Nurses report a healthy culture: Results of the practice environment scale (PES-AUS) in an Australian hospital seeking magnet certification

ABSTRACT

Background

The magnet recognition program requires reliable evidence that the nursing practice environment supports staff to provide optimal care, have available professional development opportunities and participate in hospital affairs. The nursing practice environment is a strong indicator of nursing staff satisfaction and patient care quality and safety. The Practice Environment Scale of the Nursing Work Index is a validated and well tested tool for identifying the health of the nursing work environment.

Objectives

To: assess clinical nurses' work environment at St Vincent's Private Hospital, Sydney; benchmark results with magnet hospital data from the USA; undertake a gap analysis to determine potential areas for improvement.

Design

A web-enabled survey using a version of the Practice Environment Scale of the Nursing Work Index modified for the Australian context.

Participants

Clinical nurses of all classifications employed in all clinical departments in full-time, part-time or casual employment.

Results

Three-hundred and ninety-four nurses responded (84% response rate). Mean scores for three of the PES subscales, namely *Nurse Participation in Hospital Affairs* (3.06); *Nursing Foundations of Quality of Care* (3.19); and *Nursing Unit Manager Ability, Leadership and Support of Nurses* (3.17) were significantly higher than the mean scores from both USA non-magnet and magnet hospitals. The mean scores for the two remaining subscales, *Staffing and Resource Adequacy* (2.88); and *Collegial Nurse-Doctor Relations* (3.02) were significantly higher than mean scores for the USA non-magnet hospitals and not significantly different to the mean score for USA magnet hospitals. The mean score for the composite scale (3.07) was significantly higher than the mean scores for the USA non-magnet and magnet hospitals.

Conclusions

That our results were comparable to magnet hospitals for two sub-scales and significantly higher than magnet results for the remaining three sub-scales and the composite scale are especially pleasing given an objective of the research was to undertake a gap analysis in preparation for magnet recognition; they will provide compelling evidence that the hospital is already perceived as magnet-like by its nurses. Hospitals and health services across Australia may find similar administration of the Practice Environment Scale (modified for use in the Australian context) a useful exercise to act both as a stimulus to preparation and an indicator of readiness for magnet certification.

Key Words

Practice, environment, nursing, culture, magnet, certification

What is already known about the topic?

A healthy practice environment is a key determinant of magnet certification. The practice environment is a key determinant of nurse job satisfaction and patient safety. The PES-NWI is a well validated tool for ascertaining the health of the practice environment.

What this paper adds

A modified version of the PES-NWI is an appropriate tool for use in the Australian context. Australian hospitals considering magnet certification should consider using the PES-AUS as preparation for certification. On line survey delivery can be highly successful if effective strategies are applied prior to and during survey administration.

BACKGROUND

In June 2009, a premier private hospital in Sydney, Australia embarked on the American Nurse credentialing Centre's Magnet Recognition Program to further embed its reputation as a leader in private healthcare in Australia. Only two hospitals in Australia (in Queensland and Western Australia) presently enjoy Magnet Recognition and both are public health sector facilities. This prestigious world-recognised credential requires hospitals to meet stringent criteria related to excellence in nursing care in four major domains: Transformational leadership; structural empowerment; exemplary professional practice and new knowledge, innovations and improvements. Well defined empirical outcomes of each of these domains must be demonstrated to achieve magnet recognition.

Conceptually and operationally, magnet certification is concerned with primarily ensuring hospitals can demonstrate a robust nursing culture. The practice environment is a significant feature of nursing culture as it profoundly affects those who work within an organisation. The nursing practice environment is, however, a complex construct to conceptualise and measure (Lake 2007). Despite this inherent difficulty it has been explored to better understand and influence nurse job satisfaction and turnover (Hinshaw & Attwood 1984) as well as its

relationship to quality of care and patient outcomes (Mitchell & Shortell 1997). More recently, its relationship to patient safety (Institute of Medicine 2003; Armstrong et al, 2009) has brought attention to the issue of what is it about the practice environment that enhances professional practice (Lake 2007). Magnet hospital research (see for example Kramer & Schmalenberg 2004a, b, c, d) confirms that a professional practice environment 'supports nurses to function at the highest scope of clinical practice, to work effectively in an interdisciplinary team of caregivers, and to mobilise resources quickly' (Lake 2007: 106S).

Rational and Justification:

Building on the original Magnet research conducted in the USA in the early 1980s (Kramer et al 1989; McClure et al 1983), a tool was developed to measure nursing practice environment, known as the Nursing Work Index (NWI). Aiken and various colleagues (1994; 1997; 1999) built on this early work using the NWI to measure organisational traits of magnet and non-magnet hospitals in order to further establish its validity and reliability. The pedigree of this tool was next refined by Lake (2002) who developed the Practice Environment Scale of the Nursing Work Index (PES-NWI). Lake (2002: 176) first noted that 'the soundness of the measures [of the PES-NWI] is supported by their theoretical and empirical foundations, conceptual integrity, psychometric strength and generalisability'. She also reported in an evaluative study of a range of published multidimensional instruments to measure the nursing practice environment (Lake 2007) that the PES-NWI was the most useful of such instruments. Lake justified this claim on the grounds that it met the three main criteria of theoretical relevance, namely, format , length, and a strong body of evidence that attests to its validity and reliability. Importantly, in 2004 the National Quality Forum deemed the PES-NWI a national voluntary consensus standard for measuring nursing-sensitive care (Weston 2009) and Armstrong & Laschinger (2006) found a significant relationship between staff nurses' empowerment, supportive nursing environments and perceptions of a positive patient safety climate. Notably as a consequence of this robust body of evidence, the PES-NWI is now

commonly used for measuring the practice environment (for example, Aiken & Poghosyan; 2009 Chiang &Lin 2008; Flynn & McCarthy 2008; Li et al, 2007 and Manojlovich 2007).
Lake (2007: 115S) also notes that 'the PES-NWI is the only instrument with magnet hospital reference scores available for both the original and ANCC magnet hospitals. These scores augment instrument utility by permitting hospitals to benchmark their practice environments against these exemplary settings'. Consequently, the PES-NWI was the instrument of choice for the purposes of our study which was explicitly to establish how well prepared our hospital was for magnet certification.

It was fortunate therefore, that Middleton et al (2008) further modified the PES-NWI for the Australian context and tested it in a small study in a 400 bed metropolitan hospital in Sydney, NSW. Notably, the instrument was only minimally modified to reflect the differences between the American and Australian contexts (one item referring to *Use of Nursing Diagnosis* was removed from the subscale *Nursing Foundations for Quality Care* because nursing diagnoses are not used in Australia) and the descriptions of eight job titles were also altered to reflect local nomenclature.

These modifications were justified as Middleton et al (2008: 371) noted that Lake (2007b) recommended adaptation of the PES-NWI for different care settings. The modifications undertaken in Middleton et al's study suggest that while practice environment norms are yet to be established in Australia and currently only two magnet designated hospital exist, 'future studies to examine the validity and reliability of the PES-AUS are warranted to establish these norms' (Middleton et al 2008: 371).

AIM

The research aimed to: 1) assess clinical nurses' work environment at St Vincent's Private Hospital, Sydney; 2) benchmark results with Magnet hospital data and data from a similar

study undertaken in Australia REF; 3) undertake a gap analysis to determine potential areas for improvement.

METHOD

Study Design:

The PES-AUS survey was administered in August 2009. Registered nurses, enrolled nurses and assistants-in-nursing (unregulated personnel) were eligible to participate. Nurse Unit Managers (n=X) and clinical nurse educators (n=X) were excluded from the study as their small numbers would have rendered them potentially identifiable and many of the items pertained directly to their role and function in the practice environment. The survey was accessed via the 'Survey Monkey' on-line software through a specially designed portal on the clinical workstation of the hospital's information technology system, to which all nurses had access during their working hours. Staff also were able to access the survey via this portal from their homes.

While it is recognised that web-delivered surveys do not always have robust response rates when compared with paper-based surveys (Kramer & Schmalenberg 2009), we incorporated a number of evidence-based strategies aimed to maximise our response rate (Kramer & Schmalenberg 2009). These strategies comprised the following: the relevance of the survey was stressed by the Director of Nursing, the Nursing Executive staff and the Nurse Unit Managers; staff were released from professional patient care responsibilities during work hours to complete the survey; the principle investigator used personalised contacts with nurses in the clinical areas stressing the salience of the research for the Magnet journey, outlining the benefits to the staff of obtaining their survey results as well as providing financial incentives to create a sense of fun and competition amongst staff who were divided into to 'teams' of clinical units with incentives being provided on the basis of response rate completion at 95%

or above. Several units attained a 100% response rate accordingly. Ethics approval for the study was obtained from St Vincents & Mater Health Human Research Ethics Committee.

Instrument:

Our self-administered questionnaire was comprised of the Practice Environment Scale (PES-NWI) developed by Lake (2002) but modified for the Australian context by Middleton et al (2008) and subsequently identified as the PES-AUS as in Box 1 (Middleton et al 2008: 368).

Insert Box 1 about here.

Insert Box 2 about here

For each question nurses were asked to rate whether specific organisational characteristics were present in their current job using a 4-point Likert scale ('strongly agree' to 'strongly disagree'). Staff also were asked six demographic questions: sex; age; level of highest qualification; employment status (full time, part time, and casual); nursing classification (assistant-in-nursing, enrolled nurse, registered nurse, clinical nurse specialist); primary area of employment (clinical units on levels 10 through 6, Operating Rooms, Cardiac Catheter Centre, Clinical Support Unit, Same Day Centre, Intensive Care Unit, Sister Bernice Wing, Anaesthetic/Post Anaesthetic Care Unit, Day Surgery Unit, Pre-Admission Centre) and length of time employed on their unit or department.

Data Analysis:

All data were analysed using SPSS version 17.0. The PES-AUS instrument was scored according to directions supplied by Lake (2004, unpublished data). Scores for each item were reversed so that higher numbers indicate greater agreement. Sub-scale scores were calculated as means of the items in the sub-scale. The denominator for subscale Nursing Foundations for

Quality of Care was adjusted to allow for the one item deleted from the PES-NWI (use of Nursing Diagnoses) as per the PES-AUS modifcation (Middleton et al. 2008). Responses for nurses who did not answer all items were included in the subscale scores as per scoring instructions (Lake, 2004 unpublished data,). The potential score range for each of the subscale means was 1-4. Higher scores indicated greater agreement that subscale items were present in the current job situation, specifically, values above 2.5 indicated agreement and and values below 2.5 indicated disagreement.

A composite scale was also determined using the mean sample size from all subscale items as the denominator. Measures of central tendency were used to to describe the mean and standard deviations of the PES-AUS subscales. Mean scores were compared with published norms of magnet and non-magnet hospitals from a single site study undertaken in Sydney, Australia and from the USA magnet hospital data using a 2-tailed t-test of significance.

RESULTS

Three hundred and ninety-four nurses from all clinical areas of the hospital completed the survey (84% response rate). There were 348 (88.6%) female nurses and 45 (11.4%) male nurses. The largest represented age group was 21-40 years old (64.7%). Over two-thirds of nurses were educated to the level of bachelor degree or above (69.4%). Employment status was predominantly full-time (70.3%). All the nurses responding were employed as clinicians (100%). There were 286 (72.6%) registered nurses, 63 (16.0%) clinical nurse specialists, 16 (4.1%) enrolled nurses and 29 (7.4%) assistants-in-nursing. The median length of time employed on the study units was 4 to 8 years (Table 1).

Insert Table 1 about here

Insert Table 2 about here

The Practice Environment Scale

Mean scores and standard deviations of the five PES-AUS subscale items and the composite scale from the study hospital are shown in Table 2 where they are compared with the reported means from the non magnet hospital in Sydney Australia (Middleton et al, 2008) and non-magnet and magnet hospitals in the USA.

Mean values were above 2.5 for all five of the subscales: *Nurse Participation in Hospital Affairs* (mean score 3.06); *Nursing Foundations for Quality of Care* (mean score 3.19); *Nursing Unit Manager Ability, Leadership and Support of Nurses* (mean score 3.17) *Staffing and Resource Adequacy* (mean score 2.88) and *Collegial Nurse-Doctor Relations* (mean score 3.02) as well as the composite scale (mean score 3.07) indicating that the requisite features for these items were present in the current work environment.

The mean score for *Nurse Participation in Hospital Affairs* (3.06) was significantly higher than the mean score for both the Australian non-magnet and American magnet and non-magnet hospitals ($p < 0.001$ for all). Similarly, the mean score for *Nursing Foundations of Quality of Care* (3.19) was significantly higher than the Australian non-magnet and American non-magnet and magnet hospitals ($p < 0.001$ for all) and the mean score for *Nursing Unit Manager Ability, Leadership and Support of Nurses* (3.17) was also significantly higher for the Australian non-magnet hospital ($p = 0.009$) as well as the non-magnet and magnet hospitals in the USA ($p < 0.001$). The mean score for *Staffing and Resource Adequacy* (2.88) was significantly higher than the mean score for the Australian non-magnet hospital ($p < 0.001$) and the mean score for American non-magnet hospitals ($p < 0.001$) and not significantly different to the mean score for magnet hospitals in the USA ($p = 1.00$). The mean score for *Collegial Nurse-Doctor Relations* (3.02) also was significantly higher than the Australian non-magnet hospitals ($p = 0.019$) and non-magnet hospitals in the USA ($p < 0.001$) and comparable to the mean score of magnet hospitals in the USA ($p = 0.30$). The

mean score for the composite score (3.07) was, once again, significantly higher than the mean scores for the Australian non-magnet hospital ($p < 0.001$) and non-magnet and magnet hospitals in the USA ($p < 0.001$).

DISCUSSION

As a medium-sized (250 beds) private, predominantly surgical hospital our results were significantly higher than magnet hospital data for three of the five subscales and the composite scale. For the remaining two subscales, scores were not statistically different and thus comparable to magnet hospital data. At time of writing our hospital is early in its journey toward magnet recognition and these results are extremely pleasing. One of the aims of the research was to identify any gaps in the practice environment that needed attention. Our results confirm that on each of the sub-scales, nurses rate the hospital as 'magnet-like'; they will provide compelling and rigorous empirical evidence to the American Nurse Credentialing Centre when documents are submitted for appraisal by the surveyors.

Importantly, these results are not serendipitous. They also reciprocally reinforce and are reinforced by the findings of a number of other quality measures used by the hospital over the last few years, including but not limited to, the following: In 2007 the hospital was rated as having a 'Culture of Success' by Best Practice Australia, a national benchmarking organisation for public and private hospitals in Australia. These results were derived from a hospital-wide survey (of which 70% of respondents were nurses) which explored staff satisfaction on a number of work environment measures similar to those in the PES-AUS. Notably, levels of engagement with the hospital and perceptions of its reputation were rated highly by staff. In September 2009 this result was repeated with 75% of staff reporting that the hospital was 'a truly great place to work'. This is a resounding affirmation of and for the leadership of the hospital; it equally an acclamation of a healthy work environment by the 'grass roots' workforce.

Like most health care facilities in Australia, the hospital is surveyed every four years by the Australian Council of Health Care Standards (ACHS), one of the major peak accrediting bodies for healthcare organisations in this country. The hospital has a mandate to submit to accreditation as a requirement for ongoing funding from the private health care funding bodies. In 2007 the hospital received its best results ever with a number of high commendations noted by the surveyors. Many of these were in the clinical domain and reflected nurse participation in quality and safety care initiatives.

Another quality exercise to which the hospital subscribes is the Press Ganey surveys which are sent out continuously to our patients and every two years to our visiting medical officers (surgeons and physicians). For the last four years the hospital's Press Ganey Patient Satisfaction scores have placed it on the 96th percentile when compared with peer hospitals across Australia. In the latest survey of hospital doctors satisfaction with the hospital overall was ranked in the top 12% of peer hospitals and satisfaction with nursing staff particularly, was in the top 10% compared with peer hospitals. Also importantly, in 2007, the hospital was recognised for excellence in nursing-led innovations and improvements to patient care quality and safety with the National Press Ganey Success Story award.

The excellent research results reported here reinforce that the hospital has a strong and vibrant culture in nursing and patient care and clearly, this research has been a useful exercise to undertake prior to magnet application.

Methodologically, we were very pleased with our excellent response rate (84%), particularly as response rates from nurses are at best moderate (Aiken, Clarke, Sloane, Sochalski & Silber 2002). It is also reported that on-line survey administration is less successful than paper-based survey administration (Kramer & Schmalenberg 2009). We would contend however, that this

web-enabled survey expedited the response and completion rate because it was easily accessible by all staff, took no longer then ten minutes to complete, staff were encouraged to complete it whilst at work, and pre-survey work up by the research team following the strategies outlined in the study design section above, were attended to vigorously.

The question needs to be asked whether comparing Australian data with USA data is valid. Lake (2007b) herself has recommended that the tool be adapted for use in other geographical regions and clinical settings. Consequently, it has been used successfully in countries as disparate Russia and Armenia (Aiken & Poghosyan 2009), China (Chiang & Lin 2008) and Canada (Armstrong et al, 2009) and Ireland (Flynn et al 2008) as well as clinical settings as diverse as Veterans Health Administration (Li et al 2007), Intensive Care (Manojlovich 2007) and Haemodialysis units (Gardner et al, 2007). Given that Australia and the USA are advanced Western economies with albeit different, but in many ways comparable, healthcare systems it seems reasonable to extrapolate that nurses in both countries would hold similar perceptions about their roles and responsibilities as nurses and that their practice environments would hold similar importance in relation to their work satisfaction. We acknowledge that the USA data used as a comparison in this paper, whilst from seminal studies, were obtained some years ago; they are, however, all that are available as a comparison. Clearly, a database of Australian norms would be of value to those undertaking further studies in this manner. In the future, as more regions and countries outside the USA take up the magnet recognition program upgrading the magnet database with local norms would be both desirable and a demonstration of good leadership in this important field of nursing research and scholarship.

CONCLUSION

To our knowledge, no other hospital in Australia has administered the PES-NWI or PES-AUS organisation wide prior to seeking magnet recognition. As hospitals and health service across

Australia begin to embrace the magnet concept, the efficacy and efficiency of the PES-AUS to act as both a stimulus to preparation for magnet as well as an indicator of readiness for certification looks promising. Certainly, Middleton et al's (2008) research provided the impetus from which to launch the study reported here. Similarly, our study adds to the body of Australian evidence accruing in relation to the importance of a healthy culture in nursing as reflected by and embodied in the clinical practice environment.

REFERENCES

Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout and job dissatisfaction. JAMA 2002 288, 1987-1993.

Aiken L. H., Poghosyan L 2009 Evaluation of "magnet journey to nursing excellence program" in Russia and Armenia. Journal of Nursing Scholarship 41 (2), 166-174.

Aiken L. H., Sloane, D. M., Lake, E. T., Sochalski, J., Weber, A. L., 1999. Organisation and outcomes of inpatient AIDS care. Medical Care 37, 760-772.

Aiken, H. L., Smith, H. L., Lake, E. T., 1994. Lower Medicare mortality among a set of hospitals known for good nursing care. Medical Care 32, 771-787.

Aiken, H. L., Sochalski, J., Lake, E. T., 1997. Studying outcomes of organisational change in health services. Medical Care 35 (Suppl), NS6-NS18.

Chiang H. Y., Lin S. Y., 2008 Psychometric testing of the Chinese version of nursing practice environment scale. Journal of Clinical Nursing 18, 919-929.

Flynn, M., McCarthy, G., 2008 Magnet hospital characteristics in acute general hospitals in Ireland. Journal of Nursing Management 16, 1002-1011.

Hinshaw, A. S., Atwood, J. R .,1984. Nursing staff turnover, stress, and satisfaction: Models, measures, and management. Annual Review of Nursing Research 1, 133-152.

Institute of Medicine 2003. Keeping patients safe: Transforming work environment of nurses, Quality Chasm Series. Washington DC, The National Academies Press.

Kramer, M., Schmalenberg, C., 2004a. Essentials of a magnetic work environment part 1. Nursing 2004 34 (6), 50-54.

Kramer, M., Schmalenberg, C., 2004a. Essentials of a magnetic work environment part 2. Nursing 2004 34 (7), 44-47.

Kramer, M., Schmalenberg, C., 2004a. Essentials of a magnetic work environment part 1. Nursing 2004 34 (8), 44-47.

Kramer, M., Schmalenberg, C., 2004a. Essentials of a magnetic work environment part 1. Nursing 2004 34 (9), 44-48.

Kramer, M., Schmalenberg, C., 2009. Incentives and procedures effective in increasing survey participation of professional nurses in hospitals. Nursing Administration Quarterly 33 (2), 174-187.

Kramer, M., Schmalenberg, C., Brewer, B. B., Verran, J., Keller-Ungler, J. L., 2009. Accurate assessment of clinical nurses' work environment: response rate needed. Research in Nursing & Health 32 (2), 229-40.

Kramer, M., Schmalenberg, C., Hafner, P., 1989. What causes job satisfaction and productivity of quality of nursing care? In: Moore, T. M., Simendinger, E. A. (Eds.), Managing the Nursing Shortage: A Guide to Recruitment and retention. Rockville, MD Aspen, pp. 12-32.

Lake, E. T., 2002. Development of the practice environment scale of the nursing work index. Research in Nursing & Health 25, 176-188.

Lake, E. T., 2007. The nursing practice environment: Measurement and evidence. Medical Care Research and Review 64 (2), 104S-122S.

Li, Y-U., Lake, E. T., Sales, A. E., Sharp, N. D., Greiner, G. T., Lowy, E., Chuan Fen, L., Mitchell, P. H., Sochalski, J. A., 2007 Measuring nurses' practice environments with the revised nursing work index: evidence from registered nurses in Veterans Health Administration. Research in Nursing & Health 30, 31-34.

Manojlovich, M., 2007 Healthy work environments, nurse-physician communication, and patient outcomes. American Journal of Critical Care 16 (6), 536-543.

McClure, M. L., Poulin, M. A., Sovie, M. D., Wandelt, M. A., 1983. Magnet hospitals: Attraction and retention of professional nurses. Kansas City, MO, American Nurses Association.

Middleton, S., Griffiths, R., Fernandez ,R., Smith, B., 2008. Nursing practice environment: How does one Australian hospital compare with magnet hospitals? International Journal of Nursing Practice 14, 366-372.

Mitchell, P. H., Shortell, S. M., 1997. Adverse outcomes and variation in organisation of care delivery. Medical Care 35 (11), NS19-NS32.

Weston, M. J., 2009. Validity of instruments for measuring autonomy and control over nursing practice. Journal of Nursing Scholarship 41 (1), 87-94.

Table 1 Nurses' demographic characteristics reported at baseline for total sample (*n* = 394)

Characteristic	Total sample n (%)
Sex	
Female	349 (88.6)
Male	45 (11.4)
Age	
20 or less	2 (0.5)
21-30	136 (34.5)
31-40	117 (29.7)
41-50	78 (19.8)
51-60	52 (13.2)
60 or older	9 (2.3)
Level of highest qualification	
Certificate (hospital trained RN)	62 (15.7)
Certificate III (TAFE/Private Sector)	24 (6.1)
Certificate IV (TAFE/Private Sector)	15 (3.8)
Diploma (TAFE/University)	18 (4.6)
Advanced Diploma (TAFE/University)	2 (0.5)
Bachelor Degree	198 (50.3)
Graduate Certificate	41 (10.4)
Graduate Diploma	20 (5.1)
Masters Degree	14 (3.6)
Employment status	
Full time	277 (70.3)
Part time	106 (26.9)
Casual	11 (2.8)
Years employed in department	
1 or less	69 (17.5)
1-3	99 (25.1)
4-8	140 (35.5)
9-15	57 (14.5)
15 or more	29 (7.4)
Nursing Classification	
Assistant in nursing	29 (7.4)
Enrolled nurse	16 (4.1)
Registered nurse	286 (72.6)
Clinical nurse specialist	63 (16.0)

Table 2 Baseline mean subscale scores for the Practice Environment Scale, Australia compared with magnet and non-magnet hospitals (Lake 2002)

Subscales (our subscale n)[†]	No. of items	Total sample mean (SD)	Australian non-magnet Hospital (n=67)		American non-magnet Hospitals (n=689)		American magnet hospitals (n=1610)	
			mean (SD)	P-value	mean (SD)	P-value	mean (SD)	P-value
Nurse Participation in Hospital Affairs (n=380)	9	**3.06** (0.43)	2.71 (0.39)	p<0.001	2.44 (0.44)	p<0.001	2.76 (0.47)	p<0.001
Nursing Foundations for Quality of Care (n=390)	9[‡]	**3.19** (0.39)	2.95 (0.32)	p<0.001	2.83 (0.36)	p<0.001	3.09 (0.39)	p<0.001
Nursing Unit Manager Ability, Leadership, and Support of Nurses (n=384)	5	**3.17** (0.53)	2.94 (0.47)	P=0.001	2.68 (0.60)	p<0.001	3.00 (0.59)	p<0.001
Staffing and Resource Adequacy (n=388)	4	2.88 (0.58)	2.07 (0.56)	p<0.001	2.49 (0.62)	p<0.001	2.88 (0.62)	P=1.00
Collegial Nurse–Doctor Relations (n=394)	3	3.02 (0.52)	2.81 (0.44)	P=0.002	2.82 (0.55)	p<0.001	2.99 (0.52)	P=0.30
Composite scale (n=368)[f]	5	**3.07** (0.40)	2.69 (0.36)	p<0.001	2.65 (0.37)	p<0.001	2.95 (0.40)	p<0.001

[†] Sample size (n) of subscale item varies due to missing data. [‡] This is a 10 item scale in the original tool. One item was removed for use in the Australian context (Use of Nursing Diagnoses) as it was not relevant. [f] Mean sample size of subscale items. Values above 2.5 indicate agreement that the subscale items are present in the current work environment. Values below 2.5 indicate disagreement that the subscale items are not present in the current work environment. Significant values compared with magnet hospitals in the USA are shown in bold.

Box 1 Practice Environment Scale, Australia. Modified from 31-item Practice Environment Scale of the Nursing Work Index (Lake 2002)

1. Adequate support services allow me to spend time with my patients
2. Doctors and nurses have good working relations
3. A nursing unit manager that is supportive of nurses
4. Active staff development or continuing education programme for nurses
5. Career development/clinical ladder opportunity
6. Opportunity for nurses to participate in policy decisions
7. Senior nurses use mistakes as learning opportunities, not criticism
8. Enough time and opportunity to discuss patient care problems with other nurses
9. Enough registered nurses to provide quality patient care
10. A nursing unit manager who is a good manager and leader
11. A director of nursing who is highly visible and accessible to staff
12. Enough staff to get the work done
13. Praise and recognition for a job well done
14. High standards of nursing care are expected by the hospital management
15. A director of nursing equal in power and authority to other top-level hospital executives
16. Good teamwork between nurses and doctors
17. Opportunities for advancement
18. A clear philosophy of nursing that pervades the patient care environment
19. Working with nurses who are clinically competent
20. A nursing unit manager who backs up the nursing staff in decision-making even if the conflict is with a doctor
21. Hospital management that listens and responds to employee concerns
22. An active quality assurance programme
23. Nurses are involved in the internal governance of the hospital (e.g. practice and policy committee)
24. Collaboration (joint practice) between nurses and doctors
25. A preceptor programme for newly hired nurses
26. Nursing care is based on a nursing model rather than a medical model
27. Nurses have the opportunity to serve of hospital and nursing committees
28. Nurse managers consult with staff on daily problems and procedures
29. Written up-to-date care plans for all patients
30. Patient care assignments that foster continuity of care (i.e. the same nurse cares for patients from one day to the next)

Box 2 The five sub-scales of the Practice Environment Scale, Australia

1. *Nurse Participation in Hospital Affairs:* Asked nursing staff about their perceptions of involvement in policy decisions, access and visibility of senior nurses and career development opportunities (nine questions);
2. *Nursing Foundations for Quality of Care*: Enquired about access to Continuing education and nursing standards based on a defined model of care (nine questions);
3. *Nursing Unit Manger Ability, Leadership and Support of Nurses:* Explored how well senior nurse managers demonstrate quality leadership, provide a supportive work environment and recognise nurses' achievements (five questions);
4. *Staffing Resources Adequacy*: Sought nurses' perceptions on RN/patient ratios, time allocation for patient care and peer communication (four questions);
5. *Collegial Nurse-Doctor Relations:* Sought nurses' views about teamwork and VMO/nurse collaboration (three questions). (After Middleton et al 2008).

A composite scale measuring the overall practice environment was also determined (Box 1).