Quality of care and health professional burnout: narrative literature review

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Introduction

Healthcare professionals work in environments characterised by constant change. Ageing populations and increased morbidity translate into greater clinical complexity, while pressure to decrease healthcare costs reduce hospital stays, further increasing inpatient acuity. Alongside these developments are demands from the general public in response to well publicised medical scandals and poor conditions in the health service (Collins and Joyce, 2008), for greater quality and rigorous healthcare delivery. Recently, these demands have coincided with government concerns about spiralling healthcare costs (Collins and Joyce, 2008) and calls for greater value for money within the health sector. Cost containment measures, such as staffing reductions, pay freezes and reduced training budgets affect the workforce and have patient-care implications (Buchan and Seccombe, 2012).The focus on healthcare quality in research has arisen in response to mounting evidence that practice, outcomes and costs vary significantly (Berwick, 2009). Institute of Medicine (IOM, 2001) researchers define quality of care (quality for short) as care that is safe, effective, patient-centred, timely, efficient and equitable. Quality encapsulates the care received by patients, care delivery by health professionals and also the context within which care is delivered; i.e., conditions prevailing in the workplace (Kingma, 2009). Aiken (Aiken *et al.*, 2008) and (Van Bogaert *et al.*, 2010) highlight the connection between care environments and adverse nurse job outcomes such as burnout and intention to leave.

Health professionals are integral to healthcare delivery - they are the health system's life blood (Robinson and Clark, 2006). It's reasonable therefore that the quality debate incorporates the health professional's voice and considers care delivery's impact on health professionals, particularly when the impact is negative. Burnout was first applied to health professionals by Herbert Freudenberger in 1974 (Penson *et al.*, 2000) who noted that the most dedicated and committed carers seemed prone to burnout - described as a state of fatigue and frustration (Kanai-Pak *et al.*, 2008) manifested as physical and emotional exhaustion (Abushaikha and Saca-Hazboun, 2009) characterised by dissatisfaction and stress (Billeter-Koponen and Freden, 2005). Burnout's impact on the individual is described as combined physical fatigue, cognitive weariness and emotional exhaustion (Shirom *et al.*, 2010) involving depersonalization, emotional exhaustion and low personal accomplishment

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(Maslach *et al.*, 1996). Burnout's causes include daily stress and work overload (Abushaikha and Saca-Hazboun, 2009), poor control or value conflicts in the workplace (Van Bogaert *et al.*, 2009b). Research indicates that burnout can result in staff developing negative self-concepts and job attitudes and a reduced concern for patients (Abushaikha and Saca-Hazboun, 2009), which: (i) hinders service quality; and (ii) has serious consequences for the worker's personal life (Penson *et al.*, 2000).

Donabedian (1988) identifies two quality dimensions – technical and interpersonal. Technical care refers to clinical elements such as medical diagnosis and treatment; while interpersonal care refers to nurturing elements such as communication between patient and health professional, respect and time spent with the patient. Donabedian (1988) emphasised interpersonal dimension's importance, describing it as integral to delivering technical care. This broad understanding of care is consistent with the WHO's (1948) health definition - being more than absent disease, but a state of complete physical, mental and social well-being (World Health Organisation, 1948), while Donabedian's (1988) approach to quality incorporates medical diagnosis, treatment, confidentiality, empathy and sensitivity.

The connection between quality and health professional burnout is self-evident; i.e., staff experiencing burnout and its associated symptoms are less likely to deliver high-quality care, as burnout reduces their ability to provide the best care and risks medical errors (Montgomery *et al.*, 2011). However, the key question from a research perspective is whether burnout and poor quality are causally linked (Poghosyan *et al.*, 2010). Healthcare professional burnout and poor service-quality may be symptomatic of a malfunctioning health system or hospital - both stemming from the same underlying working conditions, such as low staffing levels or poor practice (Poghosyan *et al.*, 2010).

Our review, part of the ORCAB FP7 project (Montgomery *et al.*, 2011;Conry *et al.*, 2012; McGowan *et al.*, 2013), explores the link between organizational culture, healthcare professional burnout and quality. Focusing on quality and staff burnout in the current climate is important because deteriorating working conditions in the health sector threaten service quality and patient safety (Kingma, 2009). We review the literature on quality and health professional burnout from a health workforce planning perspective; paying particular attention to the underlying working conditions that affect healthcare professionals and the care they give. Our approach mirrors the Job Demands-Resources (J D-R) burnout model proposed by Demerouti *et al.,* (2001), which emphasizes that job design demands and resources are fundamental to reducing staff exhaustion and disengagement. Improving quality, reducing burnout or understanding the extent to which they interconnect needs to be understood. We aim, therefore, to provide a foundation for future research, debate and discussion.

Methods

A Cochrane library search revealed no existing systematic reviews in this area. Electronic databases; i.e.: PsychInfo; PubMed; Embase and CINNAHL were systematically examined by four reviewers using 'quality of care', 'quality of healthcare' and 'hospital' keywords, which identified 19,662 potentially relevant studies. Titles and abstracts were examined, and the following inclusion criteria applied: (i) peer-reviewed publications; (ii) published in English between 2000 and 2013; (iii) measured or discussed health professional burnout or stress and quality; and (iv) were hospital based. Articles not discussing or measuring burnout and care quality, or those simply mentioning these keywords but containing no substantive discussion, were excluded. Articles dealing solely with either burnout or quality were excluded. The inclusion/exclusion process identified 30 articles (Table I). The review was conducted in late 2010/early 2011, updated in March 2013 and verified by a second reviewer (Figure 1).

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Table I and Figure 1 here.

Findings

To understand burnout and quality, we look at the context within which care is delivered. Stress and burnout frequently relate to heavy workloads, which in turn relate to staffing levels and work patterns (working hours, skill mix, etc.). Van Bogaert (2009b, 2010) considers nurse burnout to be the opposite of engaging nurses in their work; i.e., organisational failure. The Institute of Medicine (2001) report stated that work environments or poorly designed care systems set up the workforce to fail. Faller *et al.,* (2011) found that workplace characteristics influence quality perceptions and the degree to which a nurse is burned out - also addressed within the theoretical literature, specifically the Job Demands-Resources (JD-R) model, which assumes that burnout develops when job demands are high and job resources are limited (Demerouti *et al.*, 2001). Our review demonstrates that burnout and quality aren't considered equally among professional groups. Only three publications were specifically non-nursing focused – one on hospitalists (Hinami *et al.*, 2011), another on surgeons (Klein *et al.*, 2010) and another on physicians (Montgomery *et al.*, 2011). Within the nursing-focussed articles, one publication focussed on other health professional groups alongside nurses (Chang *et al.*, 2009), while two surveyed patients and nurses (Aiken *et al.*, 2008;Aiken *et al.*, 2012). Reasons for the nursing focus were considered: (i) perhaps quality and burnout are considered nursing issues; (ii) nurses comprise the largest healthcare professional group; (iii) it is easier or acceptable to research quality and burnout in a nursing context; and (iv) nursing studies are the first to notice the impact that health professional burnout is having on quality. Aiken (Aiken *et al.*, 2002) argue that nurses constitute a hospital surveillance system that detects adverse incidents, complications and errors. Klein *et al.*, (2010) and Hinami *et al.*, (2011) demonstrate the extent to which burnout and quality have relevance to other health professionals. Perhaps nursing is dominant in these accounts because nurses worldwide report similar shortcomings in their work environment and quality (Van Bogaert *et al.*, 2009a), which should alert other health professionals about burnout and quality.

Health workforce planning and quality

Our review highlights staff impact on service delivery (Nantsupawat *et al.*, 2011; Aiken *et al.*, 2011; Neff *et al.*, 2011), particularly workload and overload (Gunnarsdottir *et al.*, 2009), good leadership (Neff *et al.*, 2011) and nurse-physician relations (Aiken *et al.*, 2011; Shang *et al.*, 2012). Medical and surgical interventions are increasingly complex and there is a need for a larger and more specialised clinical workforce (Aiken *et al.*, 2002). The unrelenting rise in patient acuity (Milisen *et al.*, 2006) was also mentioned in relation to quality. Inpatients have shorter stays and their care is more intensive (Kanai-Pak *et al.*, 2008). Inpatients presenting with increased clinical complexity and greater acuity have significant repercussions for hospital staff. McGillis-Hall and Kiesners (2005) note that sicker patients and fewer nurses increase stress for nurses and that nurse-patient ratios have not been recalibrated to reflect increased workload. In work environments where nurses have greater opportunity to apply specialised knowledge and technical expertise, satisfaction is higher and burnout is lower. Shang *et al.,* (2010) reported that USA oncology nurses generated more favourable outcomes than other nurses and this was attributed to better staffing levels, resource adequacy and collegial nurse-physician relations. High job satisfaction is reported in South Korea despite high patient-to-nurse ratios, as family involvement in patient care allows nurses to focus on technical tasks (Kwak *et al.*, 2010).

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The US Institute of Medicine (2001, report noted that although medical science has advanced rapidly, health systems have failed to consistently provide high-quality care. Health professionals face heavier and increasingly complex workloads while patient-staff ratios remain unchanged with repercussions for their ability to provide quality care. Staffing decisions at unit, hospital or national level are workforce planning decisions, which should ensure that the right staff are in the right place at the right time (Curson *et al.*, 2010). The connection between staffing levels, workload and quality is recognized when a nurse is absent and her/his workload is automatically transferred to another nurse whose workload doubles (Billeter-Koponen and Freden, 2005). A recent Iceland study found that nursing levels independently predicted emotional exhaustion (Gunnarsdottir *et al.*, 2009). Heavy workloads and inadequate staffing are not conducive to quality care, which decreases satisfaction and nursing morale, increases absenteeism and reduces service quality (McGillis-Hall and Kiesners, 2005).

Throughout the review literature, overwhelming nursing workloads were detailed and their implications for quality outlined; with nurses attempting to maintain quality standards against the odds (Attree, 2005). McGillis Hall and Kiesners (2005) reported that regardless of how hard nurses worked, they were unable to handle their workloads. Staff frustration, unhappiness and low morale translate into lower care-standards (Attree, 2005; Begat *et al.*, 2005). Overworked, stressed or burned-out healthcare professionals are more likely to deliver poor quality care. Care delivered by stressed and overworked health professionals in a fast-paced environment is unlikely to be patient-centred, timely or safe (Institute of Medicine, 2001). Our review indicates that workforce planning, such as staffing, acuity and workload may have an impact on professionals' well-being and subsequently on service delivery. Nurse burnout has been associated with cost-reduction measures that result in shorter stays for patients and a greater nursing-intensity (Kanai-Pak *et al.*, 2008). Messmer *et al.,* (2010) found that allocating resources to support new nursing graduates improves retention and prevents burnout, and recommended that structured orientation programmes be continued despite current economic constraints to integrate nurse graduates into the nursing workforce.

Health professional burnout and quality

Our review highlighted several organisational factors deemed to obstruct healthcare professionals: (i) insufficient time to provide quality care (Berland *et al.*, 2008; Milisen *et al.*, 2006); (ii) too little time for patients (Attree, 2005); (iii) too few nursing staff (Milisen *et al.*, 2006); (iv) stressful work environment (Billeter-Koponen and Freden, 2005; Milisen *et al.*, 2006); (v) poor leadership and management (Milisen *et al.*, 2006); (vi) less control over workload (Attree, 2005); (vii) increased patient acuity (McGillis-Hall and Kiesners, 2005); and (viii) under-resourcing (Attree, 2005). These issues were frequently interconnected. Healthcare professionals described these obstacles as: (i) feeling pressured and pushed; (ii) being torn between everything that needs doing; (iii) insufficient time to handle the workload (McGillis-Hall and Kiesners, 2005); (iv) having to do everything at a fast pace (Berland *et al.*, 2008); (v) working 150% every day (McGillis-Hall and Kiesners, 2005); (vi) having neither time nor energy to meet patients' needs; and (vii) being fearful of making mistakes (Billeter-Koponen and Freden, 2005). Responding to increased workload pressures, healthcare professionals reported that they: (i) stayed late at work to complete their tasks (McGillis-Hall and Kiesners, 2005); (ii) no longer took their breaks; and (iii) went home with unfinished work still on their minds (Billeter-Koponen and Freden, 2005). These descriptions overlap with burnout , feeling fatigued and frustrated (Kanai-Pak *et al.*, 2008), and emotional exhaustion (Ridley *et al.*, 2009) characterized by dissatisfaction and stress (Billeter-Koponen and Freden, 2005). The overlap between burnout and frustration experienced by health professionals as they struggle to deliver quality care is an interesting

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area for further research that warrants further exploration. It also reinforces the recommendation proposed by Demerouti *et al.,* (2001) - that changing actual working conditions rather than changing perceptions is necessary to reduce exhaustion and disengagement. Milisen *et al.,* (2006) surveyed 9,638 Belgian hospital nurses and revealed that 41% felt they could not provide the care to which they aspired. Neglected care, owing to time constraints, included listening to patients and their concerns, responding to specific patient requests and patient or family education (Milisen *et al.*, 2006). It is the interpersonal care dimensions that are neglected when staff are time-pressured (Donebedian, 1988). Perhaps interpersonal care is most associated with nursing, which helps to explain its predominance in the literature. Two nursing-focussed studies reported similar findings regarding staffing, job dissatisfaction and burnout. Among almost 1400 Korean ICU nurses, only one fifth felt that there were enough nurses to provide quality care. One third were dissatisfied, half were burned out and a quarter planned to leave within the year (Cho *et al.*, 2009). Almost 6000 Japanese nurses in another study revealed high burnout-levels; six in ten expressed dissatisfaction with their jobs and a similar proportion reported that quality in their unit could be considered fair or poor (Kanai-Pak *et al.*, 2008).

Service quality and staff retention

Delivering high-quality care generates job satisfaction (Utriainen and Kyngas, 2009). Throughout the literature, studies reported that staff were unhappy (McGillis-Hall and Kiesners, 2005) about inadequate patient care and were eager to highlight the dangers associated with time-pressured nursing practice (Berland *et al.*, 2008). The desire to provide good quality care, regardless of circumstances, was noted by researchers internationally, including in Norway (Berland *et al.*, 2008), Belgium (Milisen *et al.*, 2006) and Japan (Kanai-Pak *et al.*, 2008). Authors note that poor care affects staff morale (Attree, 2005; Begat *et al.*, 2005), job satisfaction (Utriainen and Kyngas, 2009) and overall wellbeing (Billeter-Koponen and Freden, 2005). Our literature review suggests that delivering poor care reduces staff morale, so there may be a causal link between staff burnout and quality, and a link between quality and morale, which is another interesting area for future research in this field.

Parallels can be drawn with nursing turnover and emigration. Becoming frustrated at work, often characterised by high workloads, low remuneration and dissatisfaction with care standards may lead to staff resignations (McGillis-Hall and Kiesners, 2005). However, workload that nurses leave behind increase their colleagues' burdens (Billeter-Koponen and Freden, 2005). Heavy nursing workloads make it difficult to provide good quality care. So delivering poor care can trigger job dissatisfaction and increase attrition (possibly accompanied by nurse emigration), which could lead to nursing shortages and even heavier workloads for the remaining nurses. Hassmiller and Cozine (2006 p.269) connect morale, nursing turnover and service quality:

> A kind of vicious circle surrounds the nursing profession. Fewer people are working in nursing, which has led to a shortage. Because of the shortage, nurses who remain in hospital work must care for more patients under increasingly difficult working conditions. Because of these strained working conditions, more nurses leave the hospital workforce, thereby worsening the shortage and making recruitment of new nurses more difficult.

Conclusion

Our review indicates that healthcare workforce planning is relevant to quality and burnout. Low retention, high turnover, heavy workloads and staffing shortages conspire to provide difficult working conditions for healthcare professionals, which compromise their ability to

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provide high-quality care, which may contribute to staff burnout. These issues appear to cross national boundaries (Van Bogaert *et al.*, 2009a; Poghosyan *et al.*, 2010; Aiken *et al.*, 2002). The literature suggests that acuity, low staff-to-patient ratios and staff retention rates affect both health professional burnout and service quality, although further evidence is needed to determine whether there is a cause and effect relationship between burnout and service quality, which should not be assumed. Underlying factors such as work environments, staffing levels, acuity and workload in the health system and individual hospitals need to be investigated. Research on the intersection between quality and health professional burnout focused predominantly on nurses. We speculate about the reasons for a nursing focus - perhaps physicians are less concerned than nurses about burnout and quality. Perhaps the distinction between health professionals relates to the traditional divisions between technical and interpersonal care, whereby technical care is generally considered the physician's responsibility, whereas interpersonal care is considered a nursing role. Whatever the reasons, achieving better care and addressing staff burnout are concerning issues for all health professionals.

Our study suggests that improving the context within which care is delivered is important; i.e., the health professional's work environment. This is particularly relevant in countries experiencing economic recession, which have seen resources allocated to the health system reduced. Budgetary constraints have translated into increased workloads that impacts directly on quality (Hourihane, 2013). Maslach *et al.,* (2012) recommends benchmarking organisations on six important work-life areas: (i) work overload; (ii) staff control; (iii) insufficient rewards; (iv) community breakdown; (v) unfairness in the workplace; and (vi) value conflict. This could be a useful approach to assessing and improving work environments. (Montgomery *et al.*, in press) suggest that training and supporting health professionals to become good team members, who can locate their roles within the overall organisation's purpose and thereby better contribute to overall function. Good inter-professional working relationships between doctors and nurses contributes to better nursing outcomes; i.e., improved job satisfaction and lower burnout (Shang *et al.*, 2012). Poor inter-professional working relationships can increase stress levels, heighten job dissatisfaction and absenteeism, and lower care standards (Rowe and Sherlock, 2005). Future research on burnout should address engaging staff (Torrente *et al.*, 2013), as such an approach would be particularly relevant for healthcare settings.

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Figure 1: Database search - PRISMA flow diagram

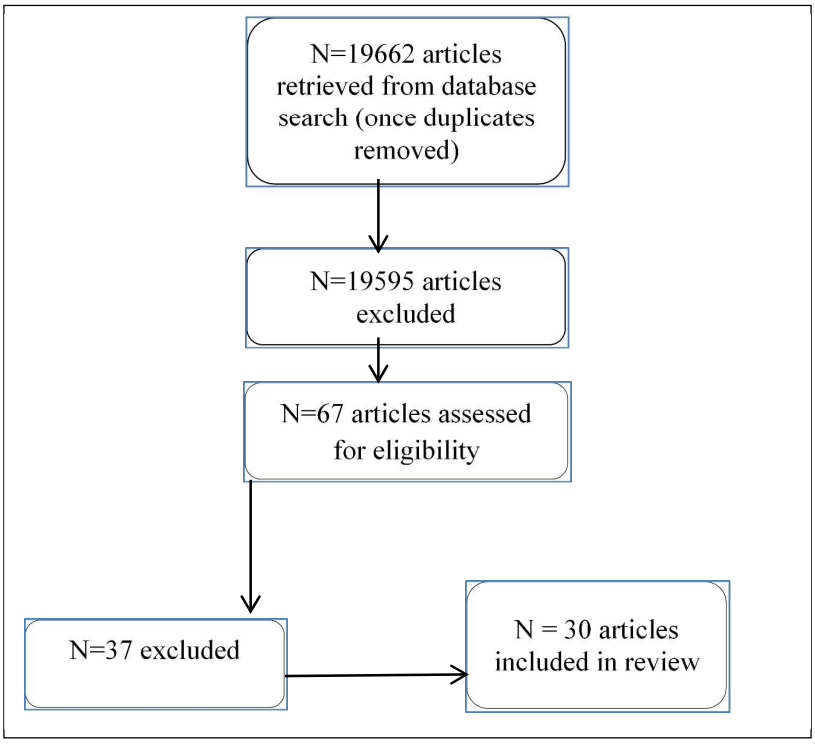

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Table I: Reviewed Literature ('quality' is shorthand for service quality)

Author and year	Aim	Type and sample size	Results and Conclusions
Aiken *et al.*, (2002)	Examined nurse staffing and organizational support's effects on nurses' job dissatisfaction, burnout and nurse reported quality.	Research N = 10,319 nurses	Adequate nurse staffing and organizational support for nursing were key to (i) improving patient care quality; (ii) diminishing nurse job dissatisfaction and burnout and (iii) improving hospital nurse retention.
Aiken *et al.*, (2008)	Analyses nurse practice and its effects on outcomes.	Research N = 10,184 nurses, 232,342 patients.	Care environments must be optimized alongside nurse staffing and education to achieve high quality.
Aiken *et al.*, (2011)	Determined work environments and its effects on hospital outcomes across multiple countries.	Research N= 98116 nurses.	Poor hospital work environments are common and are associated with negative outcomes for nurses and for quality. Improving work environments promises better nurse retention and quality.
Aiken *et al.*, (2012)	Determined whether hospitals with good organization (improved staffing and work environments) can affect patient care and nursing workforce stability in European countries.	Research N=33659 nurses 11318 patients in Europe, 27509 nurses 120000 patients in USA	Deficits in hospital care quality were common in all countries. Improving hospital work environments might be a relatively low cost strategy to improve safety, hospital quality and patient satisfaction.
Attree (2005)	Explored nurses' practice standards and factors influencing them.	Research N = 142 nurses	Nurses' perceived lack of governance over their practice requires investigation and attention if occupational dissatisfaction, stress, turnover and low morale, which impact on quality are to be reduced.
Begat *et al.*, (2005)	Examined nurse satisfaction with their work environment and the difference that clinical nurse supervision made to nurses well-being.	Research N=71 nurses	Ethical conflicts in nursing caused job-related stress and anxiety. Supporting nurses by clinical nursing supervision may have a positive influence on their well-being.
Berland *et al.*,	Examined work related stress and	Research	Demanding work environments combined with minimal control and

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(2008)	patient safety	N = 23 nurses	collegial support, results in increased stress that could affect patient safety.
Billeter-Koponen and Freden (2005)	Demonstrated how nurses experience long lasting stress and burnout.	Research N= 10 nurses	Nurses experienced powerlessness in relation to their work, specifically in relation to decisions made without consultation with nurses.
Chang *et al.*, (2009)	Compared job satisfaction and care perceptions, collaboration and teamwork among healthcare professionals in four acute hospitals.	Research N=1,365 health profs doctors, nurses and others)	Important suggestions for improving interdisciplinary collaboration and ensuring quality patient care through good job satisfaction and teamwork were identified among healthcare professionals in hospitals.
Faller *et al.*, (2011)	Examined burnout, job satisfaction and intent to leave among travel nurses.	Research N=976 travel nurses	Workplace characteristics influence the quality provided in hospitals and the degree to which nurses experience burnout or job satisfaction.
Gunnarsdottir *et al.*, (2009)	Investigated nurses' work environments connected with job outcomes and quality assessments.	Research N=695 nurses	Efforts to improve and maintain nurses' relations with nurse managers and doctors and their staffing perceptions will improve nurse job satisfaction and employee retention, and may improve quality.
Hinami *et al.*, (2011)	Determined current satisfaction levels among hospitalists	Research N=816 hospitalists	Hospitalists were most satisfied with the care they provided and with collegial relationships. They were least satisfied with organizational climate, autonomy, compensation and work-life balance. Job burnout symptoms were reported by 29.9% .
Kanai-Pak *et al.*, (2008)	Described nurse burnout, job dissatisfaction and quality in Japanese hospitals and determined how outcomes are associated with the work environment.	Research N=5,956 nurses	Fifty-six per cent scored high on burnout, 60% were dissatisfied with their jobs and 59% ranked quality as only fair or poor. Improved nurse staffing and physician-nurse working relationships may reduce nurse burnout, job dissatisfaction and improve nurse-assessed care quality.
Klein *et al.*, (2010)	Explored burnout, perceived care quality and medical errors among German surgeons.	Research N=1311 surgeons	Suggests a relationship between burnout and perceived quality among male surgeons. Reducing burnout among surgeons could improve their health and well-being and also service quality.
Kwak *et al.*, (2010)	Examined the association between job satisfaction, burnout,	Research N=496	High patient-to-nurse ratios enable South Korean nurses to focus on technical tasks, resulting in less stress and higher job satisfaction .

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	organizational support and quality among South Korean nurses.	Nurses	Career advancement and greater responsibility for clinical decision-making should be given to South Korean nurses.
Nantsupawat *et al.*, (2011)	Determined nurses' work environment and staffing, and its effect on nurse outcomes, job satisfaction, burnout and quality.	Research N=5247 nurses	Improving nurse work environments and nurse staffing in Thai hospitals may reduce nurse burnout, thus improving nurse retention and potentially improving care quality.
Neff *et al.*, (2011)	Identifying employment and nurse work environment characteristics that may affect quality.	Research N=10,951 nurses	Policy efforts must address issues such as: - Inadequate resources and administrative support - Insufficient nurses with undergraduate and graduate qualifications to retain nurses and improve care quality.
McGillis-Hall and Kiesners, (2005)	Supported hospital staff addressing work life issues for nurses to create quality work environments.	Research N= 8 nurses	A crucial finding was the extent to which nurses are affected by the care they were able to provide.
Milisen *et al.*, (2006)	Investigated hospital nurses' work environment perceptions and workforce issues, quality, job satisfaction and professional decision making.	Research N=9,638 nurses	Nurse respondents were committed to being competent providers, but perceived multiple barriers. Obstacles to providing good care included leadership and management, insufficient staff, time demands and stressful work environments.
Messmer *et al.*, (2010)	Examined intent to stay and the relationship between job satisfaction and burnout among new nurses.	Research N=33 nurses	Respondent nurses with higher work satisfaction rates had lower burnout rates. One in four respondents felt they were providing better care than previously. New nurse graduates can become competent practitioners under experienced nurse preceptor supervision.
Montgomery *et al.*, (2011)	Reviewed literature on organizational culture, burnout and quality.	Review	Connects organizational culture, burnout and care quality in a meaningful way. Provides a conceptual model to frame and evaluate future research.
Poghosyan *et al.*, (2010)	Explored the relationship between nurse burnout and care quality ratings in six countries.	Research N= 53,846 nurses	Higher burnout-rates were associated with lower care quality ratings. Reducing nurse burnout may be an effective strategy for improving nurse-rated care quality in hospitals.
Ridley *et al.*,	Ascertained how to increase	Research	Described nurses' work environments, health outcomes and perceived

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(2009)	Canadian nephrology nurse recruitment and retention.	N = 129 nurses	care quality in Canadian nephrology settings, which generates strategies to promote nurse recruitment and retention.
Rowe and Sherlock, (2005)	Explored nursing verbal abuse type and frequency.	Research N = 213 nurses	Nurses, who regularly experienced verbal abuse may be more stressed, feel less satisfied with their jobs, miss more work and provide substandard patient care.
Shang *et al.*, (2012)	Examined the differences in job dissatisfaction and burnout between oncology nurses and medical surgical nurses.	Research N=4047 nurses	Oncology nurses reported favourable practice environments and better outcomes than medical-surgical nurses. Better practice environments can help to achieve optimal care.
Utriainen and Kyngas (2009)	Reviewed literature on nurse job satisfaction.	Review	Nurse job satisfaction varied according to specialty. Attention should be paid to strengthening nurses inter-personal relationships and facilitate nurses' capacity to deliver high-quality patient care.
Van Bogaert *et al.*, (2009a)	Investigated the relationship between nurse work environment, burnout and nurse-assessed quality.	Research N=401 nurses	Hospital organizational properties, including nurse–physician relations, were related to quality assessments, job satisfaction and turnover. A direct relationship between care quality assessments and management at unit level was observed.
Van Bogaert *et al.*, (2009b)	Studied the relationship between nurse work environment, job outcomes and nurse-assessed care quality.	Research N=155 nurses	(1) Nurse-physician relations had a significant positive association with nurse job satisfaction, intent to stay in the hospital, nurse assessed quality care and personal accomplishment. (2) Nurse management at unit level had a significant positive association with job satisfaction, nurse assessed quality and personal accomplishment. (3) Hospital management and organizational support had a significant positive association with nurse-assessed quality and personal accomplishment.
Van Bogaert *et al.*,(2010)	Investigated work environment and burnout at nursing level on job outcomes and nurse-assessed care quality.	Research N = 546 nurses	Nursing practice variation and burnout predicts job outcome and nurse-reported care quality.