

Factors affecting the retention of nurses

A survival analysis

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ABSTRACT

الأهداف: تحديد وكشف العوامل الأكثر تأثيراً على دوران والاحتفاظ بالكادر التمريضي وتقدير مدة فترة التوظيف للممرضات في المستشفى.

الطريقة: أجريت دراسة رجعية وذلك بفحص استبيانات ترك العمل المعتمدة والتي تم تعيينها من قبل جميع الممرضات العاملات في قسم الأطفال واللواتي التحقن وتركن المستشفى بين الفترة من 2006م إلى 2010م. تم اعتبار الممرضات اللواتي تركن العمل ب (events) والممرضات اللاتي مازلن على رأس العمل إلى ب (censored). تمت هذه الدراسة في قسم الأطفال في مدينة الأمير سلطان الطبية العسكرية، الرياض، المملكة العربية السعودية.

النتائج: ترك أغلب الممرضات عملهن لظروف عائلية 39.7% ثم لأسباب أخرى 37.3%. مكث 75% من جميع ممرضات الأطفال في عملهن لمدة 2.2 عام. أظهر التحليل الأحادي ومتعدد المتغيرات علاقة قوية إيجابية بين مدة العمل والعوامل الديموغرافية وعوامل المنشأة.

خاتمة: أظهرت الدراسة عوامل عديدة تلعب دور رئيسي في بقاء الموظفين والتي تساعد في دوران الممرضات في مدينة الأمير سلطان الطبية العسكرية وإدارة التمريض بشكل خاص في استيعاب خطورة الدوران والتنقل العالي لتطوير ووضع استراتيجيات لتقليل هذه المشكلة وتطوير بقاء الممرضات.

Objectives: To identify and explore factors that mostly influence nurses' turnover and retention, and to estimate the length of employment for nurses in the hospital.

Methods: This is a retrospective cohort study examining the standard Exit Questionnaires completed by all the female pediatric nurses who joined and left the hospital during the period between January 2006 and October 2010. The Developed Questionnaires were completed by nurses who were

still employees in October 2010. The nurses who left the job will be considered as events and the nurses who are still working will be considered as censored. The study took place at the Pediatric Department, Prince Sultan Military Medical City (PSMMC), Riyadh, Saudi Arabia.

Results: A total of 254 nurses were included in the study. Most of the nurses left their jobs due to family reasons (39.7%) followed by other reasons (37.3%). Seventy five percent of all the pediatric nurses remained in their jobs, on average, for 2.2 years. Both simple and multivariate analysis indicated a strong positive correlation between length of employment (turnover) and the demographic and organization factors.

Conclusion: This study has identified several factors that played a key role in staff retention, which can help in predicting nursing turnover at PSMMC. The findings of this study could help PSMMC and its Nursing Administration, in particular, to understand the seriousness of the high turnover rates, to develop and implement strategies to reduce this problem, and improve the retention of nursing staff.

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The worldwide shortage of nurses raises the question regarding the impact of nurse turnover and the quality of health care provided to the patients during the last few years.¹⁻³ The Kingdom of Saudi Arabia (KSA) is one of the biggest markets for expatriate

nurses. In the year 2009 alone, it was estimated that there is one nurse for every 364 persons in the kingdom, with a massive total population of 77,946, of whom 51.9% were locals.⁴ Most expatriate nurses include, but not limited to South Asians (Indians) and Southeast Asians (Filipinos).⁵ Prince Sultan Military Medical City (PSMMC) has been facing numerous problems due to ever-increasing patients and healthcare staffing shortage especially nurses. Aside from the shortage of highly qualified nurses poor staff retention are also one of the indication of problems. In order to deliver essential healthcare, the health care organizations and their administrators can help identify different factors associated with nursing turnover. This can positively help the health care organization to provide high-quality healthcare. Therefore, nursing turnover continues to present serious challenges at all levels of healthcare.⁶ The exact definition of employee turnover varies from one study to another. Tai and Robinson² stated that “there is no consistent definition of turnover”. Mobley’s³ stated that turnover is “the cessation of membership in an organization by an individual who received monetary compensation from the organization.” Therefore, in this study, we defined “employee turnover” as the number of permanent nursing employees leaving the hospital within the study period (January 2006 to October 2010). A few studies have been carried out within the Kingdom of Saudi Arabia to find the factor which can predicts the turnover of nurses. This study aims to identify the factors responsible for the turnover and the retention of the pediatric female nurses and to investigate any relationship between the identified factors and the length of employment.

Methods. This is a retrospective cohort study examined the standard exit questionnaires that were completed by all female pediatric nurses who joined and left the hospital during the period between January 2006 and October 2010. The study also included nurses

who joined the hospital at different dates, between 2006 and who were still working at the hospital up to October 2010. These nurses were asked to complete the same exit questionnaire “Developed Questionnaire”. The nurses who left the job will be considered as events and nurses who were still working at the time of the study were considered as censored.

Study area. The Pediatric Department at Prince Sultan Military Medical City, Riyadh, Saudi Arabia has 140 patients’ beds with 4 main units (General Pediatrics Unit, Oncology Unit, Neonatal Intensive Care Unit [NICU] and Pediatric General Intensive Care Unit [PGICU] and the total number of nurses still working in the Pediatrics Department were 300 nurses.

The sample was therefore based on the exit questionnaire available at the time of the study. The total number of pediatric nurses who resigned in the last 5 years was 316, only 126 exit questionnaires were completed. The remaining 190 questionnaires were either not found, or incomplete with missing data such as: the job title, dates of employment and at which unit they worked. Therefore these data were not included in the study. In order to have valid statistical data for survival analysis (duration analysis), we collected information from past and present employees. As the exit questionnaire is only completed by staffs that have left, we needed data from a sample of working employees using systematic random sampling method. Therefore, a survey was undertaken using a “Developed Questionnaire” format which was distributed to 144 nurses. One hundred twenty-eight questionnaires were returned.

Statistical analysis. Data entered and analyzed using SPSS version 18 (Chicago, Illinois). Variables were meticulously coded prior to entry to guarantee uniformity of data entry and all possible responses taken into consideration. Data from both the events and censored were coded for analysis. Descriptive statistics was employed to obtain frequencies and percentage distribution of all categorical variables in the study. Survival or duration analysis was performed to estimate the time duration during which the event happened and estimated quantitatively the impact of different independent variables and plot them on the survival curve. Univariate analyses were carried out to evaluate if there were significant differences on the length of employment, using Log-rank test. The relationship between the length of employment (LOE) for each employees and the independent variables (nationality, age, marital status, job title, work unit and qualification) were carried out. Multivariate analysis (Cox’s Regression): or Cox’s Proportional Hazards regression was used to

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investigate the effect of each covariate on the time until the event happened while simultaneously adjusting for other possible independent variables. An advantage of the Cox-Regression procedure over the life tables and Kaplan-Meier procedures is the fact that you can include multiple covariates in the analysis. Moreover, those covariates do not have to be categorical. They can be any combination of categorical and continuous variables. *P*-value was significant at less than 0.05.

Results. Two hundred fifty-four nurses completed the questionnaires. One hundred twenty-six (49.6%) nurses who joined the hospital at different dates and terminated between January 2006 and October 2010, completed the exit questionnaire. A total of 128 (50.4%) employees, who joined the hospital at different dates but who are still working as of October 2010, completed the developed questionnaire. The age range was between 20 and 49 years with a mean of 31 years \pm 5.9 SD.

Demographic characteristics of the study population (n=254) are summarized in Table 1. Most of the subjects were Filipinos (72.8%), 25.6% were Indians, 0.8% were Saudis, and 0.8% were other nationalities. Since the last 2 nationalities (Saudis & others) have very small percentage in the sample, they were excluded from the statistical analysis. The subjects were divided into the following age groups: <30 years (31.5%), 30-40 years (34.3%), >40 years (34.3%) (Table 1). Out of the 254 employees, 57.1% were married and 42.9 % were single. Most of the respondents have university degrees. The length of service was also noted: 35.8% of the total sample stayed between 2-5 years, 28.0% stayed <2 years, 18.9% stayed >10 years, and 17.3% stayed in service between 5-10 years. The mean LOE for the subjects was 5.73 years (SD=6.05 years). The participants were asked to indicate their area of work. Approximately 43.7% worked in the neonatal intensive care Unit (NICU), 22% in pediatric intensive care Unit (PICU), 30.3% in the general pediatric staff, and 3.9% in pediatric oncology unit. Analysis of findings from the exit questionnaires on reasons for leaving indicated that family reasons are the highest (39.7%), followed by other reasons (37.3%) included: pregnancy (13.5%), to continue their retirement (1.6%), employment problems (3.2%), and workload (1.6%). Approximately 4.8% of the nurses ticked other reasons, however they did not specify these reasons. and personal reasons (23%). The 128 participants who

were still working were asked what they consider are the most important reasons why the staff were leaving the hospital. Data showed that (35.4%) stated pay and benefits were the main reason, followed by workload (31.1%), promotion opportunities (17.3%), while 15% stated housing conditions. Approximately 13% stated hospital facilities, which include child care, recreation, and transportation, as potential reasons. All participants were asked to indicate their job titles in both questionnaires. The survival analysis was performed to determine the length of employment which showed that fifty percent stayed in their jobs for 7 years, while 75% are expected to leave their jobs after 2 years of employment regardless of the independent variables (Figure 1). The overall rate of LOE for nurses is shown in Figure 1, whereas the positive signs on the curve are the censored data points. It showed that the survival rate of employment sharply declined in the initial years of employment, but then gradually dropped after

Table 1 - Demographic characteristic of study sample (n=254).

Demographic characteristic	Number	(%)
<i>Nationality</i>		
Filipino	185	(72.8)
Indian	65	(25.6)
Saudi	2	(0.8)
Other	2	(0.8)
<i>Age (years)</i>		
<30	79	(31.5)
30-40	86	(34.3)
>40	86	(34.3)
<i>Marital status</i>		
Married	145	(57.1)
Single	109	(42.9)
<i>Job Title</i>		
SN1	85	(33.5)
SN2	127	(50.0)
PCA	29	(11.4)
Head Nurse	13	(5.1)
<i>Work unit</i>		
NICU	111	(43.7)
PICU	56	(22)
General	77	(30.3)
Oncology	10	(3.9)
<i>Qualification</i>		
BSN	236	(92.9)
DON&M	18	(7.1)

SN1 - Staff Nurse One; a nurse who provides direct care and may function as charge nurse, SN2 - Staff Nurse 2; a nurse who mainly responsible for providing direct patient care, NICU - Neonatal Intensive Care Unit, PCA - Patient Care Assistant; a nurse who carries out only assistant nursing duties with no direct patient care, PGICU - Pediatric Intensive Care Unit, BSN - Bachelor of Science in Nursing, DON&M - Diploma in Nursing and midwifery

5 years of employment. To examine the relationship between the LOE and different independent variables (nationality, age, marital status, job title, work unit, and qualification); univariate analysis was conducted, and the results as shown in Table 2 illustrate that there was a significant difference in LOE between the 2 nationality with log-rank χ^2 ($=24.13$, $p=0.0001$). The median LOE for married employees was 15 years as compared to the single employees who had a median = 3.6 years. Although, out of both groups 75% will either leave before or within 5 years. This difference is statistically significant with log-rank χ^2 ($=20.9$, $p=0.0001$) (Table 2). The result also showed that there were statistically significant differences in LOE and the job title, nurses age and the work units as log-rank χ^2 ($=30.7$, $p=0.001$, ($=25.6$, $p=0.001$, ($=22.4$, $p=0.001$). However, there were no statistically significant differences between LOE and the qualifications, as log-rank χ^2 ($=0.67$, $p=0.41$), (Table 2). To examine the joint effect of all independent variables on the LOE the Cox Regression Analysis was conducted, the results showed that the Indian nurses were 2.23 times more likely to leave the jobs as compared to the Filipino nurses. Single nurses were 1.98 times more likely to leave as compared to married nurses (Table 3).

Discussion. The survival analysis indicates that 75% of nurses leave after 2 years of employment. This can be partly explained by contractual restraints as expatriate employees are initially employed on a 2-year-contract with a financial incentive awarded at the end of their contract. However whether nurses complete or renew their contract is dependent on the employee's ability to adapt to both the cultural environment and socio-demographic circumstances. Contract renewal is carried out on an annual basis, which as a result of employees gain familiarity, competency, and understanding of work related expectations. This is consistent with the finding in previous studies.⁶⁻⁸ That examined variety of personal characteristic (nationality, age, marital status and qualification)^{6,9,10} and important factors affecting staff retention and predict turnover such as work load and occupational stress;¹¹⁻¹³ therefore, a similar factor is true of expatriate nurses in Saudi Arabia. When the nationality of those studied was examined, the data collected demonstrated that the LOE of the Indian nurses was less than that of Filipino's. The explanation for this finding is due, in part, to cultural issues. For instance, Filipino nurses are more adaptable to the local culture and are capable of making small communities outside of the work environment, which provides social support for them. This suggests that interpersonal aspects as well as nationality should be taken into consideration

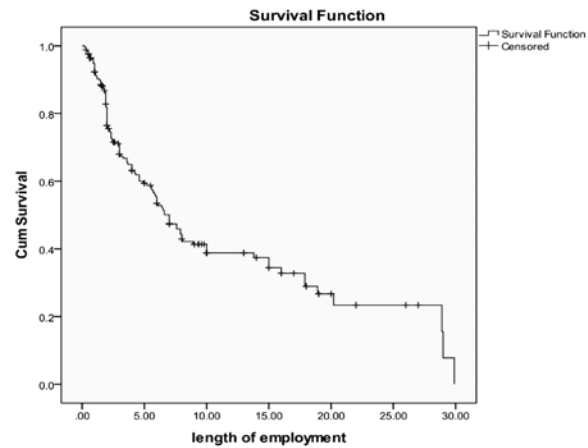


Figure 1 - Kaplan-Meier estimate of length of employment.

when recruiting expatriate nursing staff and that the recruitment process should consider hiring nurses with a similar background to the local society or to hire more local nurses. Other reasons could be living conditions and restricted freedom of movement within Saudi Arabia which may not be accepted by some expatriate nurses. Although this issue needs further investigation, a study taken in 1998 stated that "living conditions are an important aspect of work environment which may influence retention of nurses".¹⁴

Additionally, findings show that older nurses (>40) remain longer than their younger counterparts, as this age group tends to have more organizational tenure and hold senior positions and it was also noted that with older employees, satisfaction; productivity; and organizational commitment tended to rise. In addition, older and more experienced nurses with skills in various medical techniques and who are able to deal with difficult situations are less likely to leave.⁶ As they have better job opportunity and better working hours that are the main reason for nurses leaving their job.¹⁵ Moreover, Al-Juhani et al⁷ found that older nurses are more satisfied than younger ones. Tazeng,¹⁶ Shields and Ward⁹ demonstrated that there is strong association between job satisfaction and intention to quit the job. Another study found that there is a significant correlation between young nurses who are lacking skills and task identity and their intention to leave their job after 2 years.¹⁷ Moreover nurse with experience of less than 4 years, dissatisfied ed with promotion and training opportunities had highest percentage of turnover rate with a stronger impact on nurses' turnover more than pay.^{9,8,18} This could be due to the fact that older nurses adjust easier at work and have less conflict between work and personal life. Education was also a factor. Staffs

Table 2 - Duration (in years) of employment in different groups (log rank test).

Variables	Percentiles			Log Rank (Mantel-Cox)	P-value
	25 percentile (lower quartile)	Median percentile	75 percentile (upper quartile)		
Nationality					
Filipino	28.9	7.9	3.3	24.1	0.0001
Indian	8.0	2.3	1.5		
Age*					
<30 years	29.0	3.0	1.9	25.6	0.001
30-40 years	15.0	6.0	2.1		
> 40 years	28.9	20.2	17.9		
Marital status					
Married	28.9	15.0	4.0	20.9	0.0001
Single	10.0	3.6	1.9		
Job title					
SN1	20.2	11.5	4.2	30.7	0.001
SN2	6.0	4.0	2.0		
PCA	18.9	7.0	2.2		
Head nurse			16.16		
Work unit					
NICU	8.0	4.6	2.0	22.2	0.001
PICU		17.9	4.6		
General	20.0	11.5	3.0		
Qualification					
BSN	20.2	7.0	2.2	0.67	0.411
DON&M	18.9	4.6	2.2		

*This represents the age at date of hire, * Statistical Significance at $p < 0.05$.

SN1 - Staff Nurse One; a nurse who provides direct care and may function as charge nurse,
 SN2 - Staff Nurse 2; a nurse who mainly responsible for providing direct patient care,
 NICU - Neonatal Intensive Care Unit, PCA - Patient Care Assistant; a nurse who carries out only
 assistant nursing duties with no direct patient care, PGICU - Pediatric Intensive Care Unit, BSN -
 Bachelor of Science in Nursing, DON&M - Diploma in Nursing and midwifery

Table 3 - Cox regression model to predict nurses length of employment (LOE).

Covariate	P-value	Hazard ratio	95% Confidence intervals for hazard ratio	
			Lower	Upper
Nationality				
Philippine(reference group)	0.001	1.0	1.417	3.535
Indian		2.238		
Marital status				
Married(reference group)	0.001	1.0	1.336	2.946
Single		1.984		
Age				
<30 years (reference group)	0.284	1.0		
30-40 years	0.130	0.672	0.402	1.124
>40 years	0.208	0.705	0.409	1.215
Unit				
NICU (reference group)	0.072			
PICU	0.016	0.499	0.283	0.880
General Pediatric Unit	0.081	0.663	0.418	1.053
Oncology	0.964	0.000	0.000	6.143
Job title				
SN1 (reference group)	0.035			
SN2	0.343	1.248	0.790	1.973
PCA	0.101	2.761	0.821	9.284
Head Nurse	0.034	0.213	0.051	0.891
Qualification				
Bachelor (reference group)	1.0			
Diploma	0.656	0.753	0.217	2.618

P-value was significant at less than 0.05.

SN1 - Staff Nurse One; a nurse who provides direct care and may function as charge nurse,
 SN2 - Staff Nurse 2; a nurse who mainly responsible for providing direct patient care,
 NICU - Neonatal Intensive Care Unit, PCA - Patient Care Assistant; a nurse who carries out only
 assistant nursing duties with no direct patient care, PGICU - Pediatric Intensive Care Unit,
 BSN - Bachelor of Science in Nursing, DON&M - Diploma in Nursing and midwifery

with higher education levels such as Bachelor of Science in Nursing (BSN) are more likely to remain in their posts longer compared to those nurses with Diploma of Nursing & Midwifery (DON & M) which is considered to be a lower education level. This could be explained by the fact that nurses with BSN have more job satisfaction while those with DON & M do not, but would like to continue their education to advance in their careers.^{6,9,10} However, because expatriate nurses are not allowed to enroll in the local education system, they often return home to resume further education. This is similar to the findings of a study which concluded that nurses with BSN tend to be more inclined to stay and less likely to consider leaving.¹⁹ This contradicts the findings of other studies which reported that highly educated nurses with BSN are less likely to stay in a particular job especially if they are not satisfied, and will look for more employment opportunities.²⁰ Personal commitments and family responsibilities may lead to the suppression of out of home careers and may cause nurses to leave earlier. However, this was not the case in this study. The results indicated that married nurses tended to remain for longer periods compared with single nurses. This can be explained by the restrictive nature of the social environment in Saudi Arabia which may have more of an effect on single staff who may feel unsettled compared with those who are married. In addition, the married staff may face the burden of responsibility towards their families at home as they are often the major earner and feel obliged to remain employed for longer periods of time. This is similar to the findings of the previous studies.¹⁹ The positions held by the SN2 staff were found to have a shorter LOE compared to their SN1 counterparts. This could be influenced by job satisfaction and the desire to seek promotion as SN2 positions are considered less important compared with SN1 nurse positions which involve management responsibilities that are not included in SN2 positions. Another explanation could be related to workload which is generally higher for SN2 nurses than that of the SN1, although with less responsibilities. The salary of SN2 nurses, which is lower than that of the SN1 nurse, could be another factor influencing SN2 staff to leave.

When considering work units, results showed that nurses working in NICU had a shorter LOE compared to other units within the department. This may be because the nurses assigned to NICU are overloaded both physically and mentally as a result of the chronic shortage of staffing within the unit. Moreover, the nature of the work in NICU is generally more stressful with very sick patients who require special care and attention.¹⁵ This is similar to the finding of a study

which reported that a consistently heavy workload increases job tension and decreases job satisfaction which may in turn increase turnover.²¹ Therefore, the hospital administration need to focus on who to recruit to NICU or try to determine whether there are environmental issues contributing to these results such as a stressful environment, especially in NICU as the staff encounter high levels of stress on a daily basis over a long periods of time. The issue of discontented staff who remain in employment needs further investigation as the adverse effect on colleagues could cause poor job performance and low productivity. As the majority of the study group are expatriate workers, a higher percentage left for family reasons because as they are hired on single status contracts and do not wish to be absent from the family for extended periods of time.

The findings showed that pay and benefits are counted as one of the main reasons which cause nurses to leave, because of the uncompetitive pay scales among the hospitals in Saudi Arabia. It is debatable however, whether pay differences may increase employee turnover. However, pay was not a major factor for midwives and consultants to quit the job although low pay was seen by staff as one of the worst things about working in the National Health Service.²²

This study identified a number of factors that played a key role in staff retention, which included nationality, marital status, job title, and job satisfaction. Each contributing factor should be reviewed individually. More provision for married personnel, by offering benefits to attract employees will encourage staff to feel contented and remain longer in their jobs. Based on the results, any strategy developed should consider employing nurses within a certain age group, as younger staff has a more transient attitude to employment in this environment. The recruitment of experienced staff could benefit high stressful areas; with the introduction a rotation strategy should be considered. In addition, nurses working in areas where the workload is extreme could be supported with more frequent and longer breaks. In addition to an exit questionnaire, PSMC should conduct an exit interview. Exit interviews could provide useful information on the work environment which in turn may be useful in the development of interventions to reduce turnover.²³

Study limitations. There was a slight problem with the data availability. In addition, some of the Exit Questionnaire forms were not filled properly by the exiting nurses. Further studies are required to involve the nurses in the other departments and to compare the results with other hospitals in the region. We concluded

from this study that only 75% of pediatric nurses stayed on their jobs for duration of 2.2 years and we highlighted the most important factors and predictors for nurses' turnover in PSMMC. Simple and multivariate analysis indicate an existence association exists between nurse turnover and demographic, and organization factors.

We recommend that the hospital management look at these factors as the nursing shortage is a major problem in health care.

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