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FACTORS INFLUENCING NURSES INTENTIONS TO LEAVE ADULT CRITICAL CARE SETTINGS

RUNING HEAD: WHAT FACTORS INFLUENCE NURSES'S INTENTIONS TO LEAVE THE ADULT CRITICAL CARE ARAES?

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TITLE

**FACTORS INFLUENCING NURSES' INTENTIONS TO LEAVE
ADULT CRITICAL CARE SETTINGS**

(A SYSTEMATIC LITERATURE REVIEW)

Abstract

Background: The shortage of critical care and specialist nurses has been an ongoing issue for many decades. Although all areas of nursing are affected, critical care areas are especially vulnerable to recruitment and retention problems. High nursing turnover in critical care areas is evident, however research into the factors that influence nurses' intentions to leave adult critical care areas is limited.

Aim: To explore factors that may influence nurses' intentions to leave adult critical care areas.

Objectives: To appraise existing evidence and highlight gaps in knowledge regarding factors that may influence nurses' intentions to leave adult critical care areas.

Methods: A systematic mixed-method literature review was completed. The search strategy was developed using the list, keep and delete approach, a framework used to identify search terms for systematic health care reviews. The following key words were used: intentions to leave, nurses, adult and critical care. The databases searched were BNI, CINAHL, PubMed, PsycINFO, Embase and Health B Elite from 2005-2016. Primary data from non-critical care areas and neonatal and paediatric critical care areas were excluded. Comprehensive supplementary searching was performed. Papers were critically appraised using the NICE (2012) checklists. Data were analysed using Braun and Clarke (2006) thematic framework.

Results: A total of 15 studies, including 13 cross-sectional studies and 2 qualitative studies, were reviewed. Three main themes emerged following data analysis. These themes were quality of the work environment, nature of working relationships and traumatic/stressful workplace experiences.

Conclusions: The literature review highlighted the need for further research and greater understanding of how these themes may impact critical care nurses. Nurse managers and leaders should consider these findings when developing strategies to improve nurse retention.

Relevance to practice: The shortage of critical care nurses is currently a global issue impacting costs and quality of patient care.

Main Text

Introduction:

Registered nurses (RNs) make up a significant proportion of the health workforce and any loss of nurses has implications for costs and efficiency impacting quality of patient care (Duffield et al 2014). Turnover rates range from 15.1% to 44.3% across United States of America (USA), Canada, Australia and New Zealand (Duffield et al (2014). The total costs of nursing turnover from acute and critical care areas ranges from 20,561 US dollars (USD) to 64,000 USD (Duffield et al 2014, Hayes et al 2006). In the United Kingdom (UK), nursing has been added to the shortage occupation list by the Department of Health (DoH) due to increasing concerns about nurse staffing level by National Health Services (NHS) organisations (NHS employers 2015). An NHS employer survey reported nurse turnover rates ranging from 5% to 27%, with the higher turnover in critical care areas (NHS employers 2015). In addition, 93% of NHS trusts report that they are experiencing RN shortages.

The World Federation of Critical Care Nurses (WFCCN) has acknowledged the issue of nursing shortages and turnover within critical care areas (Williams et al 2006). In many cases, nursing shortages have not been institution-wide but concentrated in critical care units (Stone et al 2006). High staff turnover in critical care areas may affect productivity and quality of patient care and have financial implications (Eckman 2014). In addition, Eckman (2014) suggests that retention is preferable to recruiting, employing and training new staff. It is therefore, imperative to turn research attention towards the recruitment and retention of specialist nurses within critical care. Turnover is defined as nurses leaving their organisations for varying reasons, where intentions to leave (ITL) is defined as the final cognitive step leading to actual turnover and is the main factor impacting turnover (Mosallam et al 2015). Research in this area is limited and identifying factors influencing ITL may reduce turnover, therefore this review is specifically focusing on ITL.

Background: The shortage of specialist nurses has been an issue for many decades (Sawatazky et al 2015). Nurse retention is a global problem across all specialities but is exacerbated in critical care areas where elevated nurse-patient ratio and the use of advance technologies require greater numbers of highly educated and specialised nurses impacting costs and quality of patient care (Lobo et al 2012, Hauck et al 2011, Cortese 2012).

Research examining factors that influence nurses' intentions to leave critical care areas is lacking (Duffield et al 2014, National Health Care Retention and RN staffing report 2017, NHS employers 2015). Most studies carried out in this area have explored a single factor

associated with intention to leave, such as working conditions (Stone et al 2006), burnout syndrome (Poncet et al 2007), organisational climate (Stone et al 2007), nurse staffing (Cho et al 2009), empowerment (Fitzpatrick et al 2010), (Wahlin et al 2010), (Breau 2014) and work pressure (Dam et al 2012). A study undertaken by Lai et al (2008) explored critical care nurses' intentions to leave, but mainly focused on the effects of working in a critical care environment on their personal health. All these studies are either single site studies or specific to a district or province of that country, therefore limiting generalisability. Furthermore, whilst appreciating the similarities, there are significant differences in the health care systems of each country that influences the transferability of the studies. UK-based research in particular is lacking, therefore there is a need for further research examining ITL in critical care speciality. Furthermore, limited research including literature reviews have looked at this problem in its entirety.

The review

Aim: The aim of the present study was to explore factors that may influence nurses' intentions to leave adult critical care areas.

Objectives: The objectives of the present study were to appraise existing evidence and highlight gaps in knowledge regarding factors that may influence nurses' intentions to leave adult critical care areas.

Design and methods:

A mixed method systematic literature review was undertaken to synthesise the findings of primary quantitative and qualitative research relevant to the research question. Joanna Briggs's guidelines for mixed methods systematic reviews were used as a guide to undertake the literature review (The Joanna Brigg's institute 2014).

Search methods: The search strategy was developed using the List, Keep and Delete approach, a framework used to identify search terms for systematic health care reviews (Lavender et al 2016). This method enabled the most relevant and effective keywords to be identified. With the assistance of a librarian, a systematic approach was adopted to search for literature published between 2005 and 2016 on the following databases: BNI (British Nursing Index), CINAHL (The Cumulative Index to Nursing and Allied Health Literature), PubMed, PsycINFO, Embase and Health B Elite. Ten year period was considered to be sufficient to capture the changes within critical care areas. The search terms and Medical Subject Headings (MesSH) were intention to leave, nurses, adult and critical care, adult intensive care unit, critical care unit, high dependency unit, intensive therapy unit, intentions to leave, quit, abandon, resign, terminate, intensive care nurses/nursing, critical care

nurses/nursing, intensive therapy nurses/nursing and adult. Key words were combined using search strings “and” and “or”. The search was limited to adult critical care areas only.

High sensitivity was assured by the extensive use of supplementary search methods. These included reference lists follow up, removing related systematic reviews for primary research studies, citation tracking via Google scholar, expert contact and hand searching of the latest editions of journals and websites. The last search was conducted in September 2017. See table 1 for a PRISMA flow diagram (Moher et al 2009).

Inclusion and exclusion criteria: Primary data from non-critical care areas, neonatal and paediatric critical care areas were excluded. International research published from 2005 in English looking at factors influencing nurses’ intentions to leave adult critical care areas was included.

Search outcome: The total number of records identified was 1253 (277 through database searching and 976 through other supplementary searching); 1194 duplicates and irrelevant records were removed electronically, 30 records were removed after manual de-duplication, 29 full text articles were assessed for eligibility and 14 articles were excluded for not meeting the inclusion criteria. Fifteen studies were included in the literature review. See table 2 for summary of included studies.

Quality appraisal: All studies were critically appraised by two authors independently using the National Institute for Health and Care Excellence (NICE 2012) qualitative and quantitative checklists. Data were extracted into an evidence table and a checklist was completed separately using the Specialist Unit for Review Evidence (SURE 2016) checklist.

The two qualitative studies Tao et al (2015) and Wahlin et al (2010) were well conducted, however relationships between the researcher and participants were not explored.

The remaining thirteen cross-sectional studies were robust, but there were concerns with some of the studies (Dam et al 2012, Lai et al 2008, Zhang et al 2014, Tao et al 2015, Wahlin et al 2015) due to sampling bias where the researcher failed to declare their relationships with participants. Some studies (Dodek et al 2016, Stone et al 2007, Cho et al 2009, Karanikola et al 2012) were single site or specific to a district or a province limiting generalisability.

In order to ensure ethical conduct of this systematic review, all research in the area was fairly represented and findings presented accurately. In addition only studies that conducting the research in an ethical manner were included within this review. At a minimum, all studies adhered to the basic principles outlined by Social Research Association (2003); respect for

persons, beneficence and justice when reporting data and incorporating ideas.

Data extraction: The findings related to factors influencing nurses' intentions to leave adult critical care areas were extracted by the first author and verified by co-authors. Study details such as authors, year of publication, country, study design, population and number of participants were also extracted.

Synthesis: A thematic analysis of the data was performed using Braun and Clarke's (2006) framework. Initially, each paper was examined line by line, assigning codes to relevant sentences and paragraphs. These codes were then organised into related areas to construct sub themes that best reflected factors that influence nurses' intentions to leave adult critical care areas. Similar sub themes were amalgamated to form thematic headings that best represented the data. Thematic analysis was performed independently by three authors and final version agreed following discussions.

Results: Quantitative data from 16794 critical care nurses were drawn from 585 intensive care units in 12 different countries. Qualitative data from 24 nurses were also reported. Following data analysis, the themes identified were quality of work environment, nature of working relationships and traumatic/stressful workplace experiences.

1-Quality of work environment

Thirteen out of fifteen studies identified the quality of the work environment as a factor associated with nurse's ITL. The work environment comprises social, physical and organisational structure.

Social aspects: A work environment in which nurses are enabled to share and discuss their opinions and concerns openly regarding patient care, workforce issues and feeling more empowered are less likely to leave their job (Wahlin et al 2010, Poncet et al 2007). Not being able to share concerns regarding off duty, not having enough time to recover from night shifts and the impact of inflexible rotations on work-life balance increases ITL (Paunto and Guirardello 2013). Lack of social support is associated with increased stress and ITL (Dam et al 2012).

Organisational aspects: Nurses holding specialised critical care qualifications and more experienced perceived more access to resources, felt more empowered and were more satisfied with their job (Stone et al 2006, Fitzpatrick et al 2010, Zhang et al 2014, Breau 2014). Wahlin et al (2010) highlighted that opportunities for professional development and a structured career pathway enhances empowerment, produces good team work and reduced the likelihood of leaving. Furthermore, nurse managers play an important role in

maintaining a healthy working environment, failure to do so cause stress for nurses and influence ITL (Wahlin et al 2010). Providing less optimal care due to constant pressures from administrators, ministers and insurers to reduce costs caused moral distress (Dodek et al 2016) that was directly related to ITL. Zhang et al (2014) found pay and Tao et al (2015) found lack of respect and recognition to be associated with ITL. Lack of professional autonomy, collaboration, quality of relationships and satisfaction about care decisions were also associated with moral distress and ITL (Karanikola et al 2014).

Physical aspects: Limited working space and constant noise and activity caused stress and influenced ITL (Tao et al 2015). Lai et al (2008) highlighted poor quality sleep due to shift pattern and not having enough time to recover from night shifts and the effects on personal health were associated with ITL. Inadequate staffing, nurse to patient ratio and physical and emotional demands of critical care work environment caused stress and dissatisfaction among nurses and positively influenced nurses' ITL (Cho et al 2009, Dam et al 2012).

2-Nature of working relationships: Eight out of fifteen studies identified nature of the working relationship as a factor associated with nurses' intentions to leave. The following relationships have been described within their role.

Relationships with patients and relatives: Looking after relatives and dealing with families is a nourishing encounter that provided inner strength and power to nurses to carry on working in the critical care environment (Wahlin et al 2010). In addition, healthy relationships with families give nurses the feeling of doing something good for the patients and their families. However, conflicts and disagreements with patients and their relatives about aspects of care can influence nurses' ITL (Poncet et al 2007).

Relationships with manager and colleagues: Poor relationships with nurse managers and senior colleagues increased stress and ITL (Poncet et al 2007). Conversely, feelings of fellowship among staff at work were considered empowering (Wahlin et al 2010). In addition, good team work with everyone playing an important role increased inner strength and created a healthy working environment that reduced ITL (Wahlin et al 2010).

Relationships with medical colleagues: Poor nurse-physician collaboration was associated with moral distress influencing ITL (Karanikola et al 2014). Poor nurse-physician collaboration is mainly associated with nurses not being involved in the decision-making process by their medical colleagues regarding care and treatment interventions, hence feeling less empowered and not feeling part of the multidisciplinary team (Wahlin et al 2010, Karanikola et al 2014). Furthermore, similar feelings have been reported by nurses about ward rounds where nurses were not involved in the discussions (Karanikola et al 2014).

3-Traumatic and stressful workplace experiences: Traumatic and stressful workplace experiences have been found to be largely associated with end of life care. Poncet et al (2007) reported that caring for a dying patient, decisions to forego life sustaining treatments and prolonging death were associated with stress and ITL. Similarly, Dodek et al (2016) identified that continuing life support when it is perceived not to be in the patient's best interest and providing false hope to the family were associated with moral distress and ITL.

Discussion: To our knowledge, the present review is the first systematic literature review to explore factors that may influence nurses' intentions to leave the adult critical care areas. The studies included in the literature review were based on different samples of critical care nurses separated by geography, type and size of critical care areas and level of education and experience. It is important to highlight that all these studies were undertaken in different countries each with their own unique health care systems which may limit transferability.

The quality of the work environment is a key factor influencing ITL. The term work environment is multidimensional comprising social, physical and cultural aspects. All of these elements are required for an excellent work environment, and none are optional (Schmalenberg and Kramer 2008). Some studies have explored one aspect of the work environment e.g. (Breau 2014), while others have taken a multidimensional approach exploring all aspects e.g. organisational climate (Stone et al 2006). The American Association of Critical Care Nurses (AACCN) has published standards for establishing and sustaining a healthy work environment (Ulrich et al 2014). Following surveys by the AACCN in 2006, 2008 and 2013 the health of the critical care nurse work environment is declining (Ulrich et al 2014).

The survey in 2013 found an increase from 22.1% to 30.2% of respondents who reported appropriate unit staffing less than 50% of the time ($p < 0.05$) (Ulrich et al 2014). An RCN (Royal College of Nursing) employment survey mirrors these findings and 31% reporting that changes in staffing have led to an increase in workload (RCN 2012). Inappropriate staffing has clear implications for quality of patient care (Needleman et al 2002) and there is a statistically significant association between staffing levels and hospital-related mortality, failure to rescue and other patient outcomes (Kane et al 2007). This literature review highlights that not having enough time available to relax and recover from night shifts can have negative consequences on nurses' health causing stress and positively influencing ITL. Managing rostering in critical care areas requires the consideration of many factors such as skill mix, staff experience, workload, patient condition, patient flow, staffing costs, support structures, education, team cohesion and the model of care utilised (Bakon et al 2016).

Physical aspects of the work environment are equally important and impact critical care

nurses' well-being. Critical care areas should be healing environments that respond to the needs of all the people within a critical care unit both those who receive or give care (Bazuin and Cardon 2011). Steps should be taken to make the work environment relaxing and recharging, including pleasant lighting, windows, space for quiet, private breaks, the ability to adjust workstations and the availability of outdoor spaces and atriums (Bazuin and Cardon 2011). The culture of critical care units has not always attended to staff working conditions and therefore as a result, ICUs are often very stressful places, endangering both the physical and mental health of staff and causing them to become irritable, suffer from burnout and often quit (Rashid 2016).

The findings from this review also suggest that poor nurse-physician relationship and collaboration causes moral distress that is directly associated with ITL. These findings are similar to those of Papathanassoglou et al (2012) and Pavlakis et al (2015) who reported that the poor nurse-physician collaboration and a lack of autonomy resulted in moral distress that was associated with nurses' ITL. Karanikola et al (2011) suggested that poor collaborative relations between physicians and ICU nurses have been linked with nurse's diminished status and low appreciation of their professional role. Critical care nurses have also highlighted the issue of nurses' participation in ward rounds. Johnson and King (2012) reported that surprisingly ICU nurses were more likely to report disruptive behaviour by physicians during ward rounds than other areas highlighting poor nurse-physician collaboration.

This literature review highlighted the importance of nurses' relationships with their managers. It has been suggested by Galvin and Timmins (2010) that positive relationships with managers enhance confidence and positively influence intentions to stay. These findings seem to be consistent with other research that found that strong leadership and support is thought to be crucial in nursing (Hayes et al 2006). Leadership skills can be manifested in a variety of ways, with role- modelling being particularly effective (Mullarkey et al 2011).

The relationship issues highlighted in this review are in-line with those of Brown's (2002) theory that nurses get their strength through positive relationships and that the quality of each dyadic relationship is important as a building block in the working environment.

Traumatic and stressful workplace experiences were highlighted as influencing ITL, particularly end of life care. Critical care is an environment that supports cures but also cares for the dying (Crowe 2017). This literature review indicated that more education and training may be beneficial in the following areas; the challenges of making the decision to withdraw life-sustaining therapies, the barriers to providing good end-of-life care, factors that support good end-of-life care, and specific guidelines for the withdrawal of life-sustaining therapies.

Crowe (2017) recommends that the use of a checklist to guide nursing and medical staff when providing end of life care and treatment withdrawal may improve nurse-physician collaboration when providing end of life care and withdrawing treatment. End of life care controversies cause moral distress, which is directly linked with nurses' ITL (Meltzer & Huckabay 2004).

Nurses find other factors associated with the work environment also stressful. Some of these issues are the overwhelming workload, lack of respect and recognition and lack of role clarity (Tao et al 2015), limited flexibility to request days off (Poncet et al 2007) and lack of autonomy and control over the work environment (Panuto and Guirardello 2013). These findings are similar to those of Tsai and Liu (2012) who reported that high demands, lack of empowerment and lack of social support in critical care and specialist areas are associated with work related stress.

Monte et al (2013) reported that nurses in critical care found certain aspects more stressful than others such as not having time to provide care to patients and supporting families of critically unwell patients. Mealer et al (2012) reported that critical care nurses are repeatedly exposed to work related stresses and highlighted the importance of resilience in critical care nurses. In addition, highly resilient critical care nurses are less likely to develop psychological disorders and are less likely to have altered perceptions related to their work environment and life outside of work. Training needs to be provided to critical care nurses to acquire resilience to be able to deal with the stresses of the critical care environment.

This review also highlights the specific challenges encountered by nurses in critical care areas. The findings suggest that these challenges have not been recognised. Critical care nurses undergo a rigorous training process and are required to complete multiple academic and competency based courses in order to apply for a promotion or pay increases. These demands are not consistently required across all nursing specialities. These extra courses and development stages are essential due to the nature of critical care nursing but are not as yet remunerated either in pay or grades.

The findings reported in this review are specific to critical care however, may reflect other nursing specialities. Despite the similarities to other clinical areas, the impact of these factors on ITL and the subsequent high turnover may be greater in critical care areas than in general ward areas due to elevated nurse-patient ratio and the use of advance technologies require greater numbers of highly educated and specialised nurses. More resources are needed for greater planning, supportive structure and education and development in critical care areas impacting costs and quality patient care. In view of this, there is a need to further investigate the impact of these findings on costs and quality of care in critical care areas.

Conclusion: High nursing turnover and ITL is a global issue, especially in highly specialised environments. This review has highlighted some very important factors that are associated with nurses' intentions to leave adult critical care areas. These factors are associated with work environment, the nature of working relationships and traumatic and stressful workplace experiences. Nurse leaders and managers of critical care areas need to take these findings into considerations when developing strategies to improve turnover. There is a need for further research and greater understanding of how these themes may impact critical care nurses.

Strengths and Limitations: Data from studies were combined using an established methodology to increase the richness and robustness of the synthesis. The review was limited to literature published between 2005 and 2016. The Ten year period was considered to be sufficient to capture the changes within critical care areas, however this means that data published before 2005 is not included.

Implications and recommendations for practice: The themes identified in this literature review may influence nurses' intentions to leave or stay. Critical care teams need to take the following steps that may improve turnover;

- Provide a healthy work environment taking into account physical, social, cultural and psychological aspects
- Take steps to improve working relationships, resolve conflicts among staff and enhance nurse-physician collaboration
- Provide a training programme and support nurses in coping with traumatic and stressful workplace experiences associated with critical care nursing

What is known about this topic?

- High nurse turnover in critical care areas is a global issue with financial implications in addition to its impacts on staff morale, productivity, patient safety and quality patient outcomes
- Research into the factors influencing nurses' intentions to leave adult critical care areas is limited
- To date little is known about the more holistic elements of intentions to leave adult critical care areas.

What this paper adds?

- Identified factors influencing nurses' intentions to leave adult critical care areas
- Themes to be considered when developing strategies to improve turnover

- Highlighted the need for further research to explore how these themes may impact on nurses currently working in adult critical care areas.

References

Bakon S, Christensen M, Barker-Gregory N (2016) Appropriate staffing in critical units: A review of the literature. *Singapore Nursing Journal*, 43(3), no pages

Bazuin D & Cardon K (2011) Creating healing intensive care unit environments: physical and psychological considerations in designing critical care areas. *Critical Care Nursing Quarterly*, 34(4), 259-267.

Braun V & Clarke V (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*. 3(2), 77-101.

Breau A (2014) The relationship between empowerment and work environment on job satisfaction, intent to leave, and quality of care among ICU nurses. *Dynamics*.25 (3), 16-24.

Brown C (2002) A theory of the process of creating power in relationships. *Nursing Administration Quarterly*, 26(2), 15-33.

Cho S H, June K J, Kim Y M, Cho Y, Yoo C S, Yun S C, & Sung Y H (2009) Nurse staffing, quality of nursing care and nurse job outcomes in intensive care units. *Journal of Clinical Nursing*, 18(12), 1729-1737.

Cortese C G (2012) Predictors of critical care nurses' intentions to leave the unit, the hospital, and the nursing profession. *Open Journal of Nursing*, 2(03), 311.

Crowe S (2017) End-of-life care in the ICU: supporting nurses to provide high-quality care. *Canadian Journal of Critical Care Nursing*, 28(1), 30-33.

Dam K, Meewis M, van der Heijden B I (2012) Securing intensive care: towards a better understanding of intensive care nurses' perceived work pressure and turnover intention. *Journal of Advanced Nursing*, 69(1), 31-40.

Dodek P M, Wong H, Norena M, Ayas N, Reynolds S C, Keenan S P, Alden L (2016) Moral distress in intensive care unit professionals is associated with profession, age, and years of experience. *Journal of Critical Care*, 31(1), 178-182.

Duffield C M, Roche M A, Homer C, Buchan J, Dimitrelis S (2014) A comparative review of nurse turnover rates and costs across countries. *Journal of Advanced nursing*, 70(12), 2703-2712.

Eckman J A (2014) *Nursing Retention in Critical Care* (Doctoral dissertation, Gardner Webb University. Available from <http://gradworks.umi.com/15/67/1567749.html> accessed 15/04/2017).

Fitzpatrick J, Campo, T M, Graham G, Lavandero R (2010) Certification, empowerment, and intent to leave current position and the profession among critical care nurses. *American Journal of Critical Care*, 19(3), 218-226.

Galvin G & Timmins F (2010) A phenomenological exploration of intellectual disability: nurses experiences of managerial support. *Journal of Nursing Management*, 18(6), 726-735.

Hauck A, Quinn G M T, Fitzpatrick J (2011) Structural empowerment and anticipated turnover among critical care nurses. *Journal of Nursing Management*. 19(2), 269-276.

Hayes L J, O'Brien-Pallas L, Duffield C, Shamian J, Buchan J, Hughes F, Stone P W (2006) Nurse turnover: a literature review. *International Journal of nursing Studies*, 43(2), 237-263.

Johnson S & King D (2012) Nurses' perceptions of nurse-physician relationships: Medical-surgical vs. intensive care. *Medsurg Nursing*, 21(6), 343.

Kane R L, Shamliyan T A, Mueller C, Duval S, Wilt T J (2007) The association of registered nurse staffing levels and patient outcomes: systematic review and meta-analysis. *Medical Care*, 45(12), 1195-1204.

Karanikola M N, Papathanassoglou E D, Nicolaou C, Koutroubas A, Lemonidou C (2011) Greek intensive and emergency care nurses' perception of their public image: a phenomenological approach. *Dimensions of Critical Care Nursing*, 30(2), 108-116.

Karanikola M N, Papathanassoglou E. D, Mpouzika M, Lemonidou C (2012) Burnout syndrome indices in Greek intensive care nursing personnel. *Dimensions of Critical Care Nursing*, 31(2), 94-101.

Karanikola M N, Albarran J W, Drigo E, Giannakopoulou M, Kalafati M, Mpouzika M, Papathanassoglou E D (2014) moral distress, autonomy and nurse–physician collaboration among intensive care unit nurses in Italy. *Journal of Nursing Management*, 22(4), 472-484.

Lai H L, Lin Y P, Chang H K, Wang S C, Liu Y L, Lee H C, Chang F M (2008) Intensive care unit staff nurses: predicting factors for career decisions. *Journal of Clinical Nursing*, 17(14), 1886-1896.

Lavender, V, Mawhinney, M and Aveyard, H. Using 'List, Keep and Delete' to identify search terms for systematic health care reviews, *Symposium Abstract 2.1 RCN International Nursing Research Conference 2016*.

Lobo et al (2012) Effective Retention Strategies for Midcareer Critical care Nurses, A Q-Method Study. *Nursing Research*, 61(4), 300-308

Mealer M, Jones J, Newman J, McFann K K, Rothbaum B, Moss M (2012) The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: results of a national survey. *International Journal of Nursing Studies*, 49(3), 292-299.

Meltzer L S & Huckabay L M (2004) Critical care nurses' perceptions of futile care and its effect on burnout. *American Journal of Critical Care* 13(3), 202-208.

Moher D, Liberati A, Tetzlaff J, Altman D G (2009) Research methods and reporting-preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement-David Moher and colleagues introduce PRISMA, an update of the QUOROM guidelines for reporting systematic reviews and meta-analyses. *BMJ (CR)-print*, 338(7716), 332.

Monte P F, Lima F E T, Neves F M D O, Studart R M B, Dantas R T (2013) Stress among professional nurses working in intensive care units. *Acta Paulista de Enfermagem*, 26(5), 421-427.

Mosallam R, Hamidi S and Elrefaay M, (2015) Turnover intention among intensive care unit nurses in Alexandria, Egypt. *The Journal of the Egyptian Public Health Association*, 90(2), 46-51.

Mullarkey M, Duffy A, Timmins F (2011) Trust between nursing management and staff in critical care: a literature review. *Nursing in Critical Care*, 16(2), 85-91.

National Health Care Retention and RN Staffing Report (2017) available from;
<http://www.nsinursingsolutions.com/Files/assets/library/retention-institute/NationalHealthcareRNRetentionReport2017.pdf> (accessed 20/06/2017)

Needleman J, Buerhaus P, Mattke S, Stewart M, Zelevinsky K (2002) Nurse-staffing levels and the quality of care in hospitals. *New England Journal of Medicine*, 346(22), 1715-1722.

NHS employers (2015) available from;
<http://www.nhsemployers.org/~media/Employers/Publications/Workforce%20Supply/NHS%20registered%20nurse%20supply%20and%20demand%20survey%20findings%20Dec%202015%20FINAL.PDF> (accessed 20/06/2017)

NICE (2012) *Qualitative Appraisal Checklist*. London: NICE. Available from;
<https://www.nice.org.uk/process/pmg4/chapter/appendix-h-quality-appraisal-checklist-qualitative-studies#checklist-2>. (accessed 01/08/2016).

NICE (2012) *Quantitative Appraisal Checklist*. London: NICE. Available from; <https://www.nice.org.uk/process/pmg4/chapter/appendix-f-quality-appraisal-checklist-quantitative-intervention-studies>. (accessed 01/08/2016).

Papathanassoglou E D, Karanikola M N, Kalafati M, Giannakopoulou M, Lemonidou C, Albarran J W (2012) Professional autonomy, collaboration with physicians, and moral distress among european intensive care nurses. *American Journal of Critical Care*, 21(2), 41-52.

Paunto and Guiradello (2013) Professional nursing practice: environment and emotional exhaustion among intensive care nurses. *Rev. Latino-Am. Enfermagem* 21(3), 765-72

Pavlakis A, Georgiou E, Papathanassoglou E (2015) Nurse-physician collaboration and associations with perceived autonomy in Cypriot critical care nurses, no volume/pages

Poncet M C, Toullic P, Papazian L, Kentish-Barnes N Timsit J F, Pochard F, Azoulay E (2007) Burnout syndrome in critical care nursing staff. *American Journal of Respiratory and Critical Care Medicine*, 175(7), 698-704.

Rashid M, Khan N, Jones B (2016) Physical and Visual Accessibilities in Intensive Care Units. *Critical Care Nursing Quarterly*, 39(4), 313-334.

Royal College of Nursing (2012) *Views from the Frontline: RCN Employment Survey 2011*. Retrieved from www.rcn.org.uk/__data/assets/pdf_file/0019/407242/004184.pdf on 15/06/2017

Sawatzky J A, Enns C L, Legare C (2015) Identifying the key predictors for retention in critical care nurses. *Journal of Advance Nursing*. 71(10), 2315-2325.

Schmalenberg C & Kramer M (2008) Essentials of a productive nurse work environment. *Nursing Research*, 57(1), 2-13.

Social Research Association (2003) *Ethical guidelines online*. Available at; <http://the-sra.org.uk/wp-content/uploads/ethics03.pdf>. (accessed 10/11/2016)

Specialist Unit for Review Evidence (SURE) (2016). Questions to assist with the critical appraisal of cross-sectional studies. (accessed 15/06/2016).

Stone P W, Larson E L, Mooney-Kane C, Smolowitz J, Lin S X, & Dick A W (2006) Organizational climate and intensive care unit nurses' intention to leave. *Critical care*

Medicine, 34(7), 1907-1912.

Stone P W, Mooney-Kane C, Larson E L, Pastor D K, Zwanziger J, Dick A W (2007) Nurse working conditions, organizational climate, and intent to leave in ICUs: an instrumental variable approach. *Health Services Research*, 42(3), 1085-1104.

Tao H, Ellenbecker C H, Wang Y, Li Y (2015) Examining perception of job satisfaction and intention to leave among ICU nurses in China. *International Journal of Nursing sciences*, 2(2), 140-148.

The Joanna Briggs's institute (2014) *Methodology for JBI Mixed Methods Systematic Reviews*. Available from: <https://joannabriggs.org/assets/docs/sumari/ReviewersManual Mixed-Methods-Review-Methods-2014-ch1.pdf> (accessed 27/09/2017)

Tsai Y C & Liu C H (2012) Factors and symptoms associated with work stress and health-promoting lifestyles among hospital staff: a pilot study in Taiwan. *BMC health services research*, 12(1), 199.

Ulrich B T, Lavandero R, Woods D, Early S (2014) Critical care nurse work environments 2013: a status report. *Critical Care Nurse*, 34(4), 64-79.

Wåhlin I, Ek A C, Idvall E (2010) Staff empowerment in intensive care: nurses' and physicians' lived experiences. *Intensive and Critical Care Nursing*, 26(5), 262-269.

Williams et al (2006) Consensus forum: Worldwide Guidelines on the Critical Care Nursing Workforce and education standards. *Critical Care Clinics*. 22(3), 393-406

Zhang X C, Huang D S, Guan, P (2014) Job burnout among critical care nurses from 14 adult intensive care units in northeastern China: a cross-sectional survey. *BMJ open*, 4(6), 4813.