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**Published**

2015

**Journal Title**

Journal of Nursing Management

**Version**

Accepted Manuscript (AM)

**DOI**

<https://doi.org/10.1111/jonm.12184>

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**Work Environment, Job Satisfaction, Stress and  
Burnout Among Haemodialysis Nurses**

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**Word count:**

4854 words

**Sources of funding:**

The authors declare that no funding has been received for this research.

### **Abstract**

**Aim:** To examine the relationships among nurse and work characteristics, job satisfaction, stress, burnout and the work environment of haemodialysis nurses.

**Background:** Haemodialysis nursing is characterised by frequent and intense contact with patients in a complex and intense environment.

**Method:** Cross-sectional online survey of 417 haemodialysis nurses that included nurse and work characteristics, the Brisbane Practice Environment Measure, Index of Work Satisfaction, Nursing Stress Scale and the Maslach Burnout Inventory.

**Results:** Haemodialysis nurses reported an acceptable level of job satisfaction and perceived their work environment positively, although high levels of burnout were found. Nurses who were older and had worked in haemodialysis the longest had higher satisfaction levels, experienced less stress and lower levels of burnout than younger nurses. The in-centre type of haemodialysis unit had greater levels of stress and burnout than home training units. Greater satisfaction with the work environment was strongly correlated with job satisfaction, lower job stress and emotional exhaustion.

**Conclusion:** Haemodialysis nurses experienced high levels of burnout even though their work environment was favourable and they had acceptable levels of job satisfaction.

**Implications for Nursing Management:** Targeted strategies are required to retain and avoid burnout in younger and less experienced nurses in this highly specialised field of nursing.

*Keywords:* Haemodialysis nursing, job satisfaction, job stress, burnout, practice environment

## **Work Environment, Job Satisfaction, Stress and Burnout Among Haemodialysis Nurses**

### **Introduction**

Haemodialysis nurses in Australia and New Zealand collaborate within a multidisciplinary team to provide kidney replacement therapy to more than 10,000 people with end stage kidney disease (Pulkinghorne et al. 2011). Haemodialysis therapy is provided by in-centre, satellite (freestanding) or home haemodialysis units. In-centre units are located within a specialist renal hospital department and provide therapy to people who are medically unstable with on-site nephrology support (Agar et al. 2007); the *centre* is located *in* a hospital within a recognised specialist renal department. Satellite units, also known as free-standing dialysis units, provide lower acuity care in hospitals with no formal nephrology unit or community-based units where self-care is encouraged (Agar et al. 2007, Thomas-Hawkins et al. 2003). Home haemodialysis nursing involves educating and supporting individuals to perform haemodialysis in their own home (Agar et al. 2007). In-centre and satellite haemodialysis nursing involves caring for the same patient on a regular, second daily basis for an extended period of time, often years, resulting in a unique nurse-patient relationship (Bonner 2007, Polaschek 2003). Nursing work is also shaped by the unique context of each of these haemodialysis settings. For example, particularly in Australia, some of the satellite units can be located large distances (e.g. >1000 Km) away from the nearest specialist renal department. The range of practice environments that haemodialysis nurses work in may have differing contributors to job satisfaction, stress and burnout.

The work environment refers to the physical-social-psychological characteristics of the work setting (Chan & Huak 2004), and has been identified as a predictor of job satisfaction, stress and burnout for haemodialysis nurses (Ashker et al. 2012, Gardner & Walton 2011, Harwood et al. 2010, Ridley et al. 2009). The work environment of

haemodialysis nurses has been described as stressful (Ashker et al. 2012) and intense (Ross et al. 2009). Intention to leave the profession, nurse turnover in dialysis facilities, patient hospitalisations and patient outcomes have all been linked with the haemodialysis nurses' perception of their work environment (Gardner et al. 2007, Thomas-Hawkins et al. 2008). Thomas-Hawkins et al. (2008) found that higher haemodialysis patient to registered nurse ratios and the resultant increase in tasks being left undone were linked with poorer patient outcomes, increased patient complaints, missed or shortened treatments and more incidences of intra-dialytic hypotension.

Job satisfaction is recognised as an emotional state or attitude toward a job that arises from negative or positive job experiences and the way in which those experiences align with the nurses' values or expectations (Larrabee et al. 2003). Job satisfaction for nurses is multifaceted and complex (Hayes et al. 2010). Lower job satisfaction has been linked with high staff turnover (Cowin et al. 2008), poor morale (Callaghan 2003), poor patient outcomes (Twigg et al. 2010) and increased financial expenditure (De Gieter et al. 2011). Nurses who show higher levels of job satisfaction are more likely to be psychologically engaged in their work (Carter & Tourangeau 2012) and have greater organisational commitment (De Gieter et al. 2011).

### **Overview of the Literature**

A small but growing body of literature has examined job satisfaction among haemodialysis nurses. Contributors to job satisfaction are multi-factorial but focus on two predominate factors: personal demographics and the work environment. Hayes and Bonner's (2010) review found that job satisfaction for haemodialysis nurses was influenced by the background of the nurse, organisational factors, duration of time working in the haemodialysis environment and aspects of patient care. Nurses who were younger and worked in haemodialysis between 3 and 8 years were more likely to experience higher levels of

personal accomplishment and job satisfaction (Ross et al. 2009). Meeting the psychological needs of the patient and delivering quality care was identified as contributing to job satisfaction. Being able to address issues important to the patient and answer patient questions improved job satisfaction (Perumal & Sehgal 2003). A majority of nurses in one study derived satisfaction when they were able to be empathetic, deal effectively with patient problems and create a relaxed environment for patients (Ross et al. 2009).

The association between job satisfaction and job stress of nurses has been studied for over twenty years (Blegen 1993). Job stress is the divergence that exists between role expectations and what is being accomplished in that role (McVicar 2003). Chronic job stress can also lead to burnout (Maslach & Jackson 1981, Jourdain & Chenevêrt 2010), where burnout is a syndrome consisting of emotional exhaustion, depersonalisation and reduced personal accomplishment (Maslach et al. 1996). Several factors have been identified that contribute to both job stress and burnout for haemodialysis nurses. These include difficult interpersonal relationships with physicians (Murphy 2004, Arikan et al. 2007), facets of patient care (Brokalaki et al. 2001, Murphy 2004) and violence and abuse from patients directed at nurses (Brokalaki et al. 2001). The ability to participate in ongoing nephrology nursing education was highlighted as a factor influencing job stress and that increased access to education decreased stress levels (Uğur et al. 2007). Support from colleagues was found to be an important factor in reducing stress particularly if a haemodialysis nurse could talk to colleagues (Dermondy & Bennett 2008).

Workload is particularly burdensome for in-centre dialysis unit nurses (Dermondy & Bennett 2008) with studies reporting that nurses are unable to take meal-breaks (Brokalaki et al. 2001), having to take shorter breaks (Murphy 2004) and being unable to meet the needs of patients. Haemodialysis nurses have also reported that ineffective communication by hospital

management (Brokalaki et al 2001) or being unhelpful, unwilling to listen and not empathetic (Murphy 2004) contributes to job stress.

In Australia and New Zealand, the dialysis workforce comprises a higher staff mix of registered and enrolled nurses (Bennett et al. 2009) in contrast to dialysis practices in Europe and the United States of America where more dialysis technicians and less nursing staff are used (Ramanarayanan & Snyder 2011, Wolfe 2011, Elseviers et al. 2006). Bennett et al. (2009) in a dialysis workforce survey found that Australian and New Zealand dialysis units regularly experience staffing shortages requiring nurses to complete overtime or work extra shifts.

The impact of the work environment and job satisfaction, stress and burnout for Australian and New Zealand haemodialysis nurses is largely unknown. There has been only one small study of the differing stressors experienced between in-centre and satellite haemodialysis nurses (Dermondy & Bennett 2008). Internationally there have been no previous studies that have examined if nurse characteristics are associated with satisfaction with the work environment and levels of job satisfaction, stress and burnout. The purpose of this study was to examine:

1. Haemodialysis nurses' perceptions of the work environment, job satisfaction, job stress and burnout in Australia and New Zealand;
2. Relationships between nurse and work characteristics, the work environment, job satisfaction, job stress and burnout; and
3. Relationships among the work environment, job satisfaction, job stress and burnout.

## Method

### Sample

Using a cross-sectional design, participants were recruited from the membership of the Renal Society of Australasia (RSA). The RSA is the peak body for nurses and dialysis technicians in Australia and New Zealand and has approximately 1,300 members (95% are nurses) working in a variety of roles within renal care (i.e. haemodialysis, peritoneal dialysis, chronic kidney disease, education or transplantation); 61% (n = 795) of members indicate that they work in a haemodialysis unit. For this study, nurses aged between 18-65 years old and working at least 0.5 full-time equivalent (FTE) or greater in a haemodialysis unit were included. There were no other inclusion or exclusion criteria.

### Data Collection

Permission was sought from the Federal Board of the RSA to invite members to complete the online survey. An invitation to participate in an internet survey was included in the monthly e-news and the bi-monthly Communiqué to all members. Email correspondence was also sent to all branch presidents to direct potential participants to the survey website. A reminder to participate was also announced at branch meetings. Data was collected between October 2011 and April 2012.

### Measures

**Demographic and work characteristics.** The online survey consisted of five sections. The first section comprised demographic and work characteristics. It collected data about gender, country (Australia, New Zealand), age, work location (metropolitan, regional, rural, remote), length of time working in the haemodialysis environment, type of unit (in-centre, satellite, home haemodialysis) and nurse to patient ratio. Nurses were also asked if they were a registered nurse (RN; completed the required education preparation [typically a 3 year Bachelor degree] and legally authorized to practice as a registered nurse by the country's



registration authority) or an enrolled nurse (EN; completed a one to two year training course, works under the supervision of a registered nurse, and legally authorized to practice as an enrolled nurse by the country's registration authority), their highest nursing qualification and if they had obtained postgraduate qualifications in renal nursing.

**Work environment.** Section two comprised the Brisbane Practice Environment Scale (B-PEM; Flint et al., 2010), a recently developed self-report instrument designed to investigate nurses' dissatisfaction with the work environment. It comprises 26 questions and is arranged into four factors: *Getting things done* (having the resources and information to be able to work effectively), *flexibility of management support* (incorporates the issues around roster scheduling and other factors affecting work-life balance), *feeling valued* (the nurse's experience of the workplace and how s/he is treated within the practice environment) and *professional development* (the extent to which opportunities for professional development is available). The instrument uses a 5-point Likert scale where respondents indicate the frequency (*never, rarely, sometimes, frequently, always*) that the statement occurs. Higher scores signify greater satisfaction with the factors. The B-PEM was chosen as a validated scale developed within and for the Australian context. It has been demonstrated to provide insight into Australian work environments that cause nurses to be dissatisfied (Flint et al. 2010, Webster et al. 2009). Initial psychometric testing of the B-PEM revealed a Cronbach alpha of .94 (Flint et al. 2010). In this study the Cronbach alpha was .91.

**Job satisfaction.** Job satisfaction was measured in the next section using the Index for Work Satisfaction (IWS; Stamps 1997). This instrument measures six components associated with job satisfaction: *pay* (dollar remuneration or fringe benefits received for work done), *autonomy* (amount of job related independence, initiative and freedom, either permitted or required in daily work activities), *task requirements* (tasks or activities that must be done as a regular part of the job), *organisational policies* (management policies and procedures put

forward by the hospital and nursing administration of the hospital), *interaction* (opportunities presented for both formal and informal social and professional contact during working hours), and *professional status* (overall importance or significance felt about one's job, both in one's view and in the view of others) (Stamps 1997). The IWS has two parts and we used Part B comprising 44 attitude statements about each of the six components of job satisfaction. Each statement uses a 7-point Likert scale that ranges from *agree* to *disagree*. Higher scores indicate greater levels of satisfaction. The IWS (Part B) is considered a valid and reliable measure of job satisfaction of nurses (Zangaro & Soeken 2005). Cronbach alpha coefficients demonstrate internal consistency with values for each component between .77 and .91 (Stamps 1997). In this study the Cronbach alpha coefficients for each component ranged from .72 to .85.

**Job stress.** The fourth section contained the Nursing Stress Scale (NSS; (Gray-Toft & Anderson 1981) which consists of 34 items presented in 7 subscales that describe situations that have been identified as causing stress for nurses in the performance of their duties. The subscales include: death and dying, conflict with physicians, inadequate preparation, lack of support, conflict with other nurses, workload and uncertainty regarding treatment. The NSS asks respondents to rate attitude statements on a 4-point Likert scale (*never, occasionally, frequently* and *very frequently*). It provides a total stress score as well as scores on each of the 7 subscales that measure the frequency of stress experienced by nurses (Gray-Toft & Anderson, 1981). This instrument has not been previously used to examine haemodialysis nurses' stress but it has been widely used in other studies (Suresh et al. 2013, Garcia-Izquierdo & Rios-Risquez 2012, Abualrub et al. 2009). Gray-Toft and Anderson (1981) report a Cronbach alpha of .89 for the total score that is derived from the NSS. The overall Cronbach alpha for this study was .82, with subscales ranging from .70 to .85.

**Burnout.** The final section of the online survey contained the Maslach Burnout Inventory (MBI), a widely used instrument that measures employees' feelings about work in relation to: (i) *emotional exhaustion* – the feeling of being emotionally overextended and exhausted by one's work, (ii) *depersonalisation* - the unfeeling and impersonal response towards recipients of one's service and (iii) *personal accomplishment* – the feeling of competence and successful achievement in one's work (Maslach & Jackson 1981). The MBI has been used in more than 90% of all studies evaluating burnout in nursing employees (Shirom & Melamed 2006) and has previously been used to measure burnout among nephrology nurses (Harwood et al. 2010, Argentero et al. 2008, Flynn et al. 2009, Klersy et al. 2007, Lewis et al. 1994, Ross et al. 2009). High levels of burnout are indicated when emotional exhaustion scores are above 28, depersonalisation scores are above 10 and personal accomplishment scores are above 40. Maslach et al. (1996) reported Cronbach alphas for the subscales as .90 for emotional exhaustion, .79 for depersonalisation, and .71 for personal accomplishment. In this study the Cronbach alpha for the components of the MBI ranged from .84 to .92.

### **Ethics**

Approval to conduct the study was granted by the University's Human Research Ethics Committee. At the start of the survey, detailed information about the study was provided, and participants were informed that completion of the survey implied consent. The use of an online survey was advantageous in this study due to the wide geographical location of the nurses involved and it provided a greater sense of anonymity, convenience and ease for the participants over conventional methods of data collection.

### **Data Analysis**

Data were analysed using Statistical Package for Social Sciences for Windows 20.0 (SPSS Inc., Chicago IL., USA). Given the voluntary nature and length of the survey there was a progressive rate of non-response as the questionnaire progressed. The demographic section was completed by 100% of participants, 92% of participants completed the B-PEM questions, 81.7% completed the IWS questions, 79.4% completed the NSS questions with an overall item completion of 78%. The missing data was assessed using Little's MCAR test and found to be missing completely at random (MCAR). Multiple imputation was used to calculate the missing data as it produces unbiased estimates and provides the best estimation for high rates of missing data (Argyrous 2011). Normality of data was assessed by kurtosis and skew analysis and found to be normally distributed.

Descriptive statistics were used to summarise sample characteristics and describe haemodialysis nurses' work environments, job satisfaction, stress and burnout. To examine whether nurse characteristics or type of dialysis unit were associated with job satisfaction, stress or burnout we compared means using independent *t*-tests and ANOVAs. Finally, to explore the relationships among nurses' work environment, job satisfaction, stress and burnout we computed Pearson's correlation coefficients. We considered statistical significance as  $p < .05$  for all analyses.

## Results

### Sample Characteristics

The final sample included 417 nurses who completed the online questionnaire (see Table 1). There were 396 participants from Australia and 21 from New Zealand. As the haemodialysis workforce (Bennett et al. 2009) and work practices (George 2009) are similar, and given the small number of respondents from New Zealand, these two samples were combined for further analysis. As expected, the majority of nurses were female (90.9%) with

most over 40 years old (74.3%). A majority (75.2%) had worked more than six years in haemodialysis and 15.1% had worked more than 20 years' in haemodialysis. About half of the sample (48.4%) worked in satellite dialysis units. The geographic location of the haemodialysis unit varied with most respondents working in metropolitan units (42.4%) followed by regional units (34.5%), rural units (20.4%) and remote units (11%, not applicable in New Zealand).

Descriptive statistics for haemodialysis nurses' work environments (B-PEM), job satisfaction (IWS), stress (NSS) and burnout (MBI) are presented in Table 2. Overall the work environment as assessed by the B-PEM was perceived as positive ( $M = 92.46$ ,  $SD = 15.02$ ) with haemodialysis nurses rating flexible management the highest ( $M = 3.74$ ,  $SD = 0.75$ ). The IWS score ( $M = 191.16$ ,  $SD = 31.19$ ) was also high, indicating that haemodialysis nurses derive job satisfaction from all subscales although satisfaction with pay ( $M = 3.53$ ,  $SD = 1.11$ ) was the lowest. The NSS showed that nurses reported the highest frequency of stressful events related to their workload ( $M = 2.29$ ,  $SD = 0.52$ ) with the lowest frequency occurring with conflict between nurses ( $M = 1.95$ ,  $SD = 0.51$ ). The MBI is not reported as a totalled score (Stamps 1997), however all of the subscale scores indicated high levels of emotional exhaustion ( $M = 29.59$ ,  $SD = 12.11$ ), high levels of depersonalisation ( $M = 11.89$ ,  $SD = 6.51$ ) and low levels of personal accomplishment ( $M = 39.92$ ,  $SD = 7.29$ ) when compared to normative data (Stamps 1997; see Table 3). In this study 52.5% of haemodialysis nurses were found to have high levels of emotional exhaustion, 53% had high levels of depersonalisation and 58% had low levels of personal accomplishment (see Figure 1).

### **Associations between nurse and work characteristics with job satisfaction, stress and burnout**

No statistically significant differences were found when work environment, job satisfaction, stress and burnout scores were compared by work locations (metro, regional, rural and remote), country (Australia, New Zealand), nursing classification (RN, EN), highest nursing qualification, renal qualification, or nurse to patient ratios. Female nurses reported significantly greater overall job stress ( $M = 2.12$ ,  $SD = 0.36$ ) in the workplace compared to their male counterparts ( $M = 1.95$ ,  $SD = 0.31$ ;  $t(415) = 2.83$ ,  $p = .005$ ). Yet, despite greater stress scores, women had similar burnout scores to men. Work environment and job satisfaction scores also showed no significant differences between genders.

Older nurses reported higher levels of satisfaction with the work environment, higher overall job satisfaction and lower job stress, although this trend was not statistically significant. Overall satisfaction scores were lowest for nurses who were 21-30 years old ( $M = 186.65$ ,  $SD = 24.89$ ) and remained similar for the nurses aged 31-40 years old ( $M = 186.83$ ,  $SD = 29.53$ ) and 41-50 years old ( $M = 186.68$ ,  $SD = 31.23$ ), then increased to reach their highest levels with the nurses aged over 60 years old ( $M = 211.38$ ,  $SD = 31.23$ ). Nurses in the 31-40 year age group reported significantly higher depersonalisation scores ( $M = 13.67$ ,  $SD = 7.17$ ) compared to their older counterparts in the 51-60 year age group ( $M = 10.83$ ,  $SD = 5.80$ ;  $p < .05$ ). Nurses who had worked in the haemodialysis environment for an extended period of time (16-20 years) had significantly higher satisfaction scores ( $M = 4.70$ ,  $SD = 0.65$ ) compared with nurses who had worked between 3-5 years ( $M = 4.28$ ,  $SD = 0.64$ ;  $p < .05$ ), demonstrating a trend that satisfaction scores increased the longer a nurse stayed working in haemodialysis.

In-centre haemodialysis nurses recorded lower work environment scores ( $M = 3.47$ ,  $SD = .62$ ) compared to satellite nurses ( $M = 3.63$ ,  $SD = .60$ ;  $p = .02$ ). Notable, but not statistically significant differences were observed by work location, with in-centre nurses having lower satisfaction scores ( $M = 4.32$ ,  $SD = .66$ ), higher incidence of stressful events ( $M$

= 10.36,  $SD = 1.76$ ) and higher burnout scores (Emotional Exhaustion:  $M = 30.71$ ,  $SD = 12.13$ ) when compared with nurses who worked in satellite units (IWS:  $M = 4.44$ ,  $SD = .74$ ; NSS:  $M = 10.14$ ,  $SD = 1.71$ ; Emotional Exhaustion:  $M = 30.48$ ,  $SD = 12.27$ ). In contrast home haemodialysis nurses had the highest satisfaction scores ( $M = 4.52$ ,  $SD = .73$ ), lower reported occurrence of stress ( $M = 9.78$ ,  $SD = 1.71$ ) and burnout (Emotional Exhaustion:  $M = 28.29$ ,  $SD = 10.46$ ). A trend was noted between nurse to patient ratios and satisfaction with work environment and job satisfaction with scores decreasing as the nurse to patient ratio increased. However, the nurse to patient ratios were not related to stress and burnout scores.

### **Relationships among Work Environment, Job Satisfaction, Stress and Burnout**

The correlations among the work environment (B-PEM), job satisfaction (IWS), stress (NSS) and burnout (MBI) are presented in Table 3. Greater satisfaction with the work environment was strongly correlated with job satisfaction ( $r = .70$ ,  $p < .01$ ), lower job stress ( $r = -.41$ ,  $p < .01$ ) and emotional exhaustion ( $r = -.49$ ,  $p < .01$ ). Emotional exhaustion was significantly associated with lower overall job satisfaction ( $r = -.56$ ,  $p < .01$ ) and higher job stress ( $r = .52$ ,  $p < .01$ ).

Examination of individual components of the measures used identified that conflict with other nurses had a moderate negative correlation with feeling valued ( $r = -.52$ ,  $p < .01$ ). Conflict with doctors was moderately correlated with all other stress components but notably with two: death and dying ( $r = .53$ ,  $p < .01$ ) and uncertainty concerning treatment ( $r = .65$ ,  $p < .01$ ). The burnout component of emotional exhaustion had a positive correlation with lack of support ( $r = .47$ ,  $p < .01$ ), workload ( $r = .44$ ,  $p < .01$ ) and conflict with physicians ( $r = .43$ ,  $p < .01$ ) and was negatively correlated with the components of getting things done ( $r = -.48$ ,  $p < .01$ ), task requirements ( $r = -.46$ ,  $p < .01$ ) and feeling valued ( $r = -.46$ ,  $p < .01$ ).

## Discussion

This was the first study that has investigated the association of work environment, job satisfaction, stress and burnout levels of haemodialysis nurses working in Australia and New Zealand. A supportive nursing practice environment has been found to be important for job satisfaction and retention (Aiken et al. 2002, Choi et al. 2011). When compared to a previous study of the practice environment of Australian nurses using the B-PEM (Flint et al. 2010), the overall practice environment for haemodialysis nurses was perceived positively. This study found that haemodialysis nurses reported highest satisfaction with the flexibility of management which assists nurses in their work. Flexible management includes managerial support that is fair and equitable, clinical support, and fairness in rostering. Flexible management has been highlighted in previous studies as positively contributing to the work environment of haemodialysis nurses (Thomas-Hawkins et al. 2003, Brokalaki et al. 2001).

Job satisfaction in this study demonstrated that haemodialysis nurses were most satisfied with their professional status, interactions and autonomy. These findings are comparable to the normative values provided by the authors of the IWS (Stamps 1997). Similar scores were seen with professional status while all other components scored higher than the normative values for the IWS in this study. A comparison with studies in other areas of nursing using the IWS demonstrates that overall job satisfaction for Australian and New Zealand haemodialysis nurses is similar to or higher than nurses working in different areas of nursing in other countries (Bjørk et al. 2007, Curtis 2007, Fung-kam 1998, Flanagan & Flanagan 2002, Finn 2001, Medley & Larochelle 1995).

The present study highlights that nurses' age and length of time working in haemodialysis are associated with the perception of the work environment, levels of job satisfaction, occurrence of stress and overall levels of burnout. Older nurses and those who had worked longest in haemodialysis units identified the work environment more positively



and had higher overall job satisfaction scores, decreased stress and lower levels of burnout compared to nurses who had worked for a shorter time in haemodialysis. Other studies have also found that age and experience affect the perception of the work environment (Schmalenberg & Kramer 2008, Kanai-Pak et al. 2008). Research on the intergenerational differences and job satisfaction has found that older and more experienced nurses tend to be more satisfied with their work (Wilson et al. 2008, Klaus et al. 2012) and that the factors that contribute to job satisfaction differ for each generation (Generations X, Y and Baby Boomers) (Apostolidis & Polifroni 2006). Wilson et al. (2008) attribute the higher job satisfaction levels among older nurses to higher pay, more opportunity for promotion, better work/life balance and increased autonomy leading to lower levels of stress and burnout.

This is the first time that a comparison of nurse-reported organisational and job-related characteristics between the different haemodialysis settings (i.e. home, satellite and in-centre) has been conducted. Home haemodialysis nurses tended to report higher job satisfaction compared to their satellite and in-centre colleagues. This may reflect the increased autonomy and professional status leading to increased job satisfaction which is afforded to home haemodialysis nurses.

An important finding of this study was the high levels of burnout among haemodialysis nurses regardless of the haemodialysis setting. The scores for all components were higher than have been previously identified in haemodialysis nurses (Argentero et al. 2008, Flynn et al. 2009, Klersy et al. 2007, Ross et al. 2009, O'Brien 2011). A comparison between unit type and burnout has not been explored previously, but findings from this study suggest that home haemodialysis nurses reported lower levels of emotional exhaustion and burnout compared to their in-centre and satellite colleagues. High emotional exhaustion levels were found among the in-centre and this may be related to the higher acuity of patients, lack of support, and higher workloads. High levels of burnout in nurses who work in

haemodialysis has been shown to significantly affect patient outcomes and satisfaction (Argentero et al. 2008), retention of nurses (Gardner et al. 2007) and organisational commitment (Keyser 2011). In this study, lack of support, workload and conflict with doctors were identified as having the strongest correlation with emotional exhaustion for haemodialysis nurses and strategies should be directed at these areas to decrease burnout levels and improve retention and organisational commitment among haemodialysis nurses.

### **Limitations**

A strength of this study was the large sample size, although participants were drawn from the RSA, a professional organisation for renal nurses with voluntary membership which may introduce selection bias. It is possible that the participants may be more motivated and committed to their career in haemodialysis nursing compared to non-members and thus not be representative of the target population. In addition, this is the first time that the B-PEM has been used outside of its development sample so comparison data with other nursing specialties or nurses in other countries is not possible. Further research using the B-PEM would enable data from this study to be compared to other nursing practice environments.

### **Implications for nursing management**

The findings from this study will be valuable to nurse managers of haemodialysis units to understand current levels of job satisfaction, stress and burnout as these aspects are known to be precursors of job retention (Ritter 2011, Duffield et al. 2009). This study has found that while haemodialysis nurses were satisfied with their work environment and derived job satisfaction from this work, there were high levels of burnout. These findings are concerning given that younger nurses and those who have worked a shorter period of time in the haemodialysis environment experienced more stress and higher levels of burnout. This

indicates that these nurses need to be targeted by nurse managers when developing and implementing work retention strategies. Strategies also need to be implemented within the in-centre haemodialysis environment where nurses experience increased stress and higher levels of burnout. These strategies could include improved orientation through mentoring, support groups (Bryson 2005), increased access to professional development and building resilience among staff (Zander & Hutton 2010). Gaining an understanding of why nurses are satisfied and less stressed working in home haemodialysis may lead to changes in how haemodialysis nursing is practiced in the in-centre and satellite units.

Further research is warranted to understand the aspects of the work environment on job satisfaction, stress and burnout that have fallen outside the scope of this study such as nurse-patient interactions and nurse resilience. Further study into the subgroup of older, experienced haemodialysis nurses is needed to examine the factors that promote job satisfaction and retention. Longitudinal and qualitative research would contribute to the understanding of job satisfaction, stress and burnout in these specialised nurses where retention is imperative

## **Conclusion**

This is the first study that has examined the associations of satisfaction with the work environment, job satisfaction, job stress and burnout in Australian and New Zealand haemodialysis nurses. Results suggest that even though haemodialysis nurses were satisfied with their work environment and facets of their job, high levels of burnout was found with workload and coping with death and dying contributing to greater levels of stress. Younger nurses, those who had worked a shorter period of time in the haemodialysis environment, and those working in in-centre dialysis units had the lowest levels of job satisfaction and higher levels of burnout. In order to retain the haemodialysis nursing workforce nurse managers

ought to regularly monitor for job satisfaction, stress and burnout levels and implement strategies to enhance job satisfaction.

### **Acknowledgement**

The authors acknowledge the assistance of the Renal Society of Australasia.

### **Sources of funding**

The authors declare that no funding has been received for this research.

### **Ethical Approval**

This study was approved by the Queensland University of Technology Human Research Ethics Committee. Approval Number 1100001059

## References

- Abualrub R.F., Omari F.H. & Abu Al Rub A.F. (2009) The moderating effect of the social support on the stress-satisfaction relationship among Jordanian hospital nurses. *Journal of Nursing Management*, **17**, 870-878.
- Agar J.W.M., MacGregor M.S. & Blagg C.R. (2007) Chronic maintenance hemodialysis: making sense of terminology. *Hemodialysis International*, **11**, 252-262.
- Aiken L.H., Clarke S.P., Sloane D.M., Sochalski J. & Silber J.H. (2002) Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*, **288**(16), 1987-1993.
- Apostolidis B.M. & Polifroni E.C. (2006) Nurse work satisfaction and generational differences. *Journal of Nursing Administration*, **36**(11), 506-509.
- Argentero P., Dell'Olivo B. & Ferretti M.S. (2008) Staff burnout and patient satisfaction with the quality of dialysis care. *American Journal of Kidney Disease*, **51**(1), 80-92.
- Argyrous G. (2011) *Statistics for research: with a guide to SPSS*. SAGE Thousand Oaks.
- Ashker V.E., Penprase B. & Salman (2012) Work-related emotional stressors and coping strategies that affect the well-being of nurses working in hemodialysis units. *Nephrology Nurses Journal*, **39**(3), 231-236.
- Bennett P.N., McNeill L. & Polaschek N. (2009) The Australian and New Zealand Dialysis Workforce. *Renal Society of Australasia Journal*, **5**(3), 147-151.
- Bjørk I.T., Samdal G.B., Hansen B.S., Tørstad S. & Hamilton G.A. (2007) Job satisfaction in a Norwegian population of nurses: a questionnaire survey. *International Journal of Nursing Studies*, **44**(5), 747-757.
- Blegen M.A. (1993) Nurses' job satisfaction: A meta-analysis of related variables. *Nursing Research*, **42**(1), 36-41.
- Bonner A. (2007) Understanding the role of knowledge in the practice of expert nephrology nurses in Australia. *Nursing and Health Sciences*, **9**, 161-167.
- Brokalaki H., Matziou J., Thanou J., Ziropiannis P., Dafni U. & Papadatou D. (2001) Job-related stress among nursing personnel in Greek dialysis units. *EDTNA/ERCA Journal*, **27**(4), 181-186.
- Bryson C. (2005) The role of peer mentorship in job satisfaction of registered nurses in the hemodialysis unit. *The CANNT Journal*, **15**(3), 31-34.
- Callaghan M. (2003) Nursing morale: What is it like and why? *Journal of Advanced Nursing*, **42**(1), 82-89.
- Carter M.R. & Tourangeau A.E. (2012) Staying in nursing: What factors determine whether nurses intend to remain employed. *Journal of Advanced Nursing*, **68**(7), 1589-1600.
- Chan A.O.M. & Huak C.Y. (2004) Influence of work environment on emotional health in a health setting. *Occupational Medicine*, **54**, 207-212.
- Choi J., Flynn L. & Aiken L.H. (2011) Nursing practice environment and registered nurses' job satisfaction in nursing homes. *The Gerontologist*, **52**(4), 484-492.
- Cowin L.S., Johnson M., Craven R.G. & Marsh H.W. (2008) Causal Modeling of self-concept, job satisfaction, and retention of nurses. *International Journal of Nursing Studies*, **45**(10), 1449-1459.
- Curtis E.A. (2007) Job satisfaction: a survey of nurses in the Republic of Ireland. *International Nursing Review*, **54**(1), 92-99.
- De Gieter S., Hofmans J. & Pepermans R. (2011) Revisiting the impact of job satisfaction and organizational commitment on nurse turnover intentions: An individual differences analysis. *International Journal of Nursing Studies*, **48**, 1562-1569.
- Dermond K. & Bennett P.N. (2008) Nurse stress in hospital and satellite haemodialysis units. *Journal of Renal Care*, **34**(1), 28-32.

- Duffield C., Roche M., O'Brien-Pallas L., Catling-Paull C. & King M. (2009) Staff satisfaction and retention and the role of the Nursing Unit Manager. *Collegian*, **16**, 11-17.
- Elseviers M., De Vos J.-Y., Harrington M., Zampieron A., Ormandy P. & Kafkia T. (2006) Comparison of renal care practice in Europe: centre and patient characteristics. *EDTNA-ERCA Journal*, **32(1)**, 8-13.
- Finn C.P. (2001) Autonomy: an important component for nurse job satisfaction. *International Journal of Nursing Studies*, **38**, 349-357.
- Flanagan N.A. & Flanagan T.J. (2002) An analysis of the relationship between job satisfaction and job stress in correctional nurses. *Research in Nursing and Health*, **25(4)**, 282-294.
- Flint A., Farrugia C., Courtney M. & Webster J. (2010) Psychometric analysis of the Brisbane Practice Environment Measure (B-PEM). *Journal of Nursing Scholarship*, **42(1)**, 76-82.
- Flynn L., Thomas-Hawkins C. & Clarke S.P. (2009) Organizational traits, care processes, and burnout among chronic hemodialysis nurses. *Western Journal of Nursing Research*, **31(5)**, 569-582.
- Fung-kam L. (1998) Job satisfaction and autonomy of Hong Kong registered nurses. *Journal of Advanced Nursing*, **27(2)**, 355-363.
- Garcia-Izquierdo M. & Rios-Risquez M.I. (2012) The relationship between psychosocial job stress and burnout in emergency departments: An exploratory study. *Nursing Outlook*, **60**, 322-329.
- Gardner J. & Walton J. (2011) Striving to be heard and recognised: nurse solutions for improvement in the outpatient hemodialysis work environment. *Nephrology Nurses Journal*, **38(3)**, 239-253.
- Gardner J.K., Thomas-Hawkins C., Fogg L. & Latham C.E. (2007) The relationships between nurses' perceptions of the hemodialysis units work environment and nurse turnover, patient satisfaction, and hospitalizations. *Nephrology Nurses Journal*, **34(3)**, 271-281.
- George C.R.P. (2009) Caring for kidneys in the Antipodes: How Australian and New Zealand have addressed the challenge of end-stage renal failure. *American Journal of Kidney Disease*, **53(3)**, 536-545.
- Gray-Toft P. & Anderson J.G. (1981) The Nursing Stress Scale: Development of an instrument. *Journal of Behavioural Assessment*, **3(1)**, 11-23.
- Harwood L., Ridley J., Wilson B. & Laschinger H.K.S. (2010) Workplace empowerment and burnout in Canadian nephrology nurses. *CANNT*, **20(2)**, 12-17.
- Hayes B. & Bonner A. (2010) Job satisfaction, stress and burnout associated with haemodialysis nursing: a review of literature. *Journal of Renal Care*, **36(4)**, 174-179.
- Hayes B., Bonner A. & Pryor J. (2010) Factors contributing to nurse satisfaction in the acute hospital setting: review of recent literature. *Journal of Nursing Management*, **18(7)**, 804-814.
- Jourdain G. & Chenevêre D. (2010) Job demands-resources, burnout and intention to leave the nursing profession: A questionnaire survey. *International Journal of Nursing Studies*, **47**, 709-722.
- Kanai-Pak M., Aiken L.H., Sloane D.M. & Poghosyan L. (2008) Poor work environments and nurse inexperience are associated with burnout, job dissatisfaction and quality deficits in Japanese hospitals. *Journal of Clinical Nursing*, **17**, 3324-3329.
- Keyser B.L. (2011) Nephrology Nurses' Job Satisfaction in Chronic Hemodialysis Outpatient Facilities and the Relationship Between Nephrology Nurses' Job Satisfaction and Intent to Stay. In *Business*. Wilmington University, Wilmington.

- Klaus S.F., Ekerdt D.J. & Gajewski B. (2012) Job satisfaction in birth cohorts of nurses. *Journal of Nursing Management*, **20**(461-471).
- Klersy C., Callegari A., Martinelli V., Vizzardi V., Navino C., Malberti F., Tarchini R., Montagna G., Guastoni C., Bellazzi R., Rampino T., David S., Barbieri C., Canton A.D. & Politi P. (2007) Burnout in health care providers of dialysis service in Northern Italy - a multicentre study. *Nephrology Dialysis Transplantation*, **22**(8), 2283-2290.
- Larrabee J.H., Jamney M.A., Ostrow C.L., Withrow M.L., Hobbs G.R. & Burant C. (2003) Predicting registered nurse job satisfaction and intent to leave. *Journal of Nursing Administration*, **33**(5), 271-283.
- Lewis S.L., Bonner P.N., Campbell M.A., Cooper C.L. & Willard A. (1994) Personality, stress, coping and sense of coherence among nephrology nurses in the dialysis setting. *ANNA Journal*, **21**(6), 325-335.
- Maslach C., Jackson S. & Leiter M.P. (1996) *Maslach Burnout Inventory Manual*. Consulting Psychologists Press, Palo Alto.
- Maslach C. & Jackson S.E. (1981) The measurement of experienced burnout. *Journal of Occupational Behaviour*, **2**(2), 99-113.
- McVicar A. (2003) Workplace stress in nursing: a literature review. *Journal of Advanced Nursing*, **44**(6), 633-642.
- Medley F. & Larochelle D.R. (1995) Transformational leadership and satisfaction. *Nursing Management*, **26**(9), 64JJ-64NN.
- Murphy F. (2004) Stress among nephrology nurses in Northern Ireland. *Nephrology Nursing Journal*, **31**(4), 423-431.
- O'Brien J.L. (2011) Relationships among structural empowerment, psychological empowerment, and burnout in registered staff nurses working in outpatient dialysis centers. *Nephrology Nurses Journal*, **38**(6), 475-481.
- Perumal S. & Sehgal A. (2003) Job satisfaction and patient care practices of hemodialysis nurses and technicians. *Nephrology Nurses Journal*, **30**(5), 523-528.
- Polaschek N. (2003) Negotiated care: a model for nursing work in the renal setting. *Journal of Advanced Nursing*, **42**(4), 355-363.
- Pulkinghorne K., Dent H., Gulyani A., Hurst K. & McDonald S.P. (2011) Haemodialysis. In *ANZDATA Registry Report 2010*. Australia and New Zealand Dialysis and Transplant Registry, Adelaide, South Australia.
- Ramanarayanan S. & Snyder J. (2011) Reputations and firm performance: Evidence from the dialysis industry. *UCLA Anderson*.
- Ridley J., Wilson B., Harwood L. & Laschinger H.K.S. (2009) Work environment, health outcomes and magnet hospital traits in the Canadian nephrology nursing scene. *CANNT*, **19**(1), 28-35.
- Ritter D. (2011) The relationship between healthy work environments and retention of nurses in a hospital setting. *Journal of Nursing Management*, **19**, 27-32.
- Ross J., Jones J., Callaghan P., Eales S. & Ashman N. (2009) A survey of stress, job satisfaction and burnout among haemodialysis staff. *Journal of Renal Care*, **35**(3), 127-133.
- Schmalenberg C. & Kramer M. (2008) Essentials of a productive nurse work environment. *Nursing Research*, **57**(1), 2-13.
- Shirom A. & Melamed A. (2006) A comparison of the construct validity of two burnout measures in two groups of professionals. *International Journal of Stress Management*, **13**(2), 176-200.
- Stamps P. (1997) *Nurses and work satisfaction: an index for measurement*. Health Administration Press, Chicago.

- Suresh P., Matthews A. & Coyne I. (2013) Stress and stressors in the clinical environment: a comparative study of fourth-year student nurses and newly qualified general nurses in Ireland. *Journal of Clinical Nursing*, **22**, 770-779.
- Thomas-Hawkins C., Denno M., Currier H. & Wick G. (2003) Staff nurses' perceptions of the work environment in freestanding hemodialysis facilities. *Nephrology Nurses Journal*, **30(4)**, 377-386.
- Thomas-Hawkins C., Flynn L. & Clarke S.P. (2008) Relationships between registered nurse staffing, processes of nursing care, and nurse-reported patient outcomes in chronic hemodialysis units. *Nephrology Nurses Journal*, **35(2)**, 123-145.
- Twigg D., Duffield C., Thompson P.L. & Rapley P. (2010) The impact of nurses on patient morbidity and mortality - the need for a policy change in response to the nursing shortage. *Australian Health Review*, **34**, 312-316.
- Uğur S., Acuner A.M., Göktaş B. & Şenoğlu B. (2007) Effects of physical environment on the stress levels of hemodialysis nurses in Ankara Turkey. *Journal of Medical Systems*, **31**, 283-287.
- Webster J., Flint A. & Courtney M. (2009) A new practice environment measure based on the reality and experiences of nurses working lives. *Journal of Nursing Management*, **17**, 38-48.
- Wilson B., Squires M., Widger K., Cranley L. & Tourangeau A.E. (2008) Job satisfaction among a multigenerational nursing workforce. *Journal of Nursing Management*, **16**, 716-723.
- Wolfe W.A. (2011) Adequacy of dialysis clinic staffing and quality of care: A review of evidence and areas of needed research. *American Journal of Kidney Disease*, **58(2)**, 166-176.
- Zander M. & Hutton A. (2010) Coping and resilience factors in pediatric oncology nurses. *Journal of Pediatric Oncology Nursing*, **27(2)**, 94-108.
- Zangaro G.A. & Soeken K.L. (2005) Meta-analysis of the reliability and validity of Part B of the Index of Work Satisfaction across studies. *Journal of Nursing Measurement*, **13(1)**, 7-22.



## Tables

**Table 1:** Demographic Characteristics

		Number	Percent
Gender	Female	379	90.9
	Male	38	9.1
Country	Australia	396	94.9
	New Zealand	21	5.1
Age (years)	21-30	23	5.5
	31-40	84	20.1
	41-50	156	37.4
	51-60	141	33.8
	60+	13	3.1
Length of Time Working in Haemodialysis	<1 year	11	2.6
	1-2 years	22	5.3
	3-5 years	70	16.8
	6-10 years	116	27.8
	11-15 years	94	22.5
	16-20 years	41	9.8
	>20 years	63	15.1
Nursing Classification	Registered Nurse (RN)	406	97.4
	Enrolled Nurse (EN)	11	2.6
Highest Nursing Qualification	Certificate in Nursing	85	20.4
	Diploma in Nursing	56	13.4
	Undergraduate Degree	74	17.7
	Postgraduate Certificate/Diploma	170	40.8
	Masters/Doctorate	32	7.7
Renal Qualification	Certificate	139	33.3
	Postgraduate Certificate/Diploma	155	37.2
	Masters/Doctorate	14	3.4
	Not stated	109	26.1
Work Location	Metropolitan	177	42.4
	Regional	144	34.5
	Rural	85	20.4
	Remote	11	2.6
Type of Unit	In-Centre	187	44.8
	Satellite	202	48.4
	Home	28	6.7
Nurse to patient ratio	1:2	16	3.8
	2:5	42	10.1
	1:3	231	55.4
	1:4	95	22.8
	1:5	22	5.3
	>1:5	11	2.6

**Table 2:** Descriptive Statistics for Haemodialysis Nurses' Work Environment, Job Satisfaction, Stress and Burnout

	Sub-scales & Total	<i>M</i>	<i>SD</i>	Range		Cronbach Alpha
				Potential	Actual	
Work Environment (B-PEM)	Getting Things Done	3.56	0.60	1-5	1-5	.85
	Flexible Management Support	3.74	0.75	1-5	1-5	.80
	Feeling Valued	3.65	0.68	1-5	1-5	.85
	Professional Development	3.30	0.80	1-5	1-5	.86
	Total B-PEM score	92.46	15.02	26-130	30-124	.91
Job Satisfaction (IWS)	Pay	3.53	1.11	1-7	1.00-6.67	.85
	Professional Status	5.35	0.89	1-7	2.71-7.00	.72
	Interactions	4.88	1.05	1-7	1.90-7.00	.82
	Autonomy	4.84	1.08	1-7	1.57-7.00	.76
	Task Requirements	4.05	1.04	1-7	1.33-7.00	.71
	Organisational Policies	3.68	1.11	1-7	1.00-6.57	.73
	Total IWS score	191.16	31.19	44-308	98-276	.90
Job Stress (NSS)	Death and Dying	2.19	0.47	1-4	1.00-3.71	.74
	Conflict with Physicians	2.04	0.45	1-4	1.00-3.60	.71
	Inadequate Preparation	2.07	0.50	1-4	1.00-3.67	.75
	Lack of Support	1.98	0.63	1-4	1.00-4.00	.70
	Conflict With Other Nurses	1.95	0.51	1-4	1.00-3.80	.73
	Workload	2.29	0.52	1-4	1.00-4.00	.73
	Uncertainty Concerning Treatment	2.04	0.50	1-4	1.00-3.80	.71
	Total NSS score	71.48	12.16	34-136	34-105	.82
Burnout* (MBI)	Emotional Exhaustion	29.59	12.11	9-63	9-63	.92
	Personal Accomplishment	39.93	7.29	5-56	8-56	.84
	Depersonalisation	11.89	6.51	5-34	5-34	.85
	Total score (not applicable)					

\* Normative values for burnout are Emotional Exhaustion (Low  $\leq 16$ , Average 17-27, High  $\geq 28$ ); Depersonalisation (Low  $\leq 5$ , Average 6-9, High  $\geq 10$ ) and Personal Accomplishment (Low  $\geq 40$ , Average 39-34, High  $\leq 33$ ) Burnout is indicated by a high level of emotional exhaustion, high level of depersonalisation and low level of personal accomplishment (Stamps 1997).

**Table 3:** Pearson's Correlations among Work Environment, Job Satisfaction, Stress and Burnout

	1	2	3	4	5
1 Work Environment					
2 Job Satisfaction	.70*				
3 Job Stress	-.41*	-.52*			
4 Emotional Exhaustion	-.49*	-.56*	.52*		
5 Personal Accomplishment	.35*	.29*	-.21*	-.16*	
6 Depersonalisation	-.19*	-.30*	.34*	.47*	-.13*

\* Correlation is significant at the 0.01 level (2-tailed).

**Figure**

**Figure 1:** Burnout levels among haemodialysis nurses

