published literature, the most suitable and realistic approach was to undertake a systematic review. Although, my intention was that the results of each phase would inform the next phase, the results from the concept analysis were not directly applied to the systematic review. For example, the identified attributes of the healthy work environment were not directly used as search terms in the systematic review. The reason for this, was that it felt that use of the attributes would have limited the results from the systematic review. As attributes could have been missed during the concept analysis that could be identified with the systematic review. However, the findings of the concept analysis did indirectly help in the narrative synthesis and grouping of intention to stay factors within specific categories. Although the systematic review highlighted some of the conceptual frameworks which have been developed and tested, a more focused literature review was performed to evaluate the proposed intention to stay's frameworks. The identified frameworks were assessed for strengths and limitations. Based on this assessment and the results of the concept analysis, the conceptual framework was constructed. A further objective of the systematic review was to identify validated tools. Following this, a pilot phase was completed to assess the validated tools for their appropriateness, suitability, and

clarity prior to the selection of the most appropriate tools to use in the final phase (cross-sectional survey) of the PhD. The purpose of the cross-sectional survey was to determine if there was a relationship between the two concepts of interest within the context of the acute healthcare setting in Oman.

The initial plan was to integrate and triangulate both qualitative (focus group) and quantitative data (survey) in the final phase of the PhD study consistent with the post-positivist philosophical orientation of the study. However, it was felt to be appropriate to change the qualitative approach from focus groups to expert interviews because it help to answer the research questions about the assessment tools appropriateness. Additionally, it was important to gain expert opinion in terms of acceptability of the selected tools and to identify any potential gaps in terms of data to be collected. A further objective of the expert interviews was to gain senior level engagement and internal approval to undertake the cross-sectional survey. As the concepts were more complex than originally envisaged, a multi-method approach was utilised to answer the research questions.

7.5 Terminology

Within scientific disciplines, frequently used concepts and their definitions often change over time, as the use and understanding of the concept matures (Morse *et al.*, 1996b). As the healthy work environment was a term that was frequently used, but with different meanings and understandings, the main purpose of undertaking the concept analysis of a healthy work environment was to develop a contemporary definition. Historically, when examining the concept of the healthy work environment, the nursing literature has generally lagged behind other disciplines such as business and psychology. Initial attention to the term focused on the physical environment (Douglas, 1919; Somers and Somers, 1953). More

recently there has been greater interest in the psychosocial aspects of the healthy work environment. These include work interaction, feedback and recognition. One key objective was to synthesise existing views of the concept and identify its most common features to resolve gaps or inconsistencies in the nursing knowledge base. Following the concept analysis, it was clear that the concept of the healthy work environment is very dynamic. Moreover, unifying its definition in the literature will help to produce and build a robust evidence-base. However, building on the results of the concept analysis, some qualitative research work was needed to better understand the nurses' perception and experience of the healthy work environment.

The complexity encountered in the conduct of the concept analysis was illustrated by the use of the terms intention to stay and intention to leave. Initially, the two concepts were presented as contradictory concepts in the literature, where the positive factors associated with one concept, were considered as the negative factors of the other one. As an analogy, a similar association had been noted between the concepts of satisfaction and dissatisfaction (Herzberg, 1965). Until 1959, when Psychologist Frederick Herzberg developed the two-factor theory, which is more commonly known as the Herzberg's motivation-hygiene theory, the theory simply stated that there are specific factors in the work setting that enhance job satisfaction, whilst a distinct set of different factors enhance dissatisfaction. In conclusion, Herzberg (1965) found that both sets of factors act independently of each other. Similarly, work is needed to differentiate between the factors that relate to improving intention to stay and the factors that reduce intention to leave. However, some researchers have explored determinants of both intention to stay and intention to leave across several employment sectors, including tourism, social work, and transport (Nancarrow *et al.*, 2014; Ghosh *et al.*, 2013; Cho, Johanson and Guchait, 2009). In general, they conclude that despite the terms

sharing a number of similarities and some overlap in relation to predictors of intention to leave and intention to stay, the two concepts are not simply opposing terms (Nancarrow *et al.*, 2014; Ghosh *et al.*, 2013; Cho, Johanson and Guchait, 2009). This conclusion requires further consideration using empirical research among the nursing workforce.

7.6 The status of nursing Healthy Work Environment in Oman

With regard to the question of "How Omani nurses perceive their work environment?", the survey results demonstrate that respondents perceived their workplace as a moderately healthy environment. This finding is similar to that of Albashayreh *et al.* (2019) and Al Sabei *et al.* (2020) who explored the association between the work environment and several nursing outcomes such as turnover intention, nurses' satisfaction, burnout and perception of the quality of care in Oman. Outside Oman's context, the current study's results are congruent with recently published studies from the United Arab Emirates (UAE) and the Kingdom of Saudi Arabia (KSA) (AlMoosa *et al.*, 2020; Al-Maaitah, AbuAlRub and Al Blooshi, 2018), but contrast with Jordanian studies where the nursing work environment was reported to be less healthy (AbuAlRub *et al.*, 2016; Al-Hamdan, Manojlovich and Tanima, 2017). Although these countries, share similar cultures in terms of geographical location, language, religions and traditions, the primary distinction between them is the economic status, where Oman, UAE, KSA are ranked as high-income countries by the World Bank (2020). This result might highlight the impact of the country's economic status and the resources availability in creating better working conditions. This financial advantage might also be the main reason for these countries to be a chosen destination for nursing migration. Dywili, Bonner and O'brien (2013) concluded that while economic factors were the most frequently reported reasons for nurses' migration, nurses are migrating for better work

conditions, more training and education and a better career development plan. Although some countries can attract nurses with higher salaries and better benefits packages, they will need more than that to retain them.

The highest-rated subscale of the healthy work environment in the current study was the nurse-physician relationship. A similar finding about the nurse-physician relationship and teamwork was reported in recent publications from the UAE and Oman (Al-Maaitah, AbuAlRub and Al Blooshi, 2018; Albashayreh *et al.*, 2019). This finding may be explained by the availability and promotion of standards that encourage multidisciplinary team-working and the positive attitude of the physicians working in Oman towards collaborations and teamwork with nurses (Awadh, 2019; Al-Riyami, Fischer and Lopez, 2015). On the other hand, career development and promotion were rated as the lowest on the subscales of the healthy work environment. One possible explanation for this finding may link to a lack of a transparent, structured system for implementing career advancement and promotion in Oman (Al-Haddabi, 1996; Al-Riyami, Fischer and Lopez, 2015). This issue is identified as one of the challenges of healthcare workforce planning in Oman and was attributed to the weak appraisal system and further promotion in Omani hospitals (Al-Haddabi, 1996; Al-Riyami, Fischer and Lopez, 2015). Career planning and development are vital elements in developing the profession for all nurses. It is essential in changing the perception of nursing from viewing it as a job to a lifetime career (Donner and Wheeler, 2010). This really matters for nurses in Oman because this will change how nurses and society perceive nursing as a profession with opportunities for advancement. Furthermore, career development helps nurses to enhance their career resilience and improve their career competency (Kong, Cheung and Song, 2012; Donner and Wheeler, 2010). Therefore, it is recommended that a needs assessment of nurses' career development plans and career development programmes should

be established and aligned to nurses' needs in terms of professional development opportunities and career progression.

Another low rated subscale in the work environment was the availability of adequate staffing. This finding is consistent with that of Albashayreh *et al.* (2019), who reported that adequate staffing was reported as having the lowest mean value (2.01) among the nursing work environment's subscales. This finding was confirmed by Swiger *et al.* (2017b) who reviewed 46 studies from 28 countries and concluded that among the work environment subscales, the mean score (which indicates the level of favourability reported by nurses) of staffing and resource adequacy was the lowest. However, despite the need for adequate staffing levels, current financial restrictions and increasing healthcare demands in Oman and many other countries are unlikely to change in the short to medium term (Al-Mahrezi and Al-Kiyumi, 2019). Furthermore, as a direct result of the Covid-19 pandemic, studies from nine countries reported increasing concern regarding a severe negative impact of the lack of an adequate nursing workforce (ICN, 2021).

Considering the reported increase in the turnover rates due to heavy workload and higher stress levels, the ICN suggests the pandemic could generate a mass migration from the profession in the near future and estimates the global nurse shortfall could be amplified to nearly 13 million as a result of the pandemic (ICN, 2021; Buchan and Catton, 2020). Oman is not exempt from the negative impact of the pandemic on the nursing workforce, for example a recent study revealed a high prevalence of stress, anxiety and poor mental well-being, among young female healthcare personnel (61.1% nurses) who interacted with known or suspected Covid19 patients (Badahdah *et al.*, 2020). However, it may be that action to address deficits identified using the subscales of staffing availability and career development and advancement might prevent nurses moving on to more advanced roles because of the

need to preserve an adequate number of staffing at the bedside. Therefore, initiative and solution focused frameworks were introduced internationally to fill the gap and maintain the required balance. This equally applies to the Omani healthcare setting, which is discussed later in this chapter.

7.7 Issues and initiatives

A number of interesting discussion points have arisen through the different phases of this research (literature review and survey results) these include; filling the gap, going for Gold through Magnet accreditation, the importance of leadership and empowerment, perceptions of nursing including the nursing now initiative, nursing characteristics, individual characteristics, and finally the relationship between the healthy work environment and intention to stay.

7.7.1 Filling the gap

There is global consensus and concern relating to healthcare workforce supply. The nursing workforce is the largest workforce group in healthcare. The global shortage of nurses was estimated at 5.9 million nurses prior to the Covid-19 pandemic. The ICN estimates the shortage is now more likely to be 13 million nurses. This is a result of the current shortage and an aging workforce exacerbated by the impact of the Covid-19 pandemic(ICN, 2021; Buchan and Catton, 2020). Thus, multiple initiatives are required to fill the gap.

A number of initiatives have been implemented in the USA and UK (Barton, Bevan and Mooney, 2012) and include international recruitment, development of new access routes including apprenticeships, increasing the number of training opportunities and the development of opportunities for ancillary nursing roles for example, healthcare assistant and nursing assistants. This multi-mode approach is required and there is early evidence that the

gap is being addressed (Rosser, 2016; Kessler *et al.*, 2020). Currently, the UK has five national supply routes for nursing, which are distinctly different in their contribution to the staffing level and in terms of their scope of practice (Buchan *et al.*, 2020). The lower level of these routes is a healthcare assistant who may be hired from among available support staff, and undertakes nursing duties and delivery of direct patient care, including bathing, observing patients, and talking to and supporting patients and their families (Bosley and Dale, 2008). The most recent route, introduced in 2015, was the role of nurse associate. To attain this role, one is required to study for two years at a pre-degree level. This enables post holders to perform more complex and significant tasks than that of a healthcare assistant, but has a more limited scope of practice than the registered nurse (Rosser, 2016).

The main route of nursing supply in Oman is international recruitment, which has several challenges particularly in relation to lack of the awareness of the Omani culture, community and healthcare needs on the part of ex-patriate nurses who may experience communication barriers arising from language differences, which limits their contribution to nursing professional development (Alghemini and Denham, 2013; Ghosh, 2009; Kamanyire and Achora, 2015). Recently and based on the analysis of the impact of Covid-19 and considering the raised ethical concerns of the international recruitment during the pandemic, the International Council of Nurses (ICN) states concern that dependence on overseas in nursing recruitment may postpone any successful implementation of strategies enhancing the domestic nursing workforce supply, demanding countries to create robust, evidence-based strategies to meet their own demands (ICN, 2021). This has led Oman to focus on domestic recruitment, thereby reducing the reliance on overseas-trained nurses. It is therefore important, that Oman considers the innovations other countries are implementing. However, the social context and available resource in Oman needs to be considered prior to potential

implementation. Within developed countries the focus is on encouraging nurses to advance in their role whilst at the same time maintain an adequate number of nurses to provide bedside care. Another approach that has been applied in developed countries, creates different routes to enter and access a nursing qualification. In a country like Oman, expanding and creating different routes may be possible and such routes might help to alleviate some of the nursing shortage. It is important that all healthcare organisations consider all available options to fill the gap and thereby reduce the current shortage of nurses.

A further additional challenge relates to a shortfall in the number of available doctors. To fill this gap, nurses in developed countries such as the UK, are being encouraged to train as Advanced Nurse Practitioners (King, Tod and Sanders, 2017). Although a positive step in terms of career progression and therefore potential contribution to intention to stay, this initiative further compounds the availability of the number of nurses in the workforce. Shortage in the healthcare workforce, and growing demands on healthcare in the UK, provided the initial stimulus for introducing and developing the Advanced Clinical Practitioner role. The role expands the competencies, skills and activities of nurse practitioners into areas usually limited to a doctors' scope of practice (Beech *et al.*, 2019).

In the UK, advanced clinical practice roles in nursing began to be established in the 1970s and 1980s (Barton, Bevan and Mooney, 2012). A document outlining a 'multi-professional framework for advanced clinical practice in England' was published in 2017. The document presented an agreed definition for Advanced Clinical Practice, highlighting the 'four pillars of competency' which include clinical practice, leadership and management, education and research (England, 2017). The advanced practice role has gone through substantial advancement both from a clinical and education perspective. The role is supported by several policy drivers and changes in the NHS service provision and workforce

(Barton, Bevan and Mooney, 2012). It may seem at first glance that this initiative will add an additional burden on frontline registered nurses and negatively increase the current shortage. However, studies demonstrate that with appropriate regulation of the practice, it increases the operational efficiency of the healthcare system and enhances retention of nursing staff by encouraging clear routes for career progression (King, Tod and Sanders, 2017; Torrens *et al.*, 2020).

7.7.2 Going for gold (Magnet accreditation)

Another initiative that enhances intention to stay is Magnet accreditation (Salmond *et al.*, 2009). The Magnet principles were developed in the USA and have been implemented globally. The Magnet accreditation program is a designation from the American Nurses Credentialing Centre (ANCC) and today it stands as one of the highest international acknowledgments of nursing excellence in the healthcare setting (Gagnon, 2021).

In the systematic review undertaken for this result, attainment of Magnet status was one of the organisation factors identified in the literature which had a positive impact on nurses' intention to stay. The rationale behind the Magnet framework has evolved over time. Its contribution to intention to stay is enhancing high levels of nurses' satisfaction by creating a culture of empowerment, promoting greater autonomy and participatory decision making (Schlak *et al.*, 2021). More latterly, a number of studies report additional benefits of increased levels of high quality care, greater patient satisfaction and reductions in mortality and morbidity when compared to non-Magnet hospitals (Salmond *et al.*, 2009; Schlak *et al.*, 2021).

The benefits of Magnet accreditation have been extensively researched since its inception. The key driver for the initial programme was to address a USA National nursing shortage, not dissimilar to that now faced by Oman. However, some studies still question the

ability of Magnet to produce the desired outcome for nurses. The main criticism of Magnet relates to its focus on nursing and therefore does not represent a multi-disciplinary, multi-professional approach that is required to improve global healthcare. A further consideration is the high cost of the Magnet accreditation application process, which may make it a prohibitive option for many developing countries. A final but important point is that current outcome data is focused on healthcare structures and processes, with an assumption that these will automatically result in positive patient clinical outcomes. However, available evidence to support this notion remains limited and minimally weighted (Trinkoff *et al.*, 2010; Goode *et al.*, 2011; Dit Dariel and Regnaux, 2015).

Regardless of the extensive criticisms, Magnet accreditation could be a blueprint to support nurses to provide safe, high-quality care in Omani hospitals. At the same time, the process to attain Magnet accreditation is extremely demanding and requires extensive senior nursing input. This may add to the current challenges facing the Omani healthcare system in general and within nursing particularly. These challenges include but are not limited to; education challenges, centralised management, nursing shortage, and an absence of a structured nursing career development plan (Al Awaisi, Cooke and Pryjmachuk, 2015; Al-Riyami, Fischer and Lopez, 2015). When pursuing Magnet accreditation, the involvement of the whole organisation including board level engagement is essential. There is also a need to consider potential return on investment in terms of staff retention and a contented workforce. Oman could learn from the experience of other countries with similar cultures, such as the Kingdom of Saudi Arabia (KSA), where two hospitals had been accredited with Magnet status (Lovering, 2013). February and Holmes (2020) built a business case about the King Fahad Specialist Hospital in KSA and its financial cost-benefits that resulted from Magnet accreditation. They concluded that a total saving of 2.3 million USA$ had been achieved

over a 5-year period (February and Holmes, 2020). Although not every hospital will achieve the same level of cost savings, adoption of Magnet principles and/or attainment of Magnet accreditation is worthy of consideration to not only improve nursing excellence but also create a healthy work environment, that increases intention to stay with the potential benefit of improving patient outcomes. One important component of successful implementation of initiatives relates to strong leadership.

7.7.3 Nursing leadership and empowerment

Although all the healthy work environment's subscales were identified as predictors of nurses' intention to stay, nursing leadership practice and nursing empowerment were the strongest predictors. The two concepts (leadership and empowerment) are related and are commonly examined together in the literature (Al-Dweik *et al.*, 2016; Cowden and Cummings, 2015; Dewettinck and van Ameijde, 2011). A consistent finding in the literature relates to the relationship between leadership practice and its direct or indirect impact on nurses' intention to stay (Cowden and Cummings, 2015; Cram, 2013; Gregory *et al.*, 2007; Nakamura *et al.*, 2010; Tourangeau *et al.*, 2010). However, evidence for the impact of a specific leadership style on nurses' intention to stay was not consistent (Asamani, Naab and Ansah Ofei, 2016; Brewer *et al.*, 2016; Liang *et al.*, 2016; Manning, 2014; Wang *et al.*, 2017). Although different leadership styles have been extensively studied, to identify the best style that increases workforce stability and nurses' intention to stay, considerable emphasis on transformational leadership is noted (Brewer *et al.*, 2016; Liang *et al.*, 2016; Wang *et al.*, 2017). The theory of transformative leadership relies on leaders' characteristics and their vertical influence on others (Hutchinson and Jackson, 2013). Due to the substantial changes in all healthcare systems across the world, the notion of transformational leadership is key and important (Seljemo, Viksveen and Ree, 2020). A further leadership style that has attracted

substantial attention is collective leadership (Fitzgerald *et al.*, 2013). A collective leadership culture is built on the idea that all the organisation's employees are responsible for the organisation's success as a whole and not just for their job role or work area (West *et al.*, 2014). Collective leadership is powerful in that it encourages shared and collective power to achieve a mutual goal. Magnet principles adopt a collective leadership approach indirectly through its notion of shared governance (Salmond *et al.*, 2009).

Despite the current focus on transformational and collective leadership styles, the findings from the systematic review in this thesis demonstrate that it is a combination of leadership characteristics (also known as practices) such as being supportive, available, a good role model, ability to recognise and value nursing work and finally, one who provides regular feedback, that collectively increase nurses' intention to stay. This important finding confirms that it is a collective approach, rather than one specific or single leadership style (Hutchinson and Jackson, 2013; Sosik, Juzbasich and Chun, 2011).

Consistent with the findings of this thesis Cowden and Cummings (2015); Manning (2014) and Nedd (2006) found empowerment to be one of the strongest significant predictors of nurses' intention to stay. Nursing empowerment and leadership are considered to be closely related concepts, where leaders use their power and authority to enable nurses to make some decisions independently while providing them with the needed support (Fitzgerald *et al.*, 2013). In the literature, creating empowered nurses is considered a vital function of leadership. Transformational leadership is one of the most examined leadership styles linked to enhancing nursing participation and empowerment (Brewer *et al.*, 2016; Manning, 2014). However, in 2010 "Harvard Business Review" published an article that highlighted that empowerment is discrete from other usual managers' functions in that it primarily focuses on nurses' abilities (Goldsmith, 2010). Which simply means that although leaders prepare the

organisation structure, resources and environment for nurses to be empowered, it up to the nurses themselves to use these resources to be empowered. However, successful nursing empowerment in a healthcare setting requires an organisation structure that enhances empowerment by facilitating the nurses' access to information, support, resources, and opportunities. Empowerment, when applied, effectively enhance the nurses' sense of control, confidence, and independence in decision making. Eventually, it becomes a powerful tool for nursing to improve patient safety, quality of care and equitable access to care (Moura *et al.*, 2020).

Despite an aspiration for the development of leaders with positive leadership characteristics, or a drive towards transformational and/or a collective leadership approach, it is acknowledged that in times of crisis an autocratic leadership style may be preferable. The current global Covid-19 pandemic has resulted in major crises in most healthcare organisations around the world. During the pandemic, a gap in nursing leadership has been reported (Daly *et al.*, 2020). However, (Shaw, 2020) suggests that the pandemic has empowered nurses and improved nursing practice. One no change has been the focus on working together as a team and practising leadership at all levels rather than the usual focus on performance and achievement of targets. It is increasingly evident that leadership occurs at all levels of an organisation, diminishing the magnitude of traditional charismatic, heroic and strategic interpretations of leader-led behaviour and change despite the global pandemic (Bolden, 2011; Shaw, 2020). However, more research is needed to see if this is a permanent change or it may be a temporary response to the pandemic's circumstances.

In a country like Oman, there is a need to build and improve leadership skills and competency. This needs to be at a macro policy level as well as at individual organisation level. Except for one published study in 2012, there is no literature concerning the expected

role and functions of nurse leadership and management in Oman, yet the nursing education system continues to offer one-year Diploma in Nursing Administration from the Oman Specialized Nursing Institute (OSNI) as preparation for local nurses in leadership and management (White, 2012). According to White (2012) there is a need for highly educated nurse leaders and managers in nursing administration to provide the driving force for change and sustained motivation. The results from White (2012) revealed that the curriculum of the current programme was not meeting the expectations and needs of the future generation of nursing leaders and manager. Thus, curriculum of the current programme needs to be upgraded and delivered at a Master's level for nurse leaders. Well prepared effective leaders who using their leadership style to empower nurses are required to work across professional and organisation boundaries. It is critical that government leaders and policy planners and makers are included and indeed are the focus for this development. Regardless of the leadership style adopted, it is essential to remember that leadership is not a static attribute or competence, but it arises from groups or networks of people who interact together. Finally, in order to create a healthy work environment, healthcare organisations should recognise and value nurses as potential leaders at every level and phase of their career (Bolden, 2011; Shaw, 2020).

7.7.4 Perceptions of nursing and initiatives

The public and self-perception of nursing are important to consider. The public view of any profession affects the employees' perception of their job (Elmorshedy et al., 2020, Hoeve et al., 2014, Takase et al., 2002). There are multiple components of the nurses' perception of their profession. However, in this thesis based on the literature review, six characteristics were identified and examined including; role variety, identity, significance, autonomy, payment and physical demand (Morgeson and Humphrey, 2006). Results from the path analysis indicate that these characteristics had no direct impact on nurses' intention

to stay. However, they were identified as sub-components of nurses' satisfaction and organisation commitment which indirectly influence the nurses' intention to stay. Within the literature, there are few studies of the impact of nurses' perception of the profession and its relationship to intention to stay in their current workplace. The topics most frequently explored in the literature in this respect were autonomy and salary, although there is disagreement about the significance of autonomy and payment in predicting nurses' intention to stay (AbuAlRub *et al.*, 2016; Al-Hamdan, Manojlovich and Tanima, 2017; Cowden and Cummings, 2015; Dorigan and Guirardello, 2018). The findings from this research (systematic review and cross- sectional survey) indicate that other variables such as work conditions are more influential on intention to stay than the nursing profession characteristics.

Since the beginning of the Covid-19 pandemic, the image of nursing across the globe has changed positively as a result of media reports of the reality of care and commitment of nurses. Reports detail nurses' compassion, knowledge, competence, and professionalism (Irwin, 2021; Lotfi *et al.*, 2021). The pandemic occurred in the same year as the 'International Year of the Nurse' (WHO, 2020a), which aimed to raise the profile of nursing as a valuable and important career choice. A further initiative, the 'Nursing Now' campaign, started in 2018 and aimed to raise the status and profile of nursing around the world (WHO, 2020a). The International Year of the Nurse has been rolled over to 2021 due to the pandemic.

Going forward, Nursing Now is in collaboration with the World Health Organization and the International Council of Nurses. The collective groups are supporting a campaign to enhance nurses' empowerment and involvement in universal healthcare coverage by 2030 (Crisp and Iro, 2018; WHO, 2020a). A further key message from the collaborative is that healthcare systems cannot operate fully without a workforce that is completely empowered

and invested in (Irwin, 2021). Such collaborative initiative drove the attention of global need in providing nurses with a healthy work environment to practice their full potential and enhance their commitment to their organisation and profession.

In Oman, the public view of nursing is sub-optimal and is marked by the low number of applications received from Omani nationals to enroll into a nursing programs. Within Oman, there is a lack of family support to pursue a nursing career. This perception is reflective of a career choice that requires a high physical demand, has low payment, as well as a lack of a career development pathway to progress to a senior role (Elmorshedy *et al.*, 2020).

It is possible that a percentage of the population will be attracted to the profession from an altruistic perspective, with a desire to help/care for others despite the low albeit secure salary. However, the factors that attract and recruit staff are different to the factors that retain staff. Additionally, although the impact of nursing characteristics has an indirect impact on intention to stay, through organisation commitment and role satisfaction, these two characteristics are important. There is evidence that the Omani government has a good understanding of the need to value and strengthen the public perception of nursing roles. It has introduced several measures to build on the professional image of nursing across society which include: standardising the baccalaureate BSN degree as the only permissible entry point to a nursing career; offering an opportunity to achieve higher education qualifications; and increasing the nursing salary to the extent of making it one of the highest paid jobs in the country (Kamanyire and Achora, 2015; Al Maqbali, 2015). According to Albashayreh *et al.* (2019), all of these measures were found to improve the nurses perception to their profession, and enhance their satisfaction which eventually leads to increased organisation commitment and thereafter intention to stay. Despite the significant effort made by the Omani government, it would be advisable for senior nursing leaders to engage and represent Oman

on the global stage in terms of the collaborative campaign. Recently, the nursing profession profile has been enhanced globally due to the impact of the Covid-19 pandemic. However, it is important to further expand and enhance this view to ensure that the public are aware of the significant rewards that the profession has to offer.

7.8 Individual characteristics

The multivariate analysis from the selected model (model six) revealed the significant direct impact of four individual characteristics on nurses' intention to stay. These include age, nationality, years of experience and having no managerial role.

The current nursing workforce is more diverse in age than ever before and age differences are playing a major role in people's experience at work (Hu, Herrick and Hodgin, 2004). The correlation matrix of this study found that as age increases, nurses' satisfaction and intention to stay also increases. Furthermore, nurses who are 39 years and older reported a significantly higher intention to stay compared to younger nurses. A similar finding was reported by Liang et al. (2016) who concluded that nurses over the age of 36 years old were more likely to stay in their job. The youngest age group in the current study (21-24 years old, Generation Z) represents recent nursing graduates, who reported the lowest mean score for job satisfaction and intention to stay. This notion is supported by other studies which report that younger nurses are less likely to stay in their organisation (Asamani et al., 2016, Brewer et al., 2016, El-Jardali et al., 2013, Jiang et al., 2017, Liang et al., 2016, Mrayyan, 2008, Owens, 2011, Tourangeau and Cranley, 2006, Wang et al., 2012, Ya-Ting, 2017). This finding is particularly important, as demonstrated by the Oman new graduate nurses who report a 'reality shock' as they transition from being a student to a newly qualified nurse (Al Awaisi et al., 2015).

The path analysis also confirmed a significant negative impact of being aged between 25 and 38 years old (Millennial generation) on intention to stay. This result could be explained by some identified characteristics of the millennials, who are more ambitious and have high career expectations (AMN, 2018). The millennials are reported to be more career motivated with less loyalty to the organisation, preferring increased flexibility in terms of a work-life balance and they are willing to change jobs, if their needs not be met. Indeed 17% of millennial nurses in the American nursing workforce were found to be seeking new employment and 71% were pursuing a higher degree (AMN, 2018, Jones et al., 2015). This finding is important for Oman as millennials make up the majority of the nursing workforce. It is important to consider the variance between the different generations in order to build effective and customised strategies to enhance intention to stay among nurses from different generational groups.

In terms of nationality, Omani nurses report lower levels of satisfaction, organisation commitment and intention to stay compared to expatriate nurses. In fact, being an Omani aged between 25-39 years old reduces intention to stay. This result is consistent with previous work conducted in Oman and culturally similar countries in terms of location, language and traditions, such as Jordan and Kingdom of Saudi Arabia (KSA)(Al Maqbali, 2015; Albashayreh *et al.*, 2019; Mrayyan, 2008; Abualrub and Alghamdi, 2012). These studies report that indigenous nurses are less satisfied with their working conditions compared with expatriate nurses. This finding is likely to reflect the fact that expatriate nurses pursue overseas employment for financial reasons and often experience better working conditions than their home countries offer (Dywili, Bonner and O'brien, 2013). This finding could also be partially explained by differences between Omani nurses and expatriate nurses in term of age and experience, where Omani nurses are considered to be younger with less experience.

Thus, indigenous nurses' expectations of work conditions, tasks, wages and benefits associated with their nursing jobs are higher than expatriate nurses and therefore may not be adequately met (Al-Riyami, Fischer and Lopez, 2015). According to McKelvy (2018) the misalignment between the expectations and reality could lead to negative outcomes. This finding is particularly important in light of the current process of Omanisation, where the plan is to replace expatriate nurses with indigenous nurses in the healthcare workforce in Oman. For instance, the proportion of local nurses in the country has increased considerably from only one third of the total nursing workforce to nearly two thirds over the last two decades (MOH 2019). If Omanisation efforts are to succeed, regulations and policies need to focus on addressing the local nurses' expectations and to consider identifying and meeting these to positively impact on recruitment and retention.

The evidence of the impact of years of experience on intention to stay was inconsistent in the literature (Gilles, Burnand and Peytremann-bridevaux, 2014; El-Jardali *et al.*, 2013; Nedd, 2006). However, the findings of the survey showed that while years of experience on the ward and in the hospital setting, showed no significant association with intention to stay based on the bivariate analysis, having 6-10 years of experience in the same ward and having no managerial role had a significant, positive effect on intention to stay. Hence, nurses who have been working for 6–10 years in the same post or with the same organisation, are vulnerable to change, as after this time they start to consider alternative opportunities as most nurses in this group are at a life-change stage as first-time parents and are adjusting to this parental role (Jones, Warren and Davies, 2015). In addition, they are seeking more opportunities for development and promotion within their organisation. This may explain why nurses in this age group are more likely to change their role but stay with the same organisation. However, as age and years of nursing experience increase, nursing

staff increasingly enter a mature period, where they have attained promotion, achieved stability in financial terms, work experience has accumulated, and therefore encountered problems are well managed through experience which eventually increases their desire to stay with the same employer.

The sample recruited for this PhD study was frontline nurses, who provide direct patient care. The results of the survey indicate that having no managerial role had a positive impact on nurses' intention to stay. According to Admi and Moshe-Eilon (2010), frontline nurses who are involved in some managerial duties demonstrate higher stress levels than those who are 100% frontline. This could relate to role conflict and authority-responsibility conflict. In Oman, part of the Omanising process encourages nurses to take on management positions. However, frontline nurses report limited structured training when taking on these new roles. This might explain some of the stressors that nurses in new management roles report and this is likely to impact negatively on intention to stay (Al-Riyami, Fischer and Lopez, 2015). Thus, gradual involvement of frontline nurses in management duties should be supported by structured and formal training and continuous supervision and guidance.

A final important observation is that individual characteristics are unmodifiable, thus, customising retention strategies to meet the needs of nurses in different groups is essential. Furthermore, developing and applying retention strategies without considering workforce diversity might reduce the effectiveness of strategies designed to increase intention to stay. Increasing our understanding of what factors may increase nurses' intention to stay is important. The findings of the current study indicate that the healthy work environment contributes to nurses' intention to stay and that organisations should improve the healthy work environment to increase nurses' intention to stay. Oman should consider initiatives, and these should be prioritised as follows: a) development of senior leadership roles, b)

enhancing nursing empowerment, and c) implementation of international initiatives including Magnet accreditation and d) increase variability in nursing roles.

7.9 The relationship between HWE and nurses' ITS

Exploring the relationship between the healthy work environment and nurses' intention to stay in Oman was the main aim of the PhD study. The healthy work environment's attributes identified and examined in this thesis arose out of the sub-scales based on the Nursing Context Index (NCI) and the Career Management Scale (CMS). These attributes include leadership practice, nursing empowerment, nurses and physician relationship and teamwork, adequate staffing, education and training and career development. The final phase explored if there was a relationship between the healthy work environment and intention to stay in Oman.

Findings from the survey, using multivariate analysis suggested a weak correlation between the healthy work environment and intention to stay. There was a direct effect of all the healthy work environment attributes on intention to stay. A statistically significant difference was noted in a positive direction. The final tested model (model six) of the intention to stay variables supported several findings from previous studies which examined several healthy work environment attributes. The model testing process supported several outcomes identified by Boyle *et al.* (1999); Cowden and Cummings (2015); Tourangeau and Cranley (2006a). The impact of teamwork on intention to stay was also statistically significant and consistent with findings proposed by Tourangeau and Cranley (2006a) and the final model developed and proposed by Cowden and Cummings (2015). The model produced by Cowden and Cummings (2015) revealed that nursing empowerment and organisation

commitment were the strongest predictors of nurses' intention to stay. However, inconsistencies were identified when previous models were tested and leadership practice and support were identified as indirect predictors of intention to stay in the models developed and tested by Tourangeau and Cranley (2006a) and Cowden and Cummings (2015). Furthermore, and in contrast to the findings of the present study, no significant impact of career development, staffing and work group cohesion was detected in the current model as advocated by Cowden and Cummings (2015). The results of this study and some previous published studies suggest there is a relationship between the impact of a healthy work environment on several nursing outcomes such as intention to stay, intention to leave, burnout and satisfaction. This provides evidence that the healthy work environment is important and should be considered, measured and where appropriate further developed.

When reviewing the Oman healthcare vision for 2050, it is noted that one of the planned outcomes to be achieved by the end of 2020 was the establishment of a national working group to develop a nursing strategy to promote and embed a positive working environment. It is suggested that an introductory guide for healthcare organisations be developed to ensure and manage a positive working environment. Unfortunately, there has been no published reports to indicate whether this has been achieved. Re-visiting the strategic Oman vision 2050 document is essential and timely. Research conducted about the nursing work environment in Oman including findings from this PhD work, and the impact of the Covid -19 pandemic suggests there is a need to modify the vision's indicators to ensure they are measurable and applicable. It would be useful if the indicators included intention to stay as a quantifiable nursing outcome measure and consideration of the limitations and barriers to achieve targeted outcomes is crucial in any future planning.

In the current and predicted nursing shortage, the demand to build a healthy work environment for nurses is growing. It has become a focus of need in relation to long-term investment in healthcare organisations. However, different components of the healthy work environment will attract nurses to stay in the organisation dependent on individual and professional characteristics. Several options are available and therefore organisations should consider what is important to them. In this PhD study, leadership practice and nursing empowerment were found to have the strongest influence.

7.10 Revisiting the PhD aims

There were six research aims identified at the beginning of the PhD. All six were addressed and completed. These included;

1. To define the concept of the 'Healthy Work Environment' within the context of nursing within an acute healthcare setting. As part of the concept analysis the main attributes will be identified.

Chapter four in this thesis details the steps taken to complete the concept analysis. The steps followed the Walker and Avant (2011) framework. An operational definition of the concept was provided.

2. To identify the relationship between nurses' intention to stay and the work environment as reported in the published literature.

Using a systematic review approach, the relevant published literature was identified and examined the relationship between the healthy work environment and intention to stay was examined. Thirty-four papers (five papers from the rapid review) were included in the final review and data was extracted. All papers were quality assessed. The findings were then synthesised and presented in chapter five.

3. To explore available models and factors affecting intention to stay and develop a framework to guide the research.

Although, some 'intention to stay' frameworks were identified in the systematic review. A further inclusive review of existing conceptual frameworks as presented in the literature have been documented. Additionally, a conceptual framework was developed that guided the development of the survey which is illustrated in chapter six.

4. To examine the concept of the work environment as perceived by nurses working in public hospitals in Muscat, Oman.

Based on the developed conceptual framework, an online cross-sectional survey was developed and conducted. Nurses' perception of the healthy work environment was examined and is detailed in chapter six.

5. To explore the level of intention to stay among nurses working in public hospitals in Muscat, Oman.

The level of intention to stay among nurses working in the public hospitals in Oman was explored and assessed using the McCain Intent to Stay Scale (McCloskey, 1990). Although the response rate was 21.3%, the overall sample of 677 nurses was adequate to conduct a path analysis based on the sample power calculation. The results of the survey are detailed in chapter six.

6. To investigate the relationship between intention to stay and the healthy work environment among nurses working in three public hospitals in Muscat, Oman.

In order to understand the relationship, a path analysis was conducted as detailed in the statistical analysis plan. Using the model fit technique, the best model which examined the highest percent of explained variance of nurses' intention to stay was selected as the final model (model six). The model suggested that the best fit to explain the highest percentage

(63%) of the explained variance of intention to stay related to supportive leaders and managers who empower staff and provide them with opportunities for professional career growth.

7.11 Strengths and Limitations

In the four phases reported in this thesis, a number of strengths were evident. However as with all research, there are also several limitations. Where possible actions were taken to minimise bias. Strengths, limitations, and future research are presented in the next sections.

This PhD study is the first international study that has used a multi-phase, multi-method approach to examine the impact of the healthy work environment on nurses' intention to stay with current employer in Oman. The use of a multi-method, multi-phased approach helped to structure the thesis in a systematic manner and enabled each phase to build on the results from the previous phase. Although, incorporating both expert opinion and the survey pilot might seem to be a marginal phase, it contributed to the cross-sectional survey. The results broadened the researcher's perspective about potential interdisciplinary overlaps in term of the two main concept measurements which, as a result, were explored in the survey. The cross-sectional survey phase was systematically developed, conducted and involved the development of the conceptual framework, analysis and interpretation of the path analysis of the hypothesised relationship between the study's variables. Path analysis is one of the most sophisticated statistical ways to test and/or evaluate a complex model with potential multifaceted outcomes (Kline, 2011). Considering the dynamic interaction between variables, the mediation effect and both direct and indirect effects, the path analysis was one of the strengths in the work undertaken.

The unexpected inconsistency in the use and understanding of the two central concepts (intention to stay and the healthy work environment), led to an in-depth exploration and clarification of the concepts. This seen as a strength of the PhD and facilitated the integration of results in each stage to develop and therefore inform the subsequence phases. Despite each phase demonstrating a certain strength by itself, it is the totality and cumulative knowledge built throughout the PhD, that led to a robust and empirical study.

Using the Walker and Avant (2011) framework for the concept analysis allowed for systematic exploration and clarification of the healthy work environment as a concept. Exploring and defining the concept was key in building a preliminary conceptual framework for phase four (the cross-sectional survey). However, there is ongoing criticism for the concept analysis approach as a research design which have been discussed in chapter three.

The systematic review confirmed the heterogeneity of the two central concepts (healthy work environment and intention to stay). This heterogeneity made it difficult to compare findings and precluded any summative meta-analysis being undertaken. However, the systematic review was useful to identify the range of validated tools available to measure components related to the healthy work environment and intention to stay. Heterogeneity is a common finding when undertaking a systematic review, however it is disappointing as most of the studies identified involved a large sample size and therefore a meta-analysis would have been informative.

In terms of phase four, the cross-sectional survey, several limitations were identified. Although the sample size was moderate, the poor response rate is of concern. In fact, web surveys are reported to have a response rate of between 6% and 15% and are lower than other survey modes including mail, telephone and paper (Van Mol, 2017). However, non-response bias occurs when the sample who responded in a survey is essentially dissimilar from the

people who do not participate. This type of bias can reduce the sample's representativeness and produce skewed outcomes (Manzo and Burke, 2012). The researcher utilised some recommended strategies to enhance the response rate, such as sending an invitation which included salutations and signatures and a link to a web-based survey (Manzo and Burke, 2012). Furthermore, sending gentle reminders with another link to the survey was also included. Targeting the whole nursing population (all nurses who meet the inclusion criteria) within the three sample sites led to a large sample size that met the required power calculation. Furthermore, using a lower significance level of 0.01 and 0.80 power, compensated for the multi-analysis tests conducted. These measures are also suggested for use when undertaking a path analysis. However, to minimise the impact of non-response bias, some statistical measures were implemented such as replacing the missing values and comparing the sample and population characteristics (Toepoel and Schonlau, 2017). Finally, to improve response rate in future, one could consider giving a financial incentive for the participants to take part.

Limited geographical distribution of the targeted hospitals for the cross-sectional survey may have limited the generalisability of the findings. In addition, hospitals operated by the private sector were not included, where nurses might or might not have reported similar outcomes or relationships between study variables. Moreover, using a cross-sectional research design could be considered an intrinsic disadvantage, as it was not possible to determine causality between dependent and independent variables. In addition, the study was observational in nature and therefore determined relationships could result in spurious results due to chance or bias.

Using a convenience sample technique for the survey could be considered a weakness due to the potential risk of under or over representation of the population. Some

considerations were made to minimise the impact of these limitations on the research findings such as targeting the largest hospitals in Oman in terms of the available nursing workforce and including all nurses who met the inclusion criteria as a potential sample strategy. The inclusion of more hospitals, especially from the private sector, and consideration of a longitudinal design with random stratified sampling technique might have minimised these limitations further but would have required additional resources.

7.12 Recommendations

Based on the results of the PhD study and with consideration of the global and local (Oman) nursing workforce status, several recommendations are proposed. However, more attention was given to the results of the cross-sectional survey in terms of recommendations for workforce polices and practice.

7.12.1 Workforce policies and practice in Oman

Based on the results of the PhD study, several recommendations for workforce policy planners in Oman are suggested. These recommendations focus on improving the nursing profession's profile, enhancing retention of nurses, as well as actions that may increase the domestic nursing supply. However, initiatives will have a financial implication and therefore a cost benefit analysis should be considered.

The current thesis provides valuable information about nurses' age, gender, nationality (being Omani or expatriate) and educational level, however, comparative data is unavailable and therefore it is impossible to make meaningful comparisons. It would be useful to build a database about the nursing workforce in Oman. This will help in understanding the profession's profile before developing effective strategies. This would also permit the collection of important data that examines and considers the current and future challenges. The database could be expanded to include nurses working outside the acute care setting such

as in the community or in the home care setting as well as in the healthcare setting operated by the private sector. The involvement of the National Center for Statistics and Information (NCSI) in building a nursing workforce database is crucial for successful strategic planning to meet future demands.

Establishing a healthy work environment for nurses is one of the most cost-effective strategies to satisfy nurses, and therefore retaining them and thus ensuring safe/high-quality care for patients (Drenkard, 2010). Leadership practice and nursing empowerment are the most influential factors in terms of nurses' decision to stay with employer. Thus, developing leadership behaviours to support nursing empowerment is fundamental. Some studies show that leadership development programmes have demonstrated significant influence in terms of positive leadership behaviours (West *et al.*, 2015). In the case of Oman, upgrading the curriculum to include a National leadership programme is needed to meet the future generations' expectations. However, customising a leadership programme based on the organisations' needs will be essential to retain nurses in their current working place. Moreover, including frontline nurses from different levels will be the key to success of the leadership development programme. Furthermore, by implementing strategies that optimise nurses' contribution to practice and therefore will increase role empowerment is recommended. However, prior to that, establishing a scope of practice is the highest priority. This will assist and support nurses' role identity and allow nurses to practice to the full scope of their education and training.

Joining an international campaign such as Nursing Now is recommended for a country like Oman, in order to learn from the experience and expertise of other countries and further enhance the nursing leadership role in health policy planning and development (WHO, 2020a). The Omani government should also consider testing Magnet accreditation as a

pathway of enhancing nursing retention. This will require making fundamental changes to existing policies and practice to transform nursing standards and align them to the Magnet framework.

Furthermore, with restrictions to international recruitment, created by the Covid-19 pandemic, countries like Oman will have to rely on its domestic supply for its nursing workforce. Thus, Oman needs to review and expand the capacity of its' nursing education programmes and increase the scholarships for domestic applicants. Based on the analysis of the available data regarding the existing nursing shortage in Oman, nursing programmes need to increase their entry intake to meet the nursing demand and fill the current nursing shortfall of 2000 in the next 4 years. This effort should be preceded by a campaign to enhance the public knowledge and awareness about the value and contribution nurses make to the provision of high-quality care and positive clinical outcomes. This in turn may increase the number of applicants for nurse training. Additionally, Oman could explore the potential of new access routes to care work such as introducing the nursing assistant role.

Work will be required to scope the professional boundaries of the different nursing roles and a new nurse education curriculum will need to be developed. Although, local nurses are forming a more sustainable nursing workforce in Oman, more attention should be given to their expectations since they are demonstrating lower levels of satisfaction and intention to stay, more than expatriate nurses.

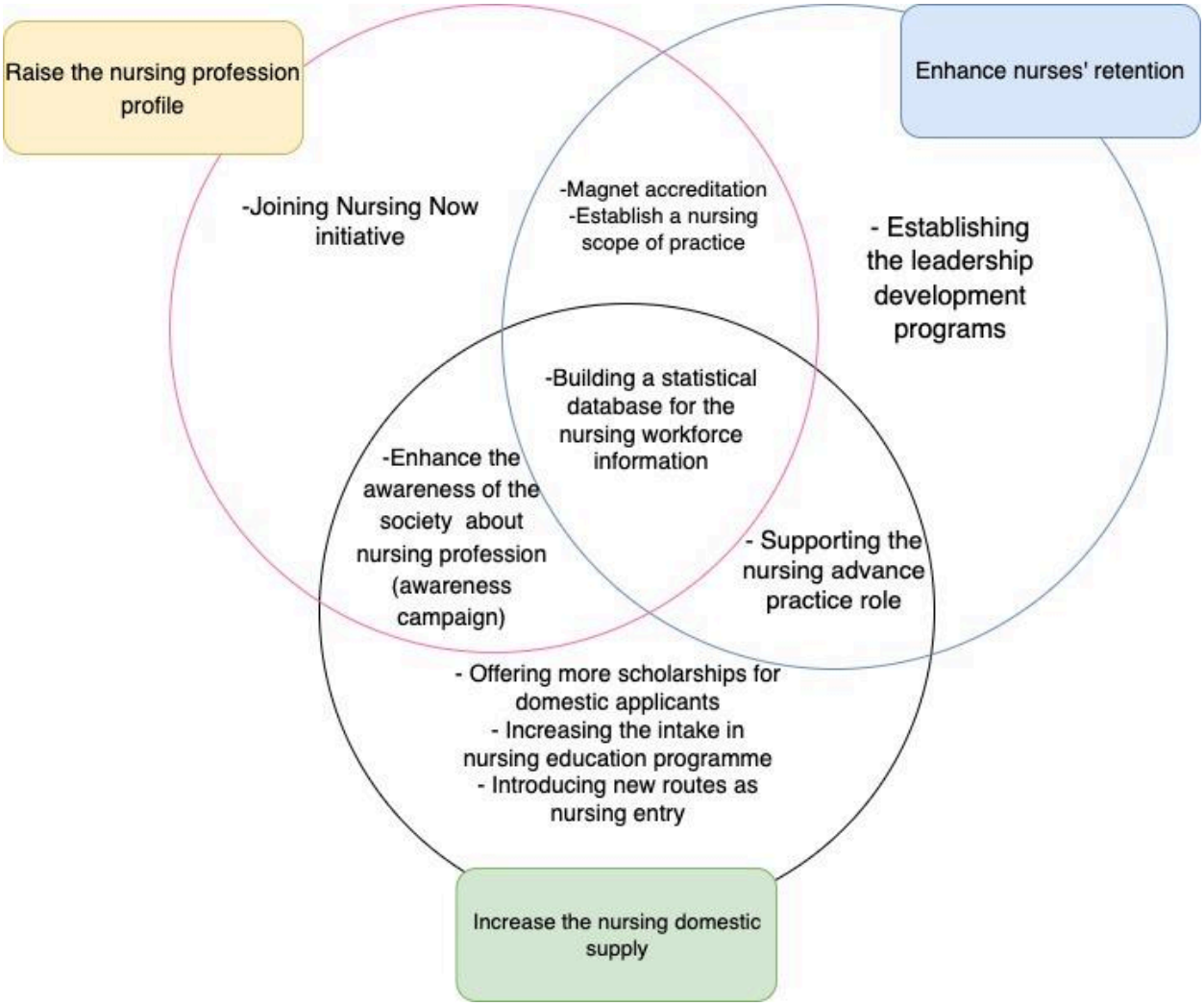


Figure15: Workforce and profession recommendations

Despite significant improvements in the health sector over the years and based on this study's findings, policy makers in Oman should consider some strategies which take specific account of the characteristics of the Omani workforce in terms of gender and nationality. It is recommended that more men be encouraged to enter the profession to provide more gender balance, and to widen the pool of talented candidates for recruitment. Nursing education programs for men must be expanded so as to encourage more men to enter the profession. However, it is important not to rely on the recruitment of men as a solution to the problem of the profession being low occupational status and difficult to balance with family responsibilities. Creating a more family friendly environment and considering the life-work

balance for all nurses, particularly women, is essential if the current and predicted nursing shortage in Oman is to be managed effectively.

Although there has been a substantial increase in the number of the graduates from nursing education programs in Oman, the number of Omani people joining the workforce will not be sufficient to meet the health needs of the population (Maqbali, 2019). The workforce data show that Oman will rely on expatriate nurses' recruitment for a while (Al Salmi, 2018). In view of this it is important to consider how the recruitment of expatriate nurses can be improved. Recruitment criteria should be designed to ensure the quality and ensure the right person is appointed for the right positions which will enhance their retention. The recruitment criteria should be clear in term of the minimal qualifications, and the competency test should include some questions to evaluate the culture sensitivity of the candidates. To address the challenge of cultural and social integration of expatriate nurses in the country, it is recommended that during their induction these nurses could be provided with language and culture classes in order to aid in their ability to communicate effectively with their patients. Policy makers and senior hospital managers in Oman should develop effective induction programs to help newly employed nurses – migrant and local – clearly understand their jobs, roles and responsibilities. Some of the specific actions required are summarised in figure 15.

7.12.2 Future research

The findings of the thesis highlight that, despite the overlap between the concepts of intention to stay and intention to leave, they are not the same constructs and are not the opposite concepts on a continuum. Thus, future research is recommended to explore and identify the differences between the two concepts. Clarifying the overlap and differences between the two concepts will help enhance understanding and assist in the building of appropriate retention strategies based on research findings.

Replicating this study with a larger sample at national or regional level may provide more evidence about the relationship between the healthy work environment and intention to stay. Using a longitudinal design with a stratified random sample would also produce a more representative sample that could consider the important variables noted in this study. A longitudinal design will help detect developments or changes in the characteristics of the target population, and in this case will allow the researcher to evaluate and examine the impact of any organisation change on nurses' intention to stay. Additionally, it might allow a follow study that explores the impact of intention on actual behavior. The findings of this study suggest that data related to different nurse generations may explain some aspects of nurses' intentions toward their work, yet these generation differences are under researched. There is a need to further investigate links between generational cohorts, their needs, expectations and explore how they impact nursing workforce stability.

In light of the results from the systematic review and cross-sectional survey, some qualitative research would be helpful to identify unknown factors which may influence nurses' intention to stay. Based on the current study and available evidence, more research is required to enhance, test and strengthen the conceptual framework developed in this study to enhance the understanding about nurses' intention to stay.

The final tested model (model six) was a more precise model than that presented by Boyle *et al.* (1999) and Tourangeau and Cranley (2006a) and less complicated than that proposed by Cowden and Cummings (2015). By introducing new concepts and explaining the direct and indirect impact of some variables, the model proposed suggests a causal sequence of the development of behavioural intention among nurses. This model is an enhancement of previous models which confirms some and challenges other elements. Explaining 63% of intention to stay variation is helpful but indicates that we do not have a

broad and complete understanding of what contributes to nurse intention to remain with employer. The remaining 37% of the variance of intention to stay was unexplained, which suggests there are unknown and possibly unmeasurable predictors. More complete understanding of these determinants requires further exploration and discovery of potential predictors that inform the unexplained proportion of the variance will be helpful.

Finally, in this chapter, the interpretation of the thesis's findings was presented and discussed in term of the similarities and differences from the previous published literature, context of Oman and its impact and meaning to the nursing workforce and current nursing challenges. Some initiatives have been implemented internationally and should be considered locally to increase nurses' intention to stay with their organisations.

Conclusion

Nursing is the largest occupational group in healthcare with 27.9 million nurses around the world, and nursing care has been constantly recognised as a core important activity of patient care. However, the quality of patient care is strongly correlated to appropriate and safe staffing levels (Amiri and Solankallio-Vahteri, 2019). Sustaining adequate staffing levels is considered one of the main challenges facing the nursing profession as there is a global shortage of nurses (ICN, 2021). According to recent report published by the World Health Organization (WHO) which estimated there was a global shortfall of 5.9 million nurses in 2020(WHO, 2020b).

The Covid-19 pandemic has been a 'double-edged sword' with increases in nurses' unavailability due to having the virus or the need to isolation to prevent transmission which estimated to raise the nursing shortage to 13 million. As a direct result of the Covid-19 pandemic there is an international call for action to reduce actual turnover among nurses (Buchan and Catton, 2020; ICN, 2021). However, on a positive note, there has been an increased appreciation and understanding of healthcare roles and healthcare research, with the public having increased respect and value of the nursing role (Lotfi *et al.*, 2021). While the Covid-19 pandemic has given the world the chance to re-evaluate the input and value of nursing care, in reality, it has also exposed sub-optimal nursing working conditions, safety and well-being (ICN, 2021). Establishing and maintaining the healthy work environment can increase nurses' commitment to the organisation and thereby increase intention to stay with the organisation and reduce actual turnover.

The healthy work environment is a complex and multi-faceted concept. Using the Walker and Avant (2011) framework, a concept analysis of the healthy work environment was undertaken. It highlighted the importance of leadership practice and nursing

empowerment in enhancing intention to stay with employer. This research successfully demonstrated that a healthy work environment is a significant determinant of nurses' intention to stay concluding that establishing and sustaining the healthy work environment is vital and worthy of investment. As such, the results from this study are likely to be of interest to workforce policy planners and decision-makers worldwide, particularly in Oman.

The complexity of the examined concepts (healthy work environment and intention to stay) in terms of how they are defined operationally and how they are measured in the literature is an essential finding of this research. This finding indicates that although some concepts such as the intention to stay and intention to leave are contrary linguistically, it should not be assumed that they are opposites operationally or predicted by opposite factors. Distinguishing between the concepts is vital when building evidence-based strategies to enhance intention to stay and reduce intention to leave.

The main aim of this research was to examine the relationship between the healthy work environment and nurses' intention to stay, who are working in public hospitals in Oman. However, some secondary aims and objectives have been achieved and contributed to the accomplishment of the main aim. First, the concept analysis developed an inclusive understanding of the term the healthy work environment. Its findings informed the development of an intention to stay' conceptual framework, which guided the data collection procedures in this PhD study. Following the concept analysis, the published literature was reviewed systematically to explore the examined relationship between the healthy work environment and nurses' intention to stay. Several potential tools were identified and considered. Finally, two related phases were undertaken and included face validity of the planned assessment tools and data being collected using a cross-sectional online survey.

Findings from the survey identified a direct effect of all the healthy work environment attributes on intention to stay. A statistically significant difference was noted in a positive direction. However, leadership practice and nursing empowerment were the strongest positive predictors. In addition, individual differences in terms of age, years of experience in the same ward and residence status played a significant role in influencing nurses' intention to stay with the current organisation. The final tested model (model six) explained 63% of the variance in intention to stay.

Fundamental changes to the existing policies to enhance the effectiveness of any implemented retention strategies, such as adopting a Magnet framework in restructuring the nursing work environment. It is essential that healthcare organisations respond by investing in nurses,' to ensure they are appropriately supported, developed and empowered to practice to their full potential to take on roles as leaders, specialists, strategists-planners, decision-makers, and agents of change in the healthcare system.

Finally, the findings from each phase of the research study hold potential importance for future work both in the clinical field in terms of implementing strategies that enhance nurses' intention to stay and within the research arena, when evaluating the implemented strategies and modifying them accordingly. Creating the best possible working conditions for nursing staff enables them to deliver the highest standards of patient care. A healthy work environment is a crucial ingredient in having healthy, satisfied, committed nurses and eventually having healthy, satisfied patients with good clinical outcomes.

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Appendices

Appendix 1: Healthcare services in the Sultanate of Oman

Prior to 1970, there were only two hospitals in Oman, Al-Rahma and Muscat Hospitals, both in Muscat. These hospitals provided basic healthcare services for the entire country. However, the renaissance in Oman's healthcare began when Sultan Qaboos issued a royal decree to establish the Ministry of Health (MoH), which was the first step toward healthcare improvement (Alghemini and Denham, 2013). Currently, the MoH is the main healthcare provider in Oman for the entire population delivering all types of healthcare services.

According to the World Health Organisation (WHO), Oman became one of the most successful countries in providing healthcare in a relatively short time (Ghosh, 2009; WHO, 2006). These improvements in health services were demonstrated by expansion of the range of available healthcare services, reduced mortality and morbidity rates, control and in some cases eradication of communicable diseases, and increased life expectancy (Alshishtawy, 2010).

The NCSI (2016) reports that Oman has 55 government hospitals, categorised variously as secondary, tertiary or referral centres, and 266 health centres and polyclinics(similar to heath centres with more capacity and specialisation). Primary healthcare services are provided by local health centres distributed throughout Oman. Although these centres provide general primary care, some offer specialised outpatient services such as ear, nose and throat, dental, ophthalmic, obstetric and gynaecology care. Secondary healthcare services for patients requiring specialised care are provided by referral hospitals following referral from primary health centres or private clinics (MoH, 2016b). There are also three major tertiary hospitals in Muscat. These are the Royal Hospital, Khoula Hospital and Al Nahdha Hospital (Ministry of Health, 2011a). These hospitals act as referral hospitals for the whole nation. In terms of mental health, the Almasra hospital in Muscat, is a major specialised mental health referral hospital which provides care for the entire population. Furthermore, there are some other governmental health institutions which support the public health services provided by the MoH such as the Sultan Qaboos University Hospital (SQUH), Armed Forces Hospital (AFH) and Royal Oman Police Hospital (ROPH). In addition to these government hospitals, there has been an increase in provision of private health care services, demonstrated by the increase in the number of private healthcare clinics and hospitals. There are currently 19 private hospitals, 304 general clinics, 288 specialised clinics and polyclinics, 251 dental clinics and 48 Chinese and Indian clinics in Oman (MoH, 2019b).

Before 1997, the public health service was free for all Omani nationals and expatriates working in the public sector. Subsequently a minimum fee for annual registration and each outpatient consultation was introduced(Al Salmi and Hannawi, 2018). This was done to reduce the number of "frivolous" visits, rather than to supplement the finances of healthcare services (WHO, 2006). Healthcare services for non-Omanis, working in Oman are by law covered by their employer. However, regardless of the economic and geographical challenges, today nearly 100% of the total Omani and non-Omani population has access to health services (MoH, 2019b).

Moreover, the changes in child and infant mortality, illustrate the success of healthcare services in Oman. In the early 1970s, almost 1 in 5 children died before their fifth birthday. This ratio had been reduced to 1 in 20 children by 1990 and to 11.7 per 1000 live births in 2016 (MoH, 2016d). In 1980, the MoH introduced the Expanded Immunisation Program (EPI), resulting in eradication of diphtheria, neonatal tetanus and polio. Immunisation coverage is high ranging from 99.9 to 100% in all children under the age of one (MoH, 2019d)

Furthermore, life expectancy in Oman is now 79.6 years which exceeds the average life expectancy of the global population at 71.5 years (NCSI, 2019; MoH, 2019b). Due to increased life expectancy and lifestyle changes in Oman, non-communicable and chronic diseases are the leading causes of morbidity and mortality in the adult population. Moreover, road traffic accidents are adding an extra burden to all the public and private health services in Oman. There were 12,168 cases in which more than 78 % of the those involved were under the age of 45 years and had been admitted to MoH hospitals with injuries due to road traffic accidents(MoH, 2019d).

Despite the increase in life expectancy there are few terms long-term elderly care facilities in Oman. This is because of the nature of Omani and Islamic culture, where families are expected to take care of their elderly with chronic diseases. Also because the elderly population accounts for only 6% of the total population, the provision of elderly care facilities is not currently regarded as a priority (MoH, 2019b).

Nursing practice and nursing education development in Oman

The roots of nursing practice in Oman originated from Islamic history. In the past, nursing was practised by women who devoted their lives to caring for needy and wounded people. Nursing in the Islamic world, including Oman, was established by Rufaidah Al-Asalmiya, who is known as the first Muslim nurse in the Islamic literature. Rufaidah's father was a healer(doctor), and she initially obtained her clinical experience from him. Rufaidah became an expert clinical nurse by dedicating herself to nursing and taking care of the sick and needy. In the 7th century, she had a tent on the battlefield during major Islamic battles where she nursed the injured and trained other women to become nurses (Alotaibi, 2016). However, the start of an organised nursing profession and workforce in Oman was in 1950 when a small group of American nurses working with the American Missionary Association established a training program for Omani nationals to become nurses. At that point, Muscat had only two small hospitals (Al Rahma and Muscat) to provide healthcare services to the entire population. The American nurses started to work in these two hospitals and established a six-to-nine-month training program at Al Rahma Hospital to train 16 Omani nurses in 1959 (Alghemini and Denham, 2013). That training programme continued to prepare nurses until 1970 when the program was upgraded to a two-year nursing programme, at the Al Rahma School of Nursing. An initial group of five male nurses graduated in 1972 after completing a two-year training programme. In the same year, the MoH took over the administration of the Al Rahma School of Nursing and increased the number of nursing students in the school and accredited the programme as a certificate level qualification. In 1980, the MoH established the Directorate of Nursing Affairs which was an official recognition of the nursing profession and its significance to the healthcare of Oman. Ms Sally Sedgwick, a British nursing professional, was the first director appointed to lead nursing development in Oman.

Currently, Oman has ten basic MOH Nursing Institutes which supply Oman with the highest percentage of qualified nurses compared to other nursing programmes at universities. The MOH institutions used to provide a three-year diploma program until 2016 when the program was updated to four baccalaureate nursing program (BSN)(MoH, 2016a). The MoH's Directorate of General of Education and Training supervises and manages these Institutes which are distributed in different governorates all over the country. Before that and as a response to the demand for higher education for nurses, Oman established the first baccalaureate nursing program in 2002 in the College of Medicine and Health Sciences at Sultan Qaboos University (SQU). In 2008, the College of Nursing became the 9that SQU. It celebrated the graduation of its first 30 graduates with BSN in 2007. Nowadays, in addition to the MoH institutes, there are three BSN programs in Oman offered by Sultan Qaboos University (SQU), University of Nizwa, and University of Buraimi. In addition to the four-year BSN program, these universities also offer a two-year RN-to-BSN conversion program for nursing diploma holders(NCSI, 2019; MoH, 2019a).

In 2001, the Specialised Nursing Institute (SNI) was established and provides specialised nurse training for general nurses at post-basic Diploma level. Specialised nursing areas include; nephrology, midwifery, paediatric critical care and neonatology, critical adult care, mental health, infection control, and administration (Alghemini and Denham, 2013). In 2016, the first master programme in Critical Care was established at Sultan Qaboos University, in order to increase the proportion of specialised nurses and introduce advanced and sophisticated health and medical care(NCSI, 2019). Although there has been a considerable increase in the numbers of nursing graduates from different nursing schools in Oman, these numbers do not meet the national demand for the required nursing workforce (MoH, 2014). In 2016, 420 nurses graduated from MoH institutes, which is nearly eight times the number that graduated in 1984. In addition, 560 nurses who are graduating every year from

other nursing universities. According to the MoH's annual report in 2019, these numbers were inadequate to meet the healthcare demand, and face the population epidemiological profile, thus Oman enhance their nursing workforce by recruiting nurses abroad especially from India, and Philippine (MoH, 2019a).

Until 2013, in order to become a registered nurse in Oman, students had to complete a three-year Diploma program or a four-year BSN program. They were eligible for registration and employment as a qualified nurse after their graduation. Nurses who graduate from any nursing education institution in Oman are not required to pass the National licensing exam as they have successfully completed nursing program. The licensing exam is mandatory for nurses who have graduated from programs outside Oman (Alghemini and Denham, 2013). Currently, any nursing graduate from any nursing education program in or outside Oman must pass the Oman Prometric exam (which is similar to the American National Council Licensure Examination) to be entitled to practice nursing (MoH, 2019a). However, newly graduated nurses joining the healthcare services must work under the guidance of preceptors for six months (also known as an internship period) before they are permitted to work independently with patients. During this period, novice nurses work with experienced registered nurses (RNs) who continue to teach, mentor and evaluate them (Alghemini and Denham, 2013).

In 2000, a Professional Code of Conduct for nursing and midwifery in Oman was launched. The following year the Oman Nursing and Midwifery Council was established(Al Salmi and Hannawi, 2018). The purpose of the Council was to foster professionalism in practice by applying the professional code of conduct for nurses, as well as maintaining high standards of education and nursing practice. However, in 2014, the council was disbanded, and its responsibilities taken over by the MoH and other government institutes. However, the MoH continues to make every effort to improve the nursing education in order to prepare well-educated nurses and enhance the quality of nursing care.

Appendix 2: Constructed Cases of the concept analysis

Constructed cases clarify the concept and support the analysis by supporting the concept's presence in a model case, the absence of a concept in a contrary case, and the difference between the concept and a closely associated concept in a borderline and related case (Walker and Avant 2011). Four such cases are presented below to further clarify the concept of a HWE.

Model cases

According to Walker and Avant (2011) a model case should include all the attributes of the concept and should the explain how does concept look in real life. The following example demonstrates a model case of the healthy work environment.

Sara is the manager of a medical unit. She was preparing the training schedule for the staff based on a training needs survey which was completed by the nurses the previous month. In addition, she was discussing with her assistant the due nurses' promotions and the criteria of to choose the unit representative in the hospital recruitment committee. At the same time new staff nurse (Nora) approached her senior nurse (Mary) to ask about the LAMA (Leave against Medical Advice) protocol. Mary guided Nora through the protocol and required documents.

Nora was assigned a patient with Graves' Disease. It was the first time she had cared for a patient with this condition and she received help nurse Mary. Mary was helping Nora, but she was concerned about one of her patients who newly diagnosed with Diabetes type I and was complaining of abdominal pain and thirst. Based on her knowledge and experience, she suspected that patient was experiencing the early stages of Diabetic Ketoacidosis. Although his blood sugar and ketone levels were within normal limits, Mary called the doctor and explained her concerns. The doctor came, assessed the patient and intervened accordingly. Sara thanked the nurses for their work, and their ability to manage their time. Moreover, Sara could maintain good nurse: patient ratio, although one staff nurse reported sick, and another staff nurse was attending a short training course.

In this case, the primary attributes of HWE are present. Sara as unit's manager is a supportive leader who reorganises the effort of her staff and provides them with essential guidance. The work environment in this unit is designed to empower the employees and give the opportunity to participate in the decision making. Additionally, the case demonstrating an example of collaborative and effective teamwork mechanism between nurses themselves and other disciplines. In this case, the unit has sufficient resources to maintain adequate staffing, as well as giving the nurses opportunity to get the proper training and promote them accordingly.

Borderline Case

According to Walker and Avant (2011), the borderline case contains some of the critical attributes of the concept but not all of them.

Tracy is a new graduate nurse who is working in the cardiothoracic unit. Since this was her first time to take care of patient post open-heart surgery, she asked her senior nurse to help her in planning her patient care. Unfortunately, the senior nurse was busy and was unable to help, so Tracy decided to depend on herself in providing the care. Although Tracy did not take her break, she was able to provide needed care to her patient. Her supervisor recognised her effort and

appreciated her independence. The unit was busy because two nurses reported sick and one staff nurse was attending a training session.

In the previous case, although some characteristics of HWE are evident in this instance such as a supportive leader, other primary attributes such as teamwork and collaboration among nurses and adequate staffing are missing.

Contrary case

According to Walker and Avant (2011), the contrary case presents the absence of the concept.

Medical unit in the hospital X was suffering from noticeable nursing shortage, and there was no clear plan to increase the staffing level. The top managers in the hospital have been paying attention to the patient safety issue with less consideration of the staff nurses' career development. Consequently, nurses were focusing on their day-to-day tasks and they did not give the attention to their advancement. Their stress level was at the highest level, and no support was received from their supervisor.

This case is clearly presenting the contrary case, which has no attributes of HWE. In fact, this case has all characteristics of the unhealthy environment such as insufficient resources, unsupportive leaders, and lack of teamwork.

Illegitimate case

The illegitimate case illustrates the improper use of the concept or the use of the concept in a different context(Walker and Avant, 2011)

Rayan and Maria are new parents. They are involved in a training program about providing a healthy environment for the child growth. They understood that the main approaches in providing healthy environment are providing him with the opportunity to explore his area, involving their family in raising him, and meeting his physical needs such as food and fresh air and sun exposure.

The concept of healthy work environment could be utilised in various context. The earlier case presents the concept of the healthy environment of raising a child.

Invented Case

Invented case illustrates hypothetical situations which does not exist (Walker and Avant, 2011).

Sara is a staff nurse who is working in a medical unit, where the nurse: patient ratio is 1:1. She was on morning duty, and she complained of a headache. Diana, the unit manager, asked her to go home and rest, and she will take care of her patient. At the same day, Diana received calls from two other nurses who will not come to work because they are attending their children party at school. In this unit, doctors are providing care for patients and nurses are giving them the treatment orders. Nurses were spending two hours of their workday in the hospital spa or joining the yoga session that is provided by the hospital.

The working conditions that are described in this case are not a real regarding the responsibilities and commitments to the work. This work environment not exists and does not present the nursing HWE.

Appendix 3: PROSPERO systematic review protocol

PROSPERO
International prospective register of systematic reviews

NHS National Institute for Health Research

UNIVERSITY of York
Centre for Reviews and Dissemination

Systematic review

1. * Review title.

Give the working title of the review, for example the one used for obtaining funding. Ideally the title should state succinctly the interventions or exposures being reviewed and the associated health or social problems. Where appropriate, the title should use the PI(E)COS structure to contain information on the Participants, Intervention (or Exposure) and Comparison groups, the Outcomes to be measured and Study designs to be included.

The relationship between a healthy work environment and intent to stay with organisation among qualified nurses working in an acute healthcare setting: a systematic review

2. Original language title.

For reviews in languages other than English, this field should be used to enter the title in the language of the review. This will be displayed together with the English language title.

3. * Anticipated or actual start date.

Give the date when the systematic review commenced, or is expected to commence.

31/07/2018

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

31/12/2018

5. * Stage of review at time of this submission.

Indicate the stage of progress of the review by ticking the relevant Started and Completed boxes. Additional information may be added in the free text box provided.
Please note: Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. Should evidence of incorrect status and/or completion date being supplied at the time of submission come to light, the content of the PROSPERO record will be removed leaving only the title and named contact details and a statement that inaccuracies in the stage of the review date had been identified.
This field should be updated when any amendments are made to a published record and on completion and publication of the review. If this field was pre-populated from the initial screening questions then you are not able to edit it until the record is published.

The review has not yet started: No

Please follow the link for the full form:

https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=103107

Appendix 4: Data Extraction Form adapted from the Cochrane Collaboration

Title of the systematic review: The relationship between a healthy work environment and intent to stay with organisation among qualified nurses working in an acute healthcare setting

This form has been established by adopting and modifying the "Data collection form for intervention review – RCTs and non-RCTs" of The Cochrane Collaboration. Particular new sections have been added into this tool and the inappropriate sections have been removed from the original form. Information included on this form should be comprehensive, and may be used in the text of the review.

Notes on using this data extraction form:

- Be consistent in the order and style you use to describe the information for each included study
- Record any missing information as unclear or not described, to make it clear that the information was not found in the study report(s), not that you forgot to extract it.
- Include any instructions and decision rules on the data collection form, or in an accompanying document. It is important to practice using the form and give training to any other authors using the form.
- You will need to protect the document in order to use the form fields (Tools / Protect document)

Review title or ID	
Study ID *(surname of first author and year first full report of study was published e.g. Smith 2001)*	
Notes	

General Information

Date form completed *(dd/mm/yyyy)*	
Name/ID of person extracting data	
Reference citation (Doi #)	If available
Publication type (*e.g. full report, abstract, letter)*	☐*Journal article.* ☐*Thesis/ Dissertation.* ☐*SR*
Notes:	

Study eligibility

Study Characteristics	Eligibility criteria *(Insert inclusion criteria for each characteristic as defined in the Protocol)*	Eligibility criteria met? Yes No Unclear	Location in text or source *(pg & ¶/fig/table/other)*
Type of study (as described in the paper)			
Participants			
Setting			

The healthy work environment attributes			
Types of outcome measures (ITS or ITL)			
INCLUDE	EXCLUDE		
Reason for exclusion			

Characteristics of included studies
Methods

	Descriptions as stated in report/paper		Location in text or source *(pg & ¶/fig/table /other)*
Aim of study *(e.g. efficacy, equivalence, pragmatic)*			
Dependent variables have been studied			
Independent variables have been studied			
Design *(e.g. parallel, crossover, non-RCT)*			
Ethical approval needed/ obtained for study	Yes No Unclear		
Notes:			

	Description *Include comparative information for each intervention or comparison group if available*		Location in text or source *(pg & ¶/fig/table/other)*
Population description *(from which study participants are drawn)*			
Setting *(including location and social context)*			
Inclusion criteria			
Exclusion criteria			
Method of recruitment of participants *(e.g. phone, mail, clinic patients)*			
Informed consent obtained	Yes No Unclear		
Samp e s ze			
Samp e s ze just f cat on, or ca cu at on	Yes No Unclear		
Response rate			
Subgroup ana ys s	Yes No Unclear		
Notes:			

Participants

Outcomes.
Outcome

	Description as stated in report/paper		Location in text or source *(pg & ¶/fig/table/other)*
Outcome name			
Outcome definition *(with diagnostic criteria if relevant)*			
Person measuring/ reporting			
Is outcome/tool validated?	Yes No Unclear		
Management of missing data *(e.g. assumptions made for ITT analysis)*			
the reliability and validity have been evaluated			
Power *(e.g. power & sample size calculation, level of power achieved)*			
Notes:			

Other

Study funding sources *(including role of funders)*	Yes No Unclear	
Possible conflicts of interest *(for study authors)*	Yes No Unclear	
Notes:		

Data analysis and result

	Description as stated in report/paper		Location in text or source *(pg & ¶/fig/table/other)*
The theoretical Framework			
Results (main result about the relationship between the healthy work environment and ITS or ITL)			
Any other results reported			
No. missing data			
level of analysis *(by individuals, unit, hospital)*			
Statistical test used and appropriateness to answer the research's questions*(e.g. adjustment for correlation)*			
Reanalysis required? *(specify, e.g. correlation adjustment)*	Yes No Uncertain		
Reanalysis possible?	Yes No Uncertain		

Notes:

Discussion

	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table/other)*
Key discussion points *(with references in detail*		
Notes:		

limitations

	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table/other)*
Limitation		
Strategies to overcome the limitations	Yes No Unclear	
Notes:		

Recommendations

	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table /other)*
Intended audience (State)		

Recommendations for research	Yes No Unclear	
If "Yes" state them (briefly)		
Notes:		

Other information

	Description as stated in report/paper	Location in text or source *(pg & ¶/fig/table /other)*
Key conclusions		
References to other relevant studies		
Correspondence required for further study information *(from whom, what and when)*	Yes No Maybe	
Notes:		

Study Quality Assessment

		Yes (3)	NO (0)	Partially (2)	Not clear (1)
1	The aim is clear				
2	Study design is appropriate doe the identified aim?				
3	The sample size was justified				
4	The target population is clearly defined				
5	The sample selection process was clear and representative for the target population				
6	The informed consent was obtained prior to data collection				
7	Measures has been undertaken to deal with non-responders and missing data				
8	The study instrument and measurement were piloted, trailed or published previously				
9	The statistical significance or precision estimate are clear(p value or confidence interval)				
10	The method including the statistical test included and clearly described				
11	The analysis of the basic data was described				
12	The response rate was mentioned and justified				
13	The result was presented in order to answer the study question(s)				

14	The study conclusion and discussion were justified by the result				
15	The limitations of the study were discussed				
16	There were no conflict of interest or funding resources which may affect the study result				
17	The ethical approval was obtained				
	Total				

Circle the appropriate quality level:

High quality paper	51-34
Medium quality paper	33-17
Low quality paper	16-0

Final decision	
To be included	
To be excluded	

Appendix 5: Invitation email and participants' information leaflet

UNIVERSITY OF BIRMINGHAM

Invitation email

Study Title: **"The relationship between the healthy work environment and intent to stay of nurses working in public hospitals in Muscat, Sultanate of Oman".**

Lead researcher: Asma Al Yahyaei

Supervisors: Professor Debbie Carrick-Sen and Dr Alistair Hewison

Thank you for taking the time to read this invitation. My name is by Asma Al Yahyaei, a full time PhD student at the University of Birmingham, UK and a Lecturer in nursing at Sultan Qaboos University in Oman. I would like to invite you to participate in a study which **aims to explore the perception of the nurses of their working environment and the relationship between the nurses' perception of their work environment and intention to stay in their current working ward.**

Your participation is voluntary. I have contacted you because you work in clinical practice and your views will be helpful in understanding the links between the work environment and your plans (or not) to stay in your current working unit. I would be most grateful if you could complete the survey If you have any questions or need more information or explanation, please do not hesitate to contact me.

If you agree to take part in this study you will be asked to complete a survey, which will take approximately 15 minutes. If you decide to take part, you are free to withdraw your information up to 48 hours after completion.

Collected data will be anonymised and stored on a password protected server. No-one will have access to the study data except the lead researcher and supervisors. Once the study is complete, data will be retained for 10 years after which, the files will be destroyed. Your data will be kept confidential and will be used exclusively for the PhD and any resulting publications.

This study is not associated with any anticipated risk. However, it is unlikely that you will directly benefit from this study. However, you may feel satisfied, knowing that the information you have provided will help in establishing strategies to enhance the work environment and improve staff retention.

Thank you for considering taking part in this study

Asma Al Yahyaei,
Full Time PhD student
School of Nursing, College of Medical and Dental Sciences, University of Birmingham
Email: asa632@student. Bham.ac.uk,/ Whattsup : +968 97676457 / Call: +44121 414 7120

The relationship between the healthy work environment domains and intent to stay with employer for qualified nurses working public hospitals in Muscat in Sultanate of Oman

Participant Information Sheet

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

Who will conduct the research?

I am Asma Al Yahyaei, currently doing a full time PhD degree at the University of Birmingham, UK. I obtained my nursing degree from Sultan Qaboos University Oman in 2009 and obtained a master's degree in Nursing Administration in 2014 from California State University, Long Beach, USA. I have worked as lecturer at Sultan Qaboos University since 2009.

Title of the Research

The relationship between the healthy work environment domains and intent to stay with employer for qualified nurses working in public hospitals in Muscat in Sultanate of Oman.

What is the aim of the research?

This study aims to examine qualified nurses' perceptions of the healthy work environment and explore the intention to stay of the qualified nurses working in Oman in order to investigate if there is a correlation between intent to stay and some healthy work environment domains among qualified nurses working in Oman.

Why have I been chosen?

Your experience as qualified nurse will help to understand the different perception of the work environment and its relationship with nurses' intention to stay.

Do I have to take part?

No, it is up to you to decide whether or not to take part and you are free to change your mind at any time and you do not have to give a reason. Your job will not be affected in any way.

What would I be asked to do if I took part?

You will be asked to take part in answering two online assessment tools, mainly to assess the healthy work environment and the nurse' intention to stay. Each surveys will take approximately of 30-45minutes.

What happens to the data collected?

Your data will be incorporated into my PhD dissertation and any related publications. Any data integrated into my PhD dissertation and/or published will be anonymised. The data will not be used for any other purpose or study. I will ensure no one have access to your data except my PhD supervisors.

How is confidentiality maintained?

Collected data will be anonymised and stored in password protected file. The filled surveys will be anonymised by using a code for each participant. Any master decoding file will be kept securely and separate from the main files. I will ensure that no-one will have access to the study data except me and my supervisors.

Once the study is complete and following the University of Birmingham's data retention period 15 years the files will be destroyed.

What happens if I do not want to take part or if I change my mind?

It is up to you to decide whether or not to take part. If you decide to take part, you are still free to withdraw at any time without giving a reason and without any consequences. You have the total freedom to not answering any questions.

Will I be paid for participating in the research?

There is no payment given to participants.

Where will the research be conducted?

The assessment tool will be sent to your email. You can answer the surveys any convenient time and place.

What will happen after I take part?

Your data will be kept confidential and will be used exclusively for my PhD and any resulting publications.

Contact for further information or questions

Asma Al Yahyaei,
Full Time PhD student
School of Nursing, College of Medical and Dental Sciences, University of Birmingham
Email:
Whattsup :
Text:

What if I have a complaint?

To make a formal complaint about the conduct of the research, please contact

My supervisors:

Prof Debbie Carrick-Sen
Primary supervisor
College of Medical and Dental Sciences/ Nursing

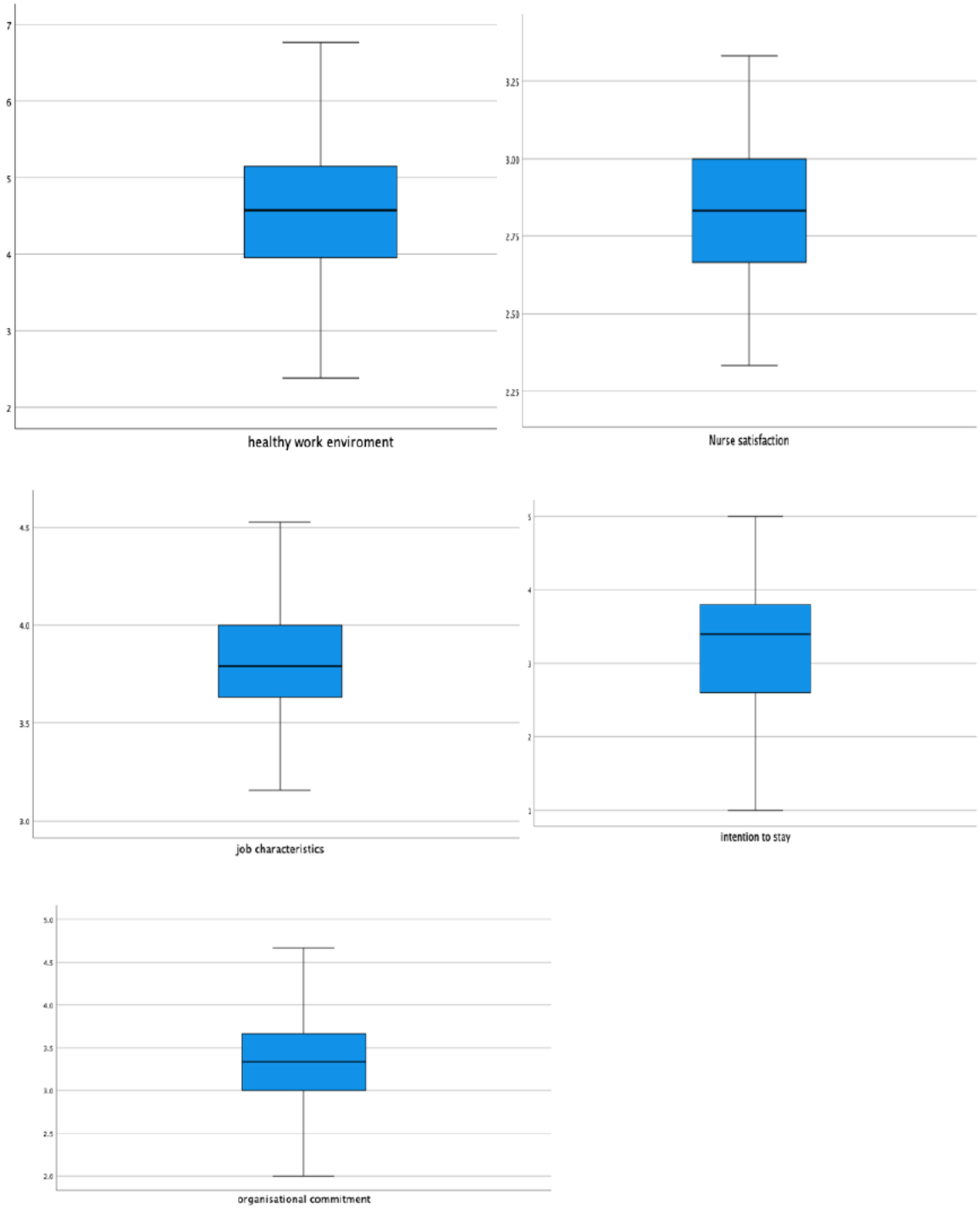
Dr Alistair Hewison
Secondary supervisor
College of Medical and Dental Sciences/ Nursing

Appendix 6 : Sampling matrix of the survey pilot

The recruitments metrics for the questionnaire pilot phase 3b (Appendix 6)

	Hospital 1	Hospital 2	Hospital 3	Total
Medical and elderly care ward	1	2	2	5
Surgical ward	1	1	2	4
Intensive care and Emergency ward	1	1	1	3
Paediatric ward	1	1	1	3
Gynaecology and obstetrics ward	1	1	2	4
Speciality nurse	1	1	1	3
Total	6	7	9	22

Appendix 7: The study variables boxplot (Tabachnick, Fidell and Ullman, 2007)



Appendix 8: The final survey

1. Intention to stay

This part of the questionnaire relates to the nurses' intention to stay. The following is a list of questions designed to explore the likelihood of you staying in your current post. By using numbers from the following key for each item, please indicate the likelihood of staying in your current job
1 = Strongly disagree 2 = Disagree3 = Neutral 4 = Agree 5 = Strongly agree

	Question	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	Even if this ward does not meet all my expectations, I will stay?	**1**	**2**	**3**	**4**	**5**
2	I plan to work on my present ward as long as possible.	**1**	**2**	**3**	**4**	**5**
3	I will probably spend the rest of my career on this ward	**1**	**2**	**3**	**4**	**5**
4	I plan to keep working on this ward for at least two or three years.	**1**	**2**	**3**	**4**	**5**
5	Under no circumstances would I leave my ward.	**1**	**2**	**3**	**4**	**5**

2. The overall nurse satisfaction

The following 6 questions are prepared to assess your overall satisfaction, Read the question carefully and chose the most appropriate answer for you. (please notice that each question has different answering options)

		1	**2**	**3**	**4**	**5**
1	**If you had to decide again whether to take the job you now have, what would you decide?**	Definitely take the job	Probably take job	Maybe take it, Maybe not	Probably not take job	Definitely not take job
2	**If a friend asked if he/she should apply for a job like yours with your employer, what would you recommend?**	Recommend Strongly	Recommend Moderately	Recommend somewhat	Recommend weakly	Recommend not at all
3	**How does this job compare to your ideal job?**	Very far from ideal	Far from ideal	Some distance from ideal	Close to ideal	It is my ideal job
4	**How does your job measure up to the sort of job you wanted when you took it?**	Just like what I wanted	Almost like what I wanted	Sort of like what I wanted	Not much like what I wanted	Not at all like what I wanted
5	**All things considered, how satisfied are you with your current job?**	Not at all satisfied	Slightly satisfied	Moderately satisfied	Largely satisfied	Completely satisfied
6	**In general, how much do you like your job?**	Not at all	A little bit	Moderately	A lot	A great deal

3. The organisational commitment:

"Please indicate how much you agree or disagree with the following statements. Would you say that you strongly disagree, disagree, agree, or strongly agree?"

		Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1	I am willing to work very hard in order to help this organization succeed.	**1**	**2**	**3**	**4**	**5**
2	I feel very little loyalty to this organization.	**1**	**2**	**3**	**4**	**5**
3	I would take almost any job to keep working for this organization	**1**	**2**	**3**	**4**	**5**
4	I find that my values and the organization's values are very similar	**1**	**2**	**3**	**4**	**5**
5	I am proud to be working for this organization.	**1**	**2**	**3**	**4**	**5**
6	I would turn down another job for more pay in order to stay with this organization	**1**	**2**	**3**	**4**	**5**

1. Healthy work environment

The following questions are assessing your perception of the work environment. For each item, please indicate the extent to which you agree that the item is PRESENT IN YOUR CURRENT organisation by circling the appropriate number. needs a starter sentence eg: In the hospital where I currently work

	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree
Staffing							
1. Adequate support services to allow me to spend time with my patients	□	□	□	□	□	□	□
2. Enough registered nurses on staff to provide quality patient care	□	□	□	□	□	□	□
3. Enough time and opportunity to discuss patient care problems with other nurses	□	□	□	□	□	□	□
4. Enough staff to get the work done	□	□	□	□	□	□	□
Doctors-nurses' relationships and teamwork							
5. Doctors and nurses have a good working relationship	□	□	□	□	□	□	□
6. There is collaboration (joint practice) between nurses and doctors	□	□	□	□	□	□	□
7. Much teamwork between doctors and nurses	□	□	□	□	□	□	□
Management support and Leadership							
8. Nursing controls its own practice	□	□	□	□	□	□	□
9. A nurse manager supports the nursing staff in decision- making, even if the conflict is with a person from another health profession	□	□	□	□	□	□	□
10. The nurse manager is an effective manager and leader	□	□	□	□	□	□	□
11. Patient assignment fosters continuity of care (i.e. the same nurses care for the same patients one day to the next)	□	□	□	□	□	□	□
12. I am not placed in a position of having to do things that are against my nursing judgement	□	□	□	□	□	□	□

13. Managerial staff that are supportive of nurses	□	□	□	□	□	□	□
14. I have freedom to make important patient care and work decisions	□	□	□	□	□	□	□
Nursing empowerment							
15. Management places a great deal of confidence in my judgement	□	□	□	□	□	□	□
16. My impact on what happens is very large	□	□	□	□	□	□	□
17. I have authority to correct problems when they occur	□	□	□	□	□	□	□
18. I have enough power to make real changes	□	□	□	□	□	□	□
Career development							
19. I have been offered financial support for my further education by my hospital	□	□	□	□	□	□	□
20. I have experienced job rotation conducted by the hospital to gain cross-functional experience	□	□	□	□	□	□	□
21. I have been told about the succession plan, the possible replacement of other mangers and the potential of promotion	□	□	□	□	□	□	□
22. I have been informed of job vacancies by hospital job posting	□	□	□	□	□	□	□
23. I have been offered dual ladder to enable my upward mobility and recognition	□	□	□	□	□	□	□
Training and Education							
24. I have participated in in-house training provided my hospital	□	□	□	□	□	□	□
25. I have been giving training to help develop my career	□	□	□	□	□	□	□
26. I learned about hospital culture and behaviours in an orientation/ induction program	□	□	□	□	□	□	□
27. I have been offered external visit and study to help me to develop my career	□	□	□	□	□	□	□

Nursing profession characteristics

The questions in this section concern characteristics of the job itself. Using the scale below, please indicate the extent to which you agree with each statement. Choose you answer based on the following scale. 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree

Task Characteristics	**Strongly Disagree 1**	**Disagree 2**	**Neutral 3**	**Agree 4**	**Strongly Agree 5**
Decision-Making Autonomy					
1. The job gives me a chance to use my personal initiative or judgment in carrying out the work.	1	2	3	4	**5**
2. The job allows me to make a lot of decisions on my own.	1	2	3	4	**5**
3. The job provides me with significant autonomy in making decisions.	1	2	3	4	**5**
Task Variety					
1. The job involves a great deal of task variety.	1	2	3	4	**5**
2. The job involves doing a number of different things.	1	2	3	4	**5**
3. The job requires the performance of a wide range of tasks.	1	2	3	4	**5**
4. The job involves performing a variety of tasks.	1	2	3	4	**5**
Task Significance					
1. The results of my work are likely to significantly affect the lives of other people.	1	2	3	4	**5**
2. The job itself is very significant and important in the broader scheme of things.	1	2	3	4	**5**

3. The job has a large impact on people outside the organization.	1	2	3	4	**5**
4. The work performed on the job has a significant impact on people outside the organization.	1	2	3	4	**5**
Task Identity					
1. The job involves completing a piece of work that has an obvious beginning and end.	1	2	3	4	**5**
2. The job is arranged so that I can do an entire piece of work from beginning to end.	1	2	3	4	**5**
3. The job provides me the chance to completely finish the pieces of work I begin.	1	2	3	4	**5**
4. The job allows me to complete work I start.	1	2	3	4	**5**
Physical Demands					
1. The job requires a great deal of muscular endurance.	1	2	3	4	**5**
2. The job requires a great deal of muscular strength.	1	2	3	4	**5**
3. The job requires a lot of physical effort.	1	2	3	4	**5**
Payment satisfaction					
1.The overall payment for the job I perform is satisfying	1	2	3	4	**5**

Demographic information					
1. Ward:					
2. Date of birth:					
3. Gender:	a) Female	b) Male			
4. Educational level:	a) Diploma degree	b) Baccalaureate Degree	a) Master's degree	b) Other Specify	
5. Marital status:	a) single	b) married	c) divorced	d) widowed	e) ther
6. Number of children:					
7. Years of experience in your current ward					
8. Years of experience in your current hospital					
9. Years of experience in nursing					

10. Do you have available opportunity to work somewhere else?	a) yes	b) no	
11. Do you have any managerial role in your unit?	a) yes	b) no	

Appendix 9: Likert scale analysis of study's variables(Frequencies and percentages)

1- Intention to stay

Item	Strongly disagree	Disagree	**Neutral**	Agree	Strongly agree	Mean	Std. Deviation	Decision
Even if this ward does not meet all your expectations, you will stay?	80(11.9%)	138(20.5%)	147(21.8%)	243(36.1%)	66(9.8%)	3.11	1.19	**Neutral**
I plan to work on my present ward as long as possible.	41(6.1%)	136(20.2%)	84(12.5%)	237(35.2%)	176(26.1%)	3.55	1.24	Agree
I will probably spend the rest of my career on this ward	64(9.5%)	146(21.7%)	157(23.3%)	185(27.4%)	122(18.1%)	3.23	1.24	**Neutral**
I plan to keep working on this ward for at least two or three years.	38(5.6%)	120(17.8%)	121(18%)	254(37.7%)	141(20.9%)	3.50	1.17	Agree
Under no circumstances would I leave my ward.	77(11.4%)	212(31.5%)	166(24.6%)	147(21.8%)	72(10.7%)	2.89	1.19	**Neutral**

Mean	**Std. Deviation**	**Decision**
3.25	0.92	**Neutral**

2- Organisational commitment

Item	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Mean	Std. Deviation	Decision
I am willing to work very hard in order to help this organization succeed.	16(2.4%)	32(4.7%)	48(7.1%)	299(44.4%)	279(41.4%)	4.18	0.92	Agree
I feel very little loyalty to this organization	176(26.1%)	265(39.3%)	138(20.5%)	83(12.3%)	12(1.8%)	2.24	1.03	Disagree
I would take almost any job to keep working for this organization	31(4.6%)	145(21.5%)	202(30%)	235(34.9%)	61(9.1%)	3.22	1.03	**Neutral**
I find that my values and the organization's values are very similar	8(1.2%)	76(11.3%)	248(36.8%)	286(42.4%)	56(8.3%)	3.45	0.84	Agree
I am proud to be working for this organization.	9(1.3%)	45(6.7%)	136(20.2%)	295(43.8%)	189(28%)	3.91	0.93	Agree
I would turn down another job for more pay in order to stay with this organization	75(11.1%)	199(29.5%)	230(34.1%)	135(20%)	35(5.2%)	2.79	1.05	**Neutral**

Mean	**Std. Deviation**	**Decision**
3.54	0.63	**Neutral**

3. Healthy work environment

a- Staffing

Item	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree	Mean	Std. Deviation	Decision
1	27(4%)	126(18.7%)	81(12%)	29(4.3%)	135(20%)	215(31.9%)	61(9.1%)	4.50	1.81	Somewhat agree
2	67(9.9%)	139(20.9%)	84(12.5%)	46(6.8%)	124(18.4%)	154(22.8%)	60(8.9%)	4.07	1.94	Neither
3	26(3.9%)	123(18.2%)	91(13.5%)	73(10.8%)	156(23.1%)	154(22.8%)	51(7.6%)	4.30	1.72	Neither
4	89(13.2%)	113(16.8%)	107(15.9%)	66(9.8%)	139(20.6%)	122(18.1%)	38(5.6%)	3.85	1.85	Neither

Mean	**Std. Deviation**	**Decision**
4.17	1.61	Neither

b- Doctors-nurses' relationships and teamwork

Item	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree	Mean	Std. Deviation	Decision
5	5(0.7%)	14(2.1%)	44(6.5%)	29(4.3%)	154(22.8%)	345(50.7%)	86(12.8%)	5 5	1.17	Agree
6	8(1.2%)	22(3.3%)	28(4.2%)	45(6.7%)	172(25.5%)	323(47.9%)	76(11.3%)	4.07	1.93	Neither
7	4(0.6%)	22(3.3%)	34(5%)	51(7.6%)	181(26.9%)	312(46.3%)	70(10.4%)	4 29	1.72	Neither

Mean	**Std. Deviation**	**Decision**
5.42	1.08	Agree

c- Management support and Leadership

Item	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree	Mean	Std. Deviation	Decision
8	13(1.9%)	61(9.1%)	28(4.2%)	50(7.4%)	124(18.4%)	316(46.9%)	82(12.2%)	5.21	1.51	Somewhat agree
9	11(1.6%)	46(6.8%)	56(8.3%)	50(7.4%)	145(21.5%)	297(44.1%)	69(10.2%)	5.14	1.46	Somewhat agree
10	15(2.2%)	67(9.9%)	51(7.6%)	80(11.9%)	144(21.4%)	224(33.2%)	93(13.8%)	4.95	1.60	Somewhat agree
11	13(1.9%)	68(10.1%)	91(13.5%)	75(11.1%)	123(18.2%)	240(35.6%)	64(9.5%)	4.78	1.60	Somewhat agree
12	13(1.9%)	79(11.7%)	66(9.8%)	114(16.9%)	127(18.8%)	222(32.9%)	53(7.9%)	4.69	1.57	Somewhat agree
13	12(1.8%)	48(7.1%)	68(10.1%)	76(11.3%)	169(25.1%)	245(36.4%)	56(8.3%)	4.93	1.46	Somewhat agree
14	9(1.3%)	49(7.3%)	57(8.5%)	93(13.8%)	200(29.7%)	219(32.5%)	47(7%)	4.89	1.39	Somewhat agree

d- Nursing empowerment

Mean	Std. Deviation	Decision
4.93	1.08	Somewhat agree

Item	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree	Mean	Std. Deviation	Decision
15	15(2.2%)	70(10.4%)	69(10.2%)	53(7.9%)	150(22.3%)	265(39.3%)	52(7.7%)	4.86	1.57	Somewhat agree
16	10(1.5%)	56(8.3%)	88(13.1%)	74(11%)	210(31.2%)	198(29.4%)	38(5.6%)	4.73	1.44	Somewhat agree
17	14(2.1%)	96(14.2%)	96(14.2%)	92(13.6%)	172(25.5%)	171(25.4%)	33(4.9%)	4.42	1.56	Neither
18	29(4.3%)	114(16.9%)	108(16%)	85(12.6%)	192(28.5%)	116(17.2%)	30(4.9%)	4.14	1.61	Neither

Mean	Std. Deviation	Decision
4.53	1.31	Somewhat agree

e- **Career development**

Item	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree	Mean	Std. Deviation	Decision
19	227(33.7%)	184(27.3%)	44(6.5%)	68(10.1%)	60(8.9%)	75(11.1%)	16(2.4%)	2.76	1.85	Disagree somewhat
20	83(12.3%)	174(25.8%)	87(12.9%)	56(8.3%)	97(14.4%)	153(22.7%)	24(3.6%)	3.69	1.89	Neither
21	55(11.1%)	150(22.3%)	101(15%)	109(16.2%)	97(14.4%)	124(18.4%)	18(2.7%)	3.66	1.75	Neither
22	75(11.1%)	148(22%)	110(16.3%)	101(15%)	106(15.7%)	124(18.4%)	10(1.5%)	3.63	1.72	Neither
23	73(10.8%)	143(21.2%)	138(20.5%)	119(17.7%)	121(18%)	72(10.7%)	8(1.2%)	3.47	1.57	Disagree somewhat

Mean	Std. Deviation	Decision
3.43	1.30	Disagree somewhat

f- **Training and Education**

Item	Strongly Disagree	Disagree	Disagree somewhat	Neither	Somewhat agree	Agree	Strongly Agree	Mean	Std. Deviation	Decision
24	21(3 1%)	38(5.6%)	29(4.3%)	25(3.7%)	102(15.1%)	352(52.2%)	107(15.9%)	5.42	1.48	Agree
25	5(0.7%)	17(2.5%)	25(3.7%)	35(5 2%)	135(20%)	372(55.2%)	85(12.6%)	5 57	1.13	Agree
26	6(1 3%)	17(2.5%)	32(4.7%)	56(8.3%)	113(16.8%)	339(50.35%)	108(16%)	5 52	1.26	Agree
27	60(8 9%)	191(28.3%)	87(12.9%)	72(10.7%)	114(16.9%)	118(17.5%)	32(4.7%)	3.70	1.81	Neither

Mean	Std. Deviation	Decision
5.04	0 98	Somewhat agree

4. **Nursing profession characteristics**

a. Decision-Making Autonomy

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation	Decision
The job gives me a chance to use my personal initiative or judgment in carrying out the work.	8(1.2%)	36(5.3%)	164(24.3%)	423(62.8%)	42(6.2%)	3.68	0.72	Agree
The job allows me to make a lot of decisions on my own.	8(1.2%)	114(16.9%)	257(38.1%)	259(38.4%)	35(5.2%)	3.30	0.85	Neutral
The job provides me with significant autonomy in making decisions.	19(2.8%)	152(22.6%)	236(35%	245(36.4%)	21(3.1%)	3.14	0 90	Neutral

Mean	Std. Deviation	Decision
3.37	0.72	Neutral

b. Task Variety

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation	Decision
The job involves a great deal of task variety.	3(0.4%)	16(2.4%)	93(13.8%)	487(72.3%)	74(11%)	3.91	0.61	Agree
The job involves doing a number of different things.	1(0.1%)	11(1.6%)	109(16.2%)	455(67.5%)	97(14.4	3.95	0.62	Agree
The job requires the performance of a wide range of tasks.	3(0.4%)	14(2.1%)	126(18.7%)	437(65%)	92(13.6%)	3.89	0.66	Agree
The job involves performing a variety of tasks.	2(0.3%)	17(2.5%)	128(19%)	449(66.6%)	77(11.4%)	3.86	0.64	Agree

Mean	**Std. Deviation**	**Decision**
3.90	0.54	Agree

c. Task Significance

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation	Decision
The results of my work are likely to significantly affect the lives of other people.	8(1.2%)	11(1.6%)	58(8.6%)	450(66.8%)	146(21.7%)	4.06	0.69	Agree
The job itself is very significant and important in the broader scheme of things.	1(0.1%)	6(0.9%)	104(15.4%)	431(63.9%)	131(19.4%)	4.02	0.63	Agree
The job has a large impact on people outside the organization.	2(0.3%)	20(3%)	133(19.7%)	401(59.5%)	117(17.4%)	3.91	0.71	Agree
The work performed on the job has a significant impact on people outside the organization.	2(0.3%)	15(2.2%)	132(19.9%)	417(61.9%)	107(15.9%)	3.91	0.68	Agree

Mean	Std. Deviation	Decision
3.97	0.55	Agree

d.Task Identity

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation	Decision
The job involves completing a piece of work that has an obvious beginning and end.	3(0.4%)	20(3%)	125(18.5%)	476(70.6%)	48(7.1%)	3.81	0.62	Agree
The job is arranged so that I can do an entire piece of work from beginning to end.	2(0.3%)	29(4.3%)	190(28.2%)	391(58%)	60(8.9%)	3.71	0.70	Agree
The job provides me the chance to completely finish the pieces of work I begin.	1(0.1%)	33(4.9%)	229(34%)	356(52.8%)	53(7.9%)	3.64	0.71	Agree
The job allows me to complete work I start.	1(0.1%)	31(4.6%)	197(29.2%)	400(59.3%)	43(6.4%)	3.67	1.67	Agree

Mean	Std. Deviation	Decision
3.70	0.54	Agree

e.Physical Demands

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation	Decision
The job requires a great deal of muscular endurance.	1(0.1%)	5((0.7%)	32(4.7%)	435(64.5%)	199(29.5%)	4.23	0.58	Strongly agree
The job requires a great deal of muscular strength.	1(0.1%)	4(0.6%)	40(5.9%)	415(61.6%)	212(31.5%)	4.24	0.60	Strongly agree
The job requires a lot of physical effort.	1(0.1%)	3(0.4%)	40(5.9%)	412(61.1%)	216(32%)	4.25	0.59	Strongly agree

Mean	**Std. Deviation**	**Decision**
4.24	0.56	

d. Payment satisfaction

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation	Decision
The overall payment for the job I perform is satisfying	70(10.4%)	40(5.9%)	133(19.7%)	339(50.3%)	90(13.4%)	3.50	1.12	Neutral

Mean	**Std. Deviation**	**Decision**
3.50	1.12	Neutral

5. The overall nurse satisfaction

If you had to decide again whether to take the job you now have, what would you decide?	Frequency	Percent	Mean	Std. Deviation
Definitely take the job	270	40.1%	3.31	0 93
Probably take job	160	23.7%		
Maybe take it, Maybe not	190	28.2%		
Probably not take job	36	5.3%		
Definitely not take job	18	2.7%		

If a friend asked if he/she should apply for a job like yours with your employer, what would you recommend?	Frequency	Percent	Mean	Std. Deviation
Recommend Strongly	240	35.6%	3.46	0.87
Recommend Moderately	216	32.0%		
Recommend somewhat	149	22.1%		
Recommend weakly	48	7.1%		
Recommend not at all	21	3.1%		

How does this job compare to your ideal job?	Frequency	Percent	Mean	Std. Deviation
Very far from ideal	24	3.6%	3 54	1.00
Far from ideal	53	7.9%		
Some distance from ideal	273	40.5%		
Close to ideal	187	27.7%		
It is my ideal job	137	20.3%		

How does your job measure up to the sort of job you wanted when you took it?	Frequency	Percent	Mean	Std. Deviation
Just like what I wanted	80	11.9%	3.56	0.85
Almost like what I wanted	229	34%		
Sort of like what I wanted	292	43.3%		
Not much like what I wanted	63	9.3%		
Not at all like what I wanted	10	1.5%		

All things considered, how satisfied are you with your current job?	Frequency	Percent	Mean	Std. Deviation
Not at all satisfied	17	2.5%	3.90	1.07
Slightly satisfied	89	13.2%		
Moderately satisfied	324	48.1%		
Largely satisfied	158	23.4%		
Completely satisfied	86	12.8%		

In general, how much do you like your job?	Frequency	Percent	Mean	Std. Deviation
Not at all	1	0.1%	3.93	1.07
A little bit	48	7.1%		
Moderately	301	44.7%		
A lot	217	32.2%		
A great deal	107	15.9%		

Overall job satisfaction	3.61	0.76	