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The Association of Chinese Hospital Work Environment with Nurse Burnout, Job Satisfaction, and Intention to Leave

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Abstract

The purpose of this study was to describe nurse burnout, job satisfaction, and intention to leave, and to explore the relationship of work environment to nurse outcomes in a sample of 9,698 nurses

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from 181 hospitals in China. Nurses reported moderate levels of emotional exhaustion and depersonalization, and high levels of reduced personal accomplishment. Nearly one fifth of the nurses reported high levels of burnout on all three dimensions. Forty-five percent of the nurses were dissatisfied with their current job; these nurses were most dissatisfied with their salary. Five percent of nurses reported intention to leave. Nurses reporting mixed and good work environments were less likely to report high burnout, job dissatisfaction, and intention to leave compared with those in poor work environments. The results suggest that high burnout and low job satisfaction are prominent problems for Chinese nurses, and improving work environment might be an effective strategy for better nurse outcomes in Chinese hospitals.

Keywords

burnout; job satisfaction; retention; turnover; nurse; work environment; nursing in China

Nurses in all countries are at high risk for burnout, low job satisfaction, and intention to leave (Aiken et al., 2001; Nantsupawat et al., 2011), all of which are regarded as important nurse outcomes (Aiken, Clarke, Sloane, Lake, & Cheney, 2008). These outcomes have received increasing attention because of the widespread shortage of nurses (Hudspeth, 2013), and the hospital work environment has been regarded as an important factor related to nurse outcomes (Aiken, Clarke, & Sloane, 2002).

China is in the midst of health care reform, and nurses in China are required to provide high quality care to serve the needs of the patients who expect excellent service (Maxime, Xue, & Emmanuel, 2009). However, hospital managers often hire fewer nurses when possible to cut costs, and Chinese hospitals are experiencing serious nursing shortages (Hu, Shen, & Jiang, 2010). The number of registered nurses (RNs) has increased steadily since 2005 in China, but the increase in nurses was much lower than the increase in outpatient visits and inpatient numbers (Gu, 2011). On the other hand, more and more contract nurses are employed in hospitals. Contract nurses are employed by the hospital to solve the problem of the nursing shortage, but with lower salaries and fewer opportunities for promotion as compared with *bianzh*i nurses, whose positions are allocated by the government (State Council of China, 2007; Hu et al., 2010). All these factors contribute to increasing burnout, job dissatisfaction, and intention to leave of nurses in Chinese hospitals.

Although a large number of researchers have focused on nurse job outcomes and shown how nurse job outcomes are associated with supportive work environment in western countries (Aiken et al., 2008; Aiken et al., 2011; Maslach & Leiter, 1997), the evidence from China is limited. There is no study on nurse job outcomes and work environment with a large sample from across China. Therefore, the purposes of this study are to present a description of nurse job outcomes, including burnout, job satisfaction, and intention to leave, and identify the relationship of work environment and nurse job outcomes in level 2 and level 3 hospitals in China.

The Nurse Burnout, Job Satisfaction and Intention to Leave Nurse Burnout

Burnout is conceptualized as the feeling of emotional exhaustion, distancing from clients, and reduced personal accomplishment (Maslach, Jackson, & Leiter, 1996). Burnout among nurses is receiving more attention because of its high incidence among nurses (Lee, Song, Cho, & Lee, 2003; Poghosyan, Clarke, Finlayson, & Aiken, 2010; Tourigny, Baba, & Wang, 2010). Aiken et al. (2011), in a study of nurses from nine countries, reported that 33% – 60% of nurses reported high levels of burnout in eight of the nine countries. Nantsupawat et al. (2011) reported that 41% of nurses had high burnout scores in Thailand. Several previous

researchers found that nurses in China experienced high levels of burnout (Liu et al., 2012; Wu, Zhu, Wang, Wang, & Lan, 2007; Xie, Wang, & Chen, 2011). A study of 527 nurses from 41 hospitals in Shanghai, China showed that nurses reported high emotional exhaustion, moderate depersonalization, and low reduced personal accomplishment (Xie et al., 2011). Although burnout is a psychological syndrome of emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA; Maslach et al., 1996), most studies have been about nurse emotional exhaustion; few researchers have studied nurse burnout comprehensively with a large sample from different regions in China. The purpose of this study was to study all three dimensions of nurse burnout and to explore the relationship between nurse burnout and work environment in China.

Nurse Job Satisfaction

Job satisfaction refers to the extent to which employees like their work and have a positive or negative attitude toward their jobs (Stamps, 1997). There have been a large number of studies on nurse job satisfaction. Nantsupawat et al. (2011) reported that 28% of nurses in Thailand were dissatisfied with their job. Aiken et al. (2011) reported that the job dissatisfaction of nurses in the nine countries studied varied from 17% in Germany, to about one third in most countries, and up to 60% in Japan. A study with a sample of 496 registered nurses in Korea showed a higher job satisfaction rate, and 68.8% of nurses were satisfied with their current jobs (Kwak, Chung, Xu, & Eun-Jung, 2010). In terms of factors associated with job satisfaction, a consistent picture did not emerge in the literature, but work environment significantly contributed to nurse job satisfaction in most studies (Nantsupawat et al., 2011; Aiken et al., 2011). Low job satisfaction of nurses has been reported in China. Lu, While, and Barriball (2007) studied 512 nurses in Beijing and found that poor salary was the major reason for nurse job dissatisfaction; only 53.7% of nurses expressed satisfaction with their jobs, and 79.2% of nurses were dissatisfied with their salary. In a study of 2,250 nurses from 19 general hospitals in Shanghai, Liu et al. (2011) reported that 50.2% of nurses were dissatisfied with their job; positive work relationships with their coworkers led to the most satisfaction; extrinsic rewards, such as annual leave entitlements, salary level and non-salary benefits led to the most dissatisfaction. In another study of 650 nurses from six hospitals in Harbin, China, nurses were most dissatisfied with workload and compensation (Sun, He, Wang, & Li, 2009). Liu et al. (2012) reported that more than 50% of nurses were dissatisfied with their jobs in Guangdong province.

The results from these studies in China are varied due to the different sites and the use of different measurement instruments. In addition, study of the relationship between nurse job satisfaction and work environment has been limited. The purpose of this study was to examine nurses' job satisfaction levels and the relationship with work environment in a large sample from different regions of China, employing instruments used in previous international studies (Aiken et al., 2011), in order to compare the findings of Chinese nurses with those in other countries.

Nurse Intention to Leave

Intention to leave has been found to be a predictor of actual leaving (Krausz, Koslowsky, Shalom, & Elyakim, 1995), and leaving work is regarded as a major contributor to the shortage of nurse (Flinkman, Leino-Kilpi, & Salantera, 2010). Aiken et al. (2001) reported that 16.6% – 38.9% of nurses in five countries (USA, Canada, England, Scotland, and Germany) reported intention to leave within the next year, and the percentage increased to 29.4% – 53.7% among those <30 years old. Failing to retain nurses has led to increasing concerns of managers and policy-makers in China in recent years (Gu, 2011; Ministry of Health of China, 2011), but the research on Chinese nurse intention to leave is limited. In a

study of 2,250 nurses in Shanghai, Liu et al. (2011) reported that 40.4% of nurses reported an intention to leave. In another study using the Chinese version of the Nurses' Intent to Stay (ITS; 6 items, with a 5 - point Likert scale, scored from 1 to 5, with a higher score indicating stronger intent to stay.), researchers found that the mean score for nurse intent to stay was 3.53, meaning that nurses were only at a moderate level of intending to stay in their current job (Wang, Tao, Ellenbecker, & Liu, 2012). Further studies about nurse turnover intention and its related factors are needed in light of the serious nursing shortage in China. The purpose of this study was to study nurse intention to leave and explore its relationship with work environment in China.

The Relationship of Work Environment and Nurse Job Outcomes

A supportive work environment includes adequate resources, good colleague relationships, and management support (Bratt, Broot, Kelber, & Lostocco, 2000). Many researchers have found that a better work environment was associated with lower burnout, higher job satisfaction, and less intention to leave (Aiken et al., 2011; Van Bogaert, Clarke, Roelant, Meulemans, & Van de Heyning, 2010). Liu et al. (2012) reported that in 21 hospitals in Guangdong province in China, 39 out of 89 inpatient units (43.82%) were classified as having poor work environments, and better work environment was associated with lower job dissatisfaction and job-related burnout. Most of this research has been conducted in western countries, and little is known about this relationship in China.

Most studies on the topic of nurse job outcomes in China have focused on data description with limited exploration of correlations among variables. The studies also were limited by use of single sites or small samples. Although a few international studies have emphasized the importance of work environment on nurse outcomes (Aiken et al., 2011; Van Bogaert et al., 2010), little is known about the situation in China. This is one of the first studies to examine nurse burnout, job satisfaction, and intention to leave with a large sample across mainland China, and to explore the relationship of hospital work environment and nurse job outcomes. This study is a part of the International Hospital Outcomes Study (IHOS), which is a collaborative research project, and all the measurements were the same as those used in previous international studies (Aiken et al., 2011). The study compares the results in China with those in other countries to identify issues of concern in China and points out the similarities and differences between Chinese nurses and nurses from other countries.

Methods

Design and Sample

The design for this study was a retrospective secondary analysis of data to estimate the relationship between hospital work environment and nurse burnout, job satisfaction, and intention to leave. The data source was the Chinese Nursing Human Resources Study (CNHRS; You et al. 2013). The original CNHRS was a multi-center collaborative study, all the data were collected between September 2008 and June 2010. The 8 China Medical Board (CMB) China Nursing Network member university nursing schools and another medical university managed the data collection. CNHRS was a cross-sectional study conducted in 181 level 2 (300–500 beds) and level 3 (> 500 beds) comprehensive hospitals from six provinces, two municipalities, and one autonomous region, which covered all eight comprehensive economic zones of Mainland China.

Participating nurses were recruited using three strategies. First, hospitals were stratified by location (capital cities vs. other areas) and hospital level (level 2 vs. level 3); 20 hospitals with equal numbers of level 2 and level 3 hospitals were drawn from 8 regions, and 10 level 2 and 11 level 3 hospitals were drawn from one province because a pilot study had been

carried out there. All 181 hospitals met the inclusion criteria, and the study was conducted in all of them. Second, the units were selected using systematic sampling, and 3 to 8 units including medical, post-operative surgical, and intensive care units were selected from each hospital. Third, all the bedside care nurses, excluding head nurses in the sampled units were surveyed. In 80% of hospitals at least 50 nurses were surveyed, and in the remaining 20% at least 38 nurses were surveyed. A total of 10,221 nurse questionnaires were distributed, 9,959 (97.40%) were returned, and 9,698 (94.88%) completed valid surveys were obtained (You et al., 2013). In this paper, the nurse surveys are analyzed. The nurses in the study accounted for 25.2% of all the nurses in the adult medical and surgical wards and ICU wards in the 181 hospitals.

Measures

The measurements used were from The China Hospital Nurse Survey, which was translated from English into Chinese and back-translated by bilingual translators. The pilot study was done with a sample of 50 nurses in a level 3 hospital to ensure the language and content were relevant to nurses in China, and items that did not conform to Chinese expressions or were not suitable to the Chinese healthcare system were modified or removed. (Liu et al., 2012).

Nurse burnout was measured by the Maslach Burnout Inventory (MBI; Maslach et al., 1996), which has 22 items and 3 subscales: Emotional Exhaustion (EE, nine items), Depersonalization (DP, eight items), and Reduced Personal Accomplishment (PA, five items). Nurses are asked to rate their experience with each item on a 7-point scale with responses ranging from *never* (1) to *a few times a week* (7). The scores of each item were aggregated for each subscale, and each subscale is treated as a continuous variable with scores ranging from low to moderate to high. Scores of 27 on EE, 10 on DP, and 33 on PA are considered "high burnout"; scores of 19 to 26 on EE, 6 to 9 on DP, and 34 to 39 on PA are considered "moderate burnout"; scores of 18 of on EE, 5 on DP, and 40 on PA are considered "low burnout" (Maslach et al., 1996). Previous studies in other countries have demonstrated that the MBI is an effective tool for measuring nurse burnout (Poghosyan et al., 2010). In this study all three dimensions of the MBI were used to measure nurse burnout comprehensively. Internal consistency was measured using Cronbach's α with reliability coefficients of .794 for the total MBI, .851 for EE, .768 for DP and .788 for PA subscale in the study.

Nurse job satisfaction was measured by a 9 item questionnaire with a 4-point Likert-type scale (1 = *Very Satisfied*, 2 = *Moderately Satisfied*, 3 = *Somewhat Dissatisfied*, 4 = *Very Dissatisfied*; Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). The scale includes one item on general satisfaction about the current job and eight items about satisfaction with work schedule, opportunity, independence, professional status, salary, health care security, retirement security, and tuition benefits. Job satisfaction was being used as a dichotomous variable in this study, *very satisfied* and *moderately satisfied* were classified as satisfied and *somewhat dissatisfied* and *very dissatisfied* were classified as dissatisfied with the job (You et al., 2013). The item on general satisfaction about current job was used in regression analyses (Liu et. al, 2012; You et al., 2013). The internal consistency Cronbach's α for the job satisfaction questionnaire was .870, and the item-total correlation coefficients of items with the scale were.302 to .686 in the study.

Nurse intention to leave was assessed by a single item, "Do you plan to be with your current employer in 1 year from now?" The answers were *No* or *Yes* (Aiken et al., 2008).

Hospital work environment was assessed by the Practice Environment Scale of the Nursing Work Index (NWI-PES), which is composed of 31 items with a 4-point Likert-type scale (1

= *Strongly Disagree*, 4 = *Strongly Agree*) in 5 subscales: Nurse Participation in Hospital Affairs; Nursing Foundations for Quality of Care; Nurse Manager Ability, Leadership, and Support of Nurses; Staffing and Resource Adequacy; and Collegial Nurse-Physician Relations. Higher scores indicate agreement that the item is present in the environment, which means a better work environment, and the mean subscale scores are derived by averaging item means for each subscale (Lake, 2002). Following the aggregation method used in similar studies (Aiken et al., 2008; Liu et al., 2012; Nantsupawat et al., 2011), we analyzed the work environment at the hospital level. Hospital-level medians for each subscale for all 181 hospitals were computed, and each hospital was coded as below, at or above the median for each subscale. Hospitals with scores above the median on one or no subscales, two or three subscales, and four or five subscales were classified as having "poor," "mixed," and "good" work environments respectively. The Cronbach's α was .971 for the NWI-PES, and the Cronbach's αs of the subscales were .834 to .946 in the study.

Procedures

A research team composed of faculty members from the nine universities involved was established, and the members were trained before data collection to ensure the consistency of implementation at all sites. In each hospital, a research nurse was appointed, and the questionnaires were delivered to staff nurses by the faculty members from a university and the hospital research nurse. The nurses completed the questionnaires individually and returned them in a sealed envelope to a sealed box in the units within 1 week. Completed questionnaires were mailed back to School of Nursing, Sun Yat-sen University (SYSU). All participants took part in the study voluntarily. The research project was approved by the Ethical Committee of School of Nursing, Sun Yat-sen University.

Data Analysis

Descriptive statistics were used to depict nurse characteristics, job outcomes, and hospital work environment. Frequencies were used for categorical variables, and means, standard deviations, medians, and quartile ranges were used for continuous variables. Chi-square tests were carried out to examine percentage differences of high burnout, job dissatisfaction, and intention to leave of nurses in hospitals with poor, mixed, and good work environments.

Logistic regression models were performed to estimate the influence of hospital work environments on nurse burnout, job satisfaction, and intention to leave after adjusting for a number of potentially confounding factors, which included some nurse characteristics (working years, marital status, employment status, and highest education level), unit type (medical, surgical, and ICU), and hospital characteristics (hospital level, location, and region). Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS version 16.0, SPSS, Inc., Chicago, IL). The level of statistical significance was set at *p*<.05.

Results

Characteristics of the Nurse Sample

Most nurses were female (9,415, 98.94%) in the sample. Their age ranged from 18 to 55 years, with an average of 29.07 years. Their work experience ranged from 1 month to 39 years, and the mean work experience was 8.31 years. More than half (53.16%) were contract nurses, and 45.70% were bianzhi nurses. At the time of the survey most nurses had an advanced diploma earned after an initial secondary diploma (see Table 4 footnotes for further explanation). The nurses worked in medical units (41.84%), surgical units (37.86%), and ICUs (20.30%). About a half of the nurses (51.20%) worked in level 2 and 48.80% in level 3 hospitals. Forty percent of the nurses worked in capital cities, and others worked in

municipalities (23.34%) or other cities (36.54%). The nurses from the east region accounted for almost half of the sample (45.27%), and followed by those from the middle (22.31%), the west (21.14%), and the northeast region (11.28%) of China.

Nurse Job Outcomes

We computed means, standard deviations, medians, quartile ranges, and percentages of the nurse job outcomes. Table 1 provides descriptive information about nurse burnout, job satisfaction, and intention to leave in this sample. The mean scores of emotional exhaustion (EE) and depersonalization (DP) were moderate, reduced personal accomplishment (PA) was at the high level of burnout, and nearly half were at high level in PA.

Nearly half of the nurses were dissatisfied with their current job. The percentage of nurses who reported being dissatisfied with their salary accounted for the greatest source of dissatisfaction (75.54%); independence at work accounted for the lowest (12.45%). The percentage of those dissatisfied with tuition benefits and professional status were the second and third highest. Only a small number of nurses reported intention to leave their present job within 1 year.

Hospital Work Environment

Table 1 demonstrates that the mean scores on all five subscales of PES-NWI for the nurses were above 3.0 with scores between *somewhat agree* (3) and *strongly agree* (4), which means that the nurses regarded the hospital work environment as positive on the whole. Collegial nurse–physician relations had the most favorable mean and median score, whereas staffing and resource adequacy were the lowest. Eighty-one hospitals were classified as having a poor work environment; 78 (43.10%) were classified as good by the nurses' assessment (Table 2). Table 2 shows the distributions of hospital with different work environment classification at level 2 and level 3 hospitals, and the location of municipalities, capital cities, and other cities.

The Effects of Hospital Work Environment on Nurse Job Outcomes

The pronounced effects of work environment on nurse job outcomes can be found in Table 3. The hospitals with good work environments, as reported by nurses, had fewer nurses reporting high burnout, job dissatisfaction with current job, professional status, opportunities for advancement, work schedule and independence at work, and intention to leave than hospitals with mixed work environments. In turn, the hospitals with mixed work environment had smaller percentages of nurses reporting high burnout, job dissatisfaction, and intention to leave than hospitals with poor work environments.

Table 4 takes these analyses a step further by presenting the results of logistic regression models and shows the effects of work environments on nurse job outcomes, after controlling for nurse characteristics (working years, marital status, employment status, and highest education level), unit type (medical, surgical, and ICU), and hospital characteristics (hospital level, location, and region). The results show that as opposed to a poor work environment, nurses in the hospitals with a mixed or good work environment had lower odds of reporting high burnout in all three dimensions of EE, DP and PA, job dissatisfaction, and intention to leave. All the ORs were <1, which implies that, all else being equal, less burnout, job dissatisfaction, and intention to leave were associated with better work environments. After controlling for nurse characteristics, the odds of nurses reporting high burnout in EE, DP and PA were lowered by 35% [ie. $(1-0.65)\times100$], 51% [ie. $(1-0.49)\times100$], and 27% [ie. $(1-0.73)\times100$] respectively, and the odds of nurses being dissatisfied with their job and reporting intention to leave were lowered by 47% [ie. $(1-0.53)\times100$] and 55% [ie. $(1-0.45)$

×100] in hospitals with good environment compared with those in hospitals with poor environment.

Table 4 also suggests that nurse job outcomes are significantly associated with nurse employment status and education level. In fully adjusted models, the likelihoods of reporting high burnout in EE, PA and job dissatisfaction were higher in "bianzhi" nurses than contract nurses, by OR of 1.26, 1.09 and 1.25 respectively, while "bianzhi" nurses were less likely to reported intention to leave (OR 0.64). Nurses with advanced diploma and baccalaureate & master degree were less likely to reported high burnout in PA (OR 0.84; OR 0.75) than nurses with secondary diploma, while they were more likely to responded job dissatisfaction (OR 1.22; OR 1.34).

Discussion

This study contributes to the literature on burnout, job satisfaction, and intention to leave of hospital nurses in China by describing these three nurse job outcomes in detail and illustrating their relationships with hospital work environment. The findings also highlight the relationship of a supportive work environment to nurse job outcomes.

A large number of nurses in this sample reported high levels of burnout in all the three dimensions; nurses exhibited moderate levels of EE and DP, and high levels of PA (nearly half of them reported high levels in PA). Compared with other countries (Poghosyan et al., 2010), the levels of EE and DP of nurses in China were similar to those in USA, Canada, and UK, but nurses in China reported higher burnout in PA. This lower level of personal accomplishment is likely the result of lower status of nursing as a profession in China, compared to some western countries. Although hospital nurses are sometimes called "angels in white," the value of nursing in health care is not well recognized, and nursing is not a popular career in China. Some hospital administrators view nurses as physicians' assistants, and patients tend to trust physicians but not nurses in China (Hu et al., 2010).

The lower level of personal accomplishment also is likely to be related to the lower degree education of nurses in China than other countries, such as USA (Kalisch, & Liu, 2009), and this study supports the point with results showing that nurses with higher degree were less likely to report high burnout in PA. In the past, most nurses held only a secondary school diploma of nursing after they graduated from junior high school. Although the number of nurses with baccalaureate or master's degrees has increased in recent years in China, the numbers are limited as compared to the portion of nurses with secondary or advanced diploma. Only about one fifth of nurses in this study held baccalaureate degrees, which is far lower than the percentages in USA and Thailand (Aiken et al., 2011). In 2007, about 71% of nurse students in China studied in secondary diploma programs, and only about 7% in baccalaureate programs (You et al., 2010), which means that most nurses in China enter into nursing profession with lower educational preparation. Although the percentage of nurses with advanced diplomas increased to 51.3% in 2010 (Ministry of Health of China, 2011), the majority of nurses caring for patients in hospitals are still less prepared than their colleagues in other health professions. The lack of educational attainment is reflected in the public and other health professions views of what nurses really know or can do. The low social status and structural imbalance in educational qualification may affect the sense of accomplishment of nurses. To alleviate nurse burnout in PA, it will be necessary to take action to improve nurse professional status, and increase numbers in advanced nursing education in the future.

The results indicated that bianzhi nurses tended to be more likely to report high burnout in EE and PA as compared with contract nurses. A possible reason may be that bianzhi nurses

usually are more senior and take on more responsibilities in job, meanwhile they may have higher expectation for work.

Nearly half of the nurses (45.20%) in this sample were dissatisfied with their current jobs, as compared with 17% – 37% in seven other countries (Aiken et al., 2011). Nurses were most dissatisfied with their salary, and the results were consistent with previous reports (Liu et al., 2011; Lu et al., 2007; McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011). Yet, the rates of dissatisfaction with salary were much higher than those of nurses in Europe (You et al., 2013). In addition to the low satisfaction levels with salary and benefits, more than one half of the nurses reported dissatisfaction with their professional status, which was much higher than the reports in USA, where only 17% of bedside nurses in hospitals indicated dissatisfaction with professional status (McHugh et al., 2011).

In Chinese hospitals, nurses are often the first target for cost cutting, although there is fewer nursing staff per patient in Chinese hospitals when compared with other countries, such as the USA (Kalisch & Liu, 2009). Nurses in hospitals work with heavy workloads and low salaries, but they are also less likely to be respected by patients.

From the findings, nurses were satisfied with their independence at work but dissatisfied with salary, benefits, and professional status, bianzhi nurses and nurses with higher degree tended to report higher job dissatisfaction. The findings suggest that policy-makers and hospital managers can target improving nurse salaries, benefits, and status for better nurse job satisfaction. Policy support for nurses to get better incomes and for more bedside nurses caring for patients to improve the quality of care, would improve the patients' respect for nurses. Bianzhi nurses and those with higher degree may have higher expectation for work; hospital managers need to pay attention to their needs in their career development and try to provide support.

In this study, 5.1% of nurses expressed intention to leave their present job in the next 12 months, which was much lower than the findings in western countries (Aiken et al., 2001), although contract nurses were more likely to reported intention to leave as compared with bianzhi nurses. The lower intention to leave reported in this sample may be related to the Chinese culture. Some Chinese are unwilling to tell others about planning for the future, especially when there are uncertainties in their plans. A previous study in China reported much higher turnover intention than this sample (Xun & Wu, 2011), which may be related to the different way of asking questions. In this survey, there was only one item asking about turnover intention with a *yes* or *no* choice and a timeframe of within 12 months. Xun & Wu (2011) used a 6-item questionnaire to measure different levels of turnover intention. Lack of data about actual nurse turnover rate from the hospitals included in this study is a limitation of the study.

This study indicates that the turnover problem is more serious among contract nurses. With more and more young contract nurses are employed in hospitals in China, providing fair treatment and more support for contract nurses, such as providing the same payments and equal opportunities for career development for them, should be emphasized by the managers to retain contract nurses.

These results suggest that nurses in China reported better work environments as compared with the reports from other countries (Aiken et al., 2011), but the work environments varied within and across hospitals. Substantial numbers of poor hospital work environments were reported by the nurses' in this study. Inadequate staffing and resources was the nurses' major concern in work environment.

China is suffering a serious nursing shortage at present, and the shortage is likely to be even worse in the future due to poor salaries, high pressure from their job, and poor professional status (Hu et al., 2010). On the other hand, only 4% – 5.28% of its gross domestic product is spent on healthcare in China (Zhang, 2011), compared with 17.4% in USA and 8.5% in Japan (Organization for Economic Co-operation and Development, 2011). The results suggest that the insufficient nurse staffing and resources were the most prominent problem, and must be increased if nurses' work environments are to be improved.

In this study work environment was positively related to nurse outcomes, which is consistent with the studies in other countries (Aiken et al. 2011; Van Bogaert et al., 2010). The results suggest that to decrease nurse burnout, improve their job satisfaction, and retain more nurses, it will be required to consider how to improve work environments followed by action on the part of health system leaders. According to the results of this study, the first ways would be to increase nurse staffing, provide more supports for nurse career development, and enhance nursing participation in hospital management for better work environment, and ultimately for better job outcomes.

There are several limitations to the study although we have a national sample of hospitals. One limitation of this study is that it is a secondary data analysis, and the data are from nurses' self report, and there is only one item with *yes* or *no* answer for measuring intention to leave, but the measures have established good predictive validity in international research (Aiken et al., 2011). In the future, if more objective evidence, such as the turnover rate of nurses, and work environment data from hospitals could be collected, a more complete and accurate understanding of the topic could be obtained. Another limitation is that we cannot make causal inferences because of the cross-sectional design, and further studies with longitudinal and prospective designs are needed to know more about the nurse job outcomes and their relationships with work environment. Further, the population of this study was limited to the nurses in Level 2 and Level 3 hospitals, and its findings cannot be generalized to nurses in Level 1 hospitals (with fewer hospital beds) in China.

Conclusion

This study is the first to describe nurse burnout, job satisfaction, and intention to leave with a large sample from different regions of China in detail. We found that a substantial proportion of nurses in China were suffering from high levels of burnout and low job satisfaction. The results suggest that absence of personal accomplishment, and low satisfaction with salary, benefits, and professional status were prominent problems for Chinese nurses.

We also found that nearly half of the hospitals in China provide poor work environment according to nurse assessment, and inadequate staffing and resource were key issues for nurse work environment. Furthermore, the study established that there is a positive relationship between work environment and nurse job outcomes. These findings added to the growing nurse outcomes research and showed the importance of work environment for better nurse job outcomes.

In conclusion, more effort should be made to improve nurse accomplishment, salary and benefits, professional status and nurse staffing to improve the job outcomes of bedside nurses in hospitals, and to help diminish the nursing shortage.

Acknowledgments

References

Aiken LH, Clarke SP, Sloane DM. Hospital staffing, organization, and quality of care: Cross-national findings. Nursing Outlook. 2002; 5:187–194. [PubMed: 12386653]

Aiken LH, Clarke SP, Sloane DM, Lake ET, Cheney T. Effects of hospital care environment on patient mortality and nurse outcomes. The Journal of Nursing Administration. 2008; 38:223–229. [PubMed: 18469615]

Aiken LH, Clarke SP, Sloane DM, Sochalski JA, Busse R, Clarke H, Shamian J. Nurses' reports on hospital care in five countries. Health Affairs. 2001; 20:43–53. [PubMed: 11585181]

Aiken LH, Clarke S, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. The Journal of Nursing Administration. 2002; 288:1987–1993.

Aiken LH, Sloane DM, Clarke S, Pghosyan L, Cho E, You LM, Aungsuroch YP. Importance of work environments on hospital outcomes in nine countries. International Journal for Quality in Health Care. 2011; 23:357–364. [PubMed: 21561979]

Bratt MM, Broot M, Kelber S, Lostocco L. Influence of stress and nursing leadership on job satisfaction of pediatric intensive care unit nurses. American Journal of Critical Care. 2000; 9:307–317. [PubMed: 10976354]

Fang, ZhZ. Potential of China in global nurse migration. Health Services Research. 2007; 42:1419–1428. [PubMed: 17489923]

Flinkman M, Leino-Kilpi H, Salantera S. Nurses' intention to leave the profession: Integrative review. Journal of Advanced Nursing. 2010; 66:1422–1434. [PubMed: 20497270]

Gu X. The human resource crisis in the field of Chinese medicine. Journal of China National School of Administration. 2011; 6:17–22. (in Chinese).

Hu Y, Shen J, Jiang AL. Nursing shortage in China: State, causes, and strategy. Nursing Outlook. 2010; 58:122–128. [PubMed: 20494686]

Hudspeth R. Staffing healthy workplaces: Some global nursing shortage issues. Nursing Administration Quarterly. 2013; 4:374–376. [PubMed: 24022291]

Kalisch BJ, Liu YL. Comparison of nursing: China and the United States. Nursing Economic$. 2009; 27:322–331. [PubMed: 19927447]

Krausz M, Koslowsky M, Shalom N, Elyakim N. Predictors of intentions to leave the ward, the hospital, and the nursing profession: A longitudinal study. Journal of Organizational Behaviour. 1995; 16:277–288.

Kwak C, Chung BY, Xu Y, Eun-Jung C. Relationship of job satisfaction with perceived organizational support and quality of care among South Korean nurses: A questionnaire survey. International Journal of Nursing Studies. 2010; 47:1292–1298. [PubMed: 20303081]

Lake ET. Development of the Practice Environment Scale of the Nursing Work Index. Research in Nursing & Health. 2002; 25:176–188. [PubMed: 12015780]

Lee H, Song R, Cho YS, Lee GZ. A comprehensive model for predicting burnout in Korean nurses. Journal of Advanced Nursing. 2003; 44:534–545. [PubMed: 14651702]

Liu C, Zhang LJ, Ye WQ, Zhu JY, Cao J, Lu XY, Li FP. Job satisfaction and intention to leave: A questionnaire survey of hospital nurses in Shanghai of China. Journal of Clinical Nursing. 2011; 21:255–263. [PubMed: 21854472]

Liu K, You LM, Chen SX, Hao YT, Zhu XW, Zhang LF, Aiken LH. The relationship between hospital work environment and nurse outcomes in Guangdong, China: A nurse questionnaire survey. Journal of Clinical Nursing. 2012; 21:1476–1485. [PubMed: 22380003]

Lu H, While AE, Barriball KL. Job satisfaction and its related factors: A questionnaire survey of hospital nurses in Mainland China. International Journal of Nursing Studies. 2007; 44:574–588. [PubMed: 16962123]

Maslach, C.; Jackson, SE.; Leiter, MP. Maslach Burnout Inventory. 3. Palo Alto, CA: University of California, Consulting Psychologists Press; 1996.

Maxime M, Xue XY, Emmanuel F. China's health system reform and medical education. The Journal of the American Medical Association. 2009; 302:1270–1271.

McHugh MD, Kutney-Lee A, Cimiotti JP, Sloane DM, Aiken LH. Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. Health Affairs. 2011; 30:202–210. [PubMed: 21289340]

Ministry of Health of China. Guideline for nursing development (2011–2015). 2011 Dec 31. Retrieved from http://www.moh.gov.cn/yzygj/s3593/201201/5d494a1dd2104029878f01dc2568be04.shtml (in Chiese)

Nantsupawat A, Srisuphan W, Kunaviktikul W, Wichaikhum OA, Aungsuroch Y, Aiken LH. Impact of nurse work environment and staffing on hospital nurse and quality of care in Thailand. Journal of Nursing Scholarship. 2011; 43:426–433. [PubMed: 22018093]

Organization for Economic Co-operation and Development. [2012 Jun. 13rd] OECD Health Data 2011. How does the United States compare. 2011. Retrieved from http://www.oecd.org/dataoecd/46/2/38980580.pdf

Peng GY, Liu XQ. Problems and countermeasures in the management of nursing human resource in China. Chinese Nursing Management. 2008; 8:11–14. (in Chinese).

Poghosyan L, Clarke SP, Finlayson M, Aiken LH. Nurse burnout and quality of care: Cross-national investigation in six countries. Research in Nursing & Health. 2010; 33:288–298. [PubMed: 20645421]

Stamps, PL. Nurse and work satisfaction: An index for measurement. 2. Chicago, IL: Health Administration Press; 1997.

State Council of China. The regulations of local people's governments organizational structure and staffing management. 2007 Feb 24. Retrieved from http://www.gov.cn/ziliao/flfg/2007-03/05/content_542691.htm (in Chinese)

Sun N, He Zh, Wang LB, Li QJ. The impact of nurse empowerment on job satisfaction. Journal of Advanced Nursing. 2009; 65:2642–2648. [PubMed: 19941547]

Tourigny L, Baba VV, Wang X. Burnout and depression among nurses in Japan and China: The moderating effects of job satisfaction and absence. The International Journal of Human Resource Management. 2010; 21:2741–2761.

Van Bogaert P, Clarke S, Roelant E, Meulemans H, Van de Heyning P. Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: A multilevel modelling approach. Journal of Clinical Nursing. 2010; 19:1664–1674. [PubMed: 20579204]

Wang L, Tao H, Ellenbecker CH, Liu XH. Predictors of hospital nurses, intent to stay: A cross-sectional questionnaire survey in Shanghai, China. International Nursing Review. 2012; 59:547–554. [PubMed: 23134140]

Wu SY, Zhu W, Wang ZhM, Wang MZh, Lan YJ. Relationship between burnout and occupational stress among nurses in China. Journal of Advanced Nursing. 2007; 59:233–239. [PubMed: 17590211]

Xie, ZhY; Wang, AoL; Chen, B. Nurse burnout and its association with occupational stress in a cross-sectional study in Shanghai. Journal of Advanced Nursing. 2011; 67:1537–1546. [PubMed: 21261698]

Xun ML, Wu MF. A Study on the nurse work environment and intention to leave. Chinese Journal of Practical Nursing. 2011; 27:64–66. (in Chinese).

You LM, Aiken LH, Sloane DM, Liu K, He GP, Hu Y, Shang ShM. Hospital nursing, care quality, and patient satisfaction: Cross-sectional surveys of nurses and patients in hospitals in China and Europe. International Journal of Nursing Studies. 2013; 50:154–161. [PubMed: 22658468]

You LM, Luo ZhM, Wan LH, Liu K, Zhen J, Zhu XW. Study on education capacity and development trend of nursing education in China. Chinese Journal of Nursing Education. 2010; 7:147–151. (in Chinese).

Zhang, ZJ. Total expenditure on health spends 5.28% of gross domestic product in China in 2010. 2011 Sep 5. Retrieved from http://business.sohu.com/20110905/n318391714.shtml (in Chinese)

Table 1

Descriptive Statistics for Nurse Burnout, Job Satisfaction, Intention to Leave and Hospital Work Environment

	Mean (*SD*)	Median (P$_{25}$, P$_{75}$)
Nurse Burnout		
EE (*n*=9,037)	23.95 (11.27)	23 (15, 32)
DP (*n*=9,259)	6.63 (5.80)	5 (2, 10)
PA (*n*=8,909)	32.46 (9.60)	34 (26, 40)
Hospital Work Environment (*n*=9,277)		
Nurse participation in hospital affairs	3.18 (0.79)	3.33 (2.56, 3.89)
Nursing foundations for quality of care	3.35 (0.55)	3.50 (3.00, 3.80)
Nurse manager ability, leadership, and support of nurses	3.37 (0.65)	3.60 (3.00, 4.00)
Staffing and resource adequacy	3.14 (0.82)	3.25 (2.50, 4.00)
Collegial nurse-physician relations	3.50 (0.63)	3.67 (3.00, 4.00)
	n	%
High Burnout		
EE 27	3,444	38.11
DP 10	2,352	25.40
PA 33	4,328	48.58
EE 27 & DP 10 & PA 33	1,449	17.10
Job Dissatisfaction		
Current job (*n*=9,601)	4,340	45.20
Salary (*n*=9,621)	7,268	75.54
Tuition benefits (*n*=9,413)	6,395	67.94
Professional status (*n*=9,628)	5,883	61.10
Retirement security & welfare/benefits (*n*=9,457)	5,371	56.79
Health care security & welfare/benefits (*n*=9,637)	5,456	56.62
Opportunities for advancement (*n*=9,570)	4,173	43.61
Work schedule (*n*=9,653)	2,549	26.41
Independence at work (*n*=9,594)	1,194	12.45
Intention to Leave	486	5.12

Note. EE, emotional exhaustion; DP, depersonalization; PA, reduced personal accomplishment.

Scores 27 or greater on EE, scores 10 or greater on DP, and scores 33 or less on PA are defined as high burnout.

"Job dissatisfaction" includes the responses of "somewhat dissatisfied" and "very dissatisfied".

Table 2

Work Environment among Hospitals (n=181)

Hospital Work Environment	n (%)	Hospital level (n [%])		Location (n [%])			
		Level 2 (n=90)	Level 3 (n=91)	Municipality (n=40)	Capital city (n=72)	Other city (n=69)	
Poor	81 (44.75)	40 (22.10)	41 (22.65)	25 (13.81)	30 (16.57)	26 (14.37)	
Mixed	22 (12.15)	12 (6.63)	10 (5.52)	7 (3.87)	6 (3.32)	9 (4.97)	
Good	78 (43.10)	38 (21.00)	40 (22.10)	8 (4.42)	36 (19.89)	34 (18.78)	
χ^2		0.24			11.95*		

Note. There are 5 subscales of NWI-PES, and hospital-level medians for each subscale for all the 181 hospitals were computed, and each hospital was coded as below, at or above the median for each subscale. Hospitals with scores above the nationwide hospital-level median on one or non subscales, two or three subscales, and four or five subscales were classified as having "poor", "mixed", and "good" work environments, respectively.

Table 3

Nurse Job Outcomes by Hospital Work Environment Categories

Job Outcomes	Hospital work environment categories (n [%])			χ^2	Post hoc†
	Poor[1]	Mixed[2]	Good[3]		
High Burnout					
EE 27	1,807 (42.95)	422 (38.72)	1,215 (32.49)	92.13*	1>2>3
DP 10	1,374 (32.05)	285 (25.51)	693 (17.98)	212.17*	1>2>3
PA 33	2,188 (52.52)	530 (49.35)	1,610 (43.88)	58.58*	1>2>3
Job Dissatisfaction					
Current job	2,366 (53.24)	512 (44.48)	1,462 (36.50)	238.77*	1>2>3
Salary	3,491 (78.41)	901 (77.67)	2,876 (71.74)	54.18*	1, 2>3
Tuition benefits	3,153 (72.23)	788 (69.00)	2,454 (62.83)	84.42*	1,2>3
Professional status	3,022 (67.79)	686 (59.24)	2,175 (54.21)	165.67*	1>2>3
Retirement security & welfare/benefits	2,621 (59.60)	698 (60.85)	2,052 (52.45)	51.80*	1,2>3
Health care security & welfare/benefits	2,637 (59.01)	689 (59.50)	2,130(53.12)	34.30*	1,2>3
Opportunities for advancement	2191 (49.36)	509 (44.07)	1,473 (37.05)	129.38*	1>2>3
Work schedule	1,453 (32.54)	272 (23.37)	824 (20.48)	164.82*	1>2>3
Independence at work	720 (16.18)	131 (11.36)	343 (8.59)	112.52*	1>2>3
Intention to Leave	293 (6.66)	62 (5.41)	131 (3.31)	48.36*	1>2>3

Note. EE, emotional exhaustion; DP, depersonalization; PA, reduced personal accomplishment.

Scores 27 or greater on EE, scores 10 or greater on DP, and scores 33 or less on PA are defined as high burnout.

"Job dissatisfaction" includes the responses of "somewhat dissatisfied" and "very dissatisfied".

There are 5 subscales of NWI-PES, and hospital-level medians for each subscale for all the 181 hospitals were computed, and each hospital was coded as below, at or above the median for each subscale. Hospitals with scores above the nationwide hospital-level median on one or non subscales, two or three subscales, and four or five subscales were classified as having "poor", "mixed", and "good" work environments, respectively.

†The post hoc test was done with a significance level of 0. 0167. The "poor", "middle", "good" hospital work environment was represented by 1, 2 and 3.

*
 $p<.01$

Table 4

Logistic Regression Odds Ratios Indicating the Effect of Hospital Work Environment, Employment Status and Education Level on Nurse Job Outcomes

| | High burnout | | | | | | Job dissatisfaction‡ | | Intention to leave | |
| | EE | | DP | | PA | | | | | |
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Work environment†										
Mixed	0.79	(0.70, 0.89) *	0.68	(0.60, 0.77) **	0.89	(0.80, 0.99) *	0.71	(0.64, 0.80) **	0.79	(0.63, 0.99) *
Good	0.65	(0.60, 0.71) *	0.49	(0.45, 0.54) **	0.73	(0.67, 0.79) **	0.53	(0.49, 0.57) **	0.45	(0.38, 0.55) **
Employment Status††										
Bianzhi	1.26	(1.16, 1.38) **			1.09	(1.00, 1.20) *	1.25	(1.11, 1.40) **	0.64	(0.55, 0.76) **
Education Level†††										
Advanced diploma					0.84	(0.76, 0.92) **	1.22	(1.11, 1.34) **		
Baccalaureate & Master degree					0.75	(0.66, 0.84) **	1.34	(1.20, 1.51) **		

Note. EE, emotional exhaustion; DP, depersonalization; PA, reduced personal accomplishment.

Scores 27 or greater on EE, scores 10 or greater on DP, and scores 33 or less on PA are defined as high burnout.

There are 5 subscales of NWI-PES, and hospital-level medians for each subscale for all the 181 hospitals were computed, and each hospital was coded as below, at or above the median for each subscale. Hospitals with scores above the nationwide hospital-level median on one or non subscales, two or three subscales, and four or five subscales were classified as having "poor", "mixed", and "good" work environments respectively.

OR: Odds Ratios

CI: Confidence Interval

Adjusted models included controls for some nurse other characteristics (working years and marital status), unit type (medical, surgical unit and ICU), and some hospital characteristics (hospital level, location and region).

†"Poor work environment" being regarded as the reference.

††There are mainly two types of employment status of nurses in Chinese hospitals: Contract nurse and "bianzhi" nurse (Hu et al., 2010). "Contract nurse" being regarded as the reference.

†††There are five levels of nursing education in mainland China: Secondary diploma delivered by health schools; advanced diploma is equivalent to an associate degree, mainly provided by vocational colleges; baccalaureate, master and doctoral degrees are earned at a university. In this sample no nurse had a PhD. "Secondary diploma" being regarded as the reference.

‡"Dissatisfied with current job" is used for the analysis of "Job dissatisfaction", and "Dissatisfied" includes the responses of "somewhat dissatisfied" and "very dissatisfied".

*
p<.05