The Relationship Between Nurses' Working Hours Overload and Patient Safety and Care Quality: A Cross-Sectional Study

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ABSTRACT

Objective: Nursing comprises the care of sick or well people, including health promotion, maintenance, or recovery. As stated in Article 7 of the Saudi Law of Health Jobs, the stated monthly working hours are 176 hours. When they exceed 8 hours in outpatient departments, 12 hours in inpatient departments, or 176 monthly hours, they are considered overloaded. Providers seek to provide cost-free qualified care. Many countries have developed new techniques to combat the rising costs, which may lower quality. This study is concerned with the nurse shortage and the growing burden of healthcare.

Materials and Methods: A self-structured survey was distributed among different departments in five hospitals. The study was conducted in November and December, 2021.

Results: 21.5% of males and 78.5% of females, with an average age of 44.3 years, contributed. 77.8% have a bachelor's, 79% are trained in patient safety, and 84% had no patient safety problems. A Likert scale-based scoresheet was distributed to measure patient safety practice, and higher scores were found in expert nurses, nurses working in isolation departments, and those who had received patient safety training.It also showed lower scores as the working hours increased. Using a t-test and an ANOVA provides insignificant results.

Conclusion and Recommendation: Average working hours improve quality and safety. This distinguishes decision-making from action-taking. What care to offer and how to provide and allocate time are interwoven practice decisions. Due to schedules, policies, and workflows, nurses may not be able to make timely decisions.

Keywords: Caldwell-Luc, Dental implant, Displacement, Maxillary sinus, Sinus lift

INTRODUCTION

Nursing includes care of individuals of all ages, families, groups, and communities, sick or well, in all settings[1]. It includes health promotion, illness prevention, and care of the ill, disabled, and dying. Healthcare quality is the degree to which health services increase the desired health outcomes[2] and patient safety is a discipline that emerged with the evolving complexity and the resulting rise of patient harm in healthcare facilities[3]. Subject 7 of the Saudi regulations on Health Jobs states that monthly working hours for those covered by these regulations are 176 hours. Working hours' overload is defined as exceeding the daily limit of 8 hours in outpatient departments, 12 hours in inpatient departments, or 176 working hours per month[4]. Globally, high quality care is the ultimate goal of all healthcare systems, but many have adopted efficiency-focused cost-saving strategies to adapt to rising costs as a result of many factors, like increasing centenarians, complexity of diseases, and the emergence of new technologies which may lower quality and patient safety[5]. Working-hours overload is found to be related to certain health-related and personal/family-related harms. It increases the risk of cardiovascular problems, fatigue, stress, depression, anxiety, insomnia, and smoking[6]. Long-term overload makes the balance between work and life aspects more difficult. In Korea, a study concluded that inadequate nurse staffing is a major problem, where some research found the nurse staffing is inadequate[7]. Furthermore, working-hour overload was found to be a strong cause of unfinished work[8]. According to a systematic review, recruiting higher-level nurses can improve outcomes such as lower death rates, shorter stay durations, and fewer adverse events[9]. In the same context, in Saudi Arabia, three studies (12) found working hours overload led to a moderate level of burnout and the other two studies suggested a severe level[10]. Another study found 85% of 126 nurses working in intensive care units were emotionally exhausted. In another study, where 270 intensive care unit nurses were included, the majority of them (65%) had high levels of burnout (depersonalization, emotional exhaustion, and loss of personal achievement). It was done after discussing the patient's safety and using the Measurement and Monitoring Safety (MMS) frame. Three documents were analyzed, and 21 semi-structured interviews with key stakeholders in Saudi healthcare systems were conducted. There were 39 different MMS methods discovered, with one of them handling two dimensions. Among them, 10 (25%) had problems relevant to patient safety, 14 (35%) with the reliability of safety-important processes, 3 (7.5%) with sensitivity to operations, 2 (5%) with anticipation and preparedness, and 11 (27.5%) with integration and learning. According

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to the document analysis and interviews, Saudi hospitals have already established comprehensive MMS systems. The evaluation of the MMS provided a valuable platform for healthcare institutions and scholars to conduct consistory MMS[11]. A multi-center cross-sectional study was done in four Cambodian hospitals using a questionnaire to collect data from 253 nurses who provide direct nursing care. Working hours' overload and unfavorable scheduling were widespread, and more than 20% of the nurses worked more than the regular working hours (48 hours/week). They were working more hours than what is usually done to get more days of rest[12]. According to the study, employee evaluation should be based on the number of patients served by the nurse rather than the time spent in the hospital. Later there, they started evaluating the work by the number of served patients rather than by the consumed time. Understanding why nurses tend to work more hours is critical to developing health policies, strategies, and programs that will improve patient safety, care quality, and nurse wellbeing[10]. To avoid negative outcomes for nurses and patients, healthcare providers should arrange the 24-hour on-call practice according to labor policy.

In a systematic review, 22 of 2,366 articles talking about healthcare providers' working time were included and analyzed. It was concluded that working more than 12 hours per day or more than 40 hours per week was negatively affecting patient outcomes. This research discovered a clear link between excessive nurse working hours and poor patient outcomes. Also, the link between working-hours overload and poor patient outcomes needs more prospective cohort studies. To improve patient safety and prevent unfavorable patient outcomes, this review emphasizes the necessity to carefully manage nursing schedules, such as extending daily and weekly working hours[13]. The rationale for doing this study is the small number of nurses and the increasing workload in healthcare. The question was, is increasing working hours a solution to the problem or a contributor to it?

MATERIALS AND METHODS

A cross-sectional survey was used and distributed among five different hospitals in the Aseer region using the same protocol (Aseer Central, Khamis Mushait General, Ahad Rufaidah General, Harja General, and Dharan Aljanoub General Hospitals). The sample (n = 135) was randomly selected from different departments (surgical, medical, ICU, emergency, isolation, and other), and the participants were nurses from departments having a 24-hour scheduling system. The study was extended for two months, starting from November 1st, 2021, to December 31st, 2021. The data was collected using a modified self-structured questionnaire to measure sociodemographic factors and to meet the cultural adaptation. The 5 points (strongly disagree-disagree-neutral-agree-strongly agree) A Likert scale-using questionnaire was distributed by the head nurse in each hospital and the responses were coded by 1 for strongly disagreeing response through 5 for strongly agreeing response. This scale was originally used in a hospital survey on patient safety culture conducted by the Agency for Healthcare Research and Quality (AHRQ). The mean total score was analyzed with the sociodemographic value and the department related over time. Variables that predict RNs' reported the number of patients allocated to them during their most recent shift Overtime for nurses: The actual hours worked minus the hours scheduled for her/his last shift was used to determine overtime hours from the nurse survey. We recorded working hours' overload into a binary variable: it was coded as "yes" when actual working hours were longer than the scheduled working hours, while it was coded as "no" when actual working hours were not longer than the scheduled working hours. In the statistical analysis, first of all, the descriptive analysis frequency is present for categorical variables and the mean stranded deviation for continuous variables. Second, the mean score of patient safety in each different group category. Then the mean score of patient safety is used in the bivariant test with a significant score if (P 0.05). with STATA13.1 software (StataCorp LP, College Station, Texas, USA).

RESULTS

Table 1 represents the demographic distribution of the study sample among different departments in different hospitals and shows that 21.5% of the participants were male while 78.5% were female, with a mean age for all of 44.3 years. 77.8% of the study participants have a bachelor's degree and 79.3% have received training in patient safety. 84.4% did not experience patient complaints related to patient safety and don't have open cases in the medical errors committee, but some experienced safety-related events due to working hours' overload. The mean for those who received patient safety training has clearly risen. It is also found that the awareness about patient safety increases as the age of the nurse increases. The nurses working in isolation departments got the highest scores. Finally, there is a drop in the mean in those who work more than 12 hours daily. Table 3 shows the bivariant test of a mean score with the different sociodemographic and study factors using a t-test for one group variable and an ANOVA for more than two group variables shows insignificant results. Table 1 represents the demographic distribution of the study sample among different departments in different hospitals and shows a mean age of 44.3 years for the 21.5% male and 77.5% female nurses who participated in the study. 77.8% of the participants have a bachelor's degree and 79.3% have received training in patient safety. 84.4% did not have patient complaints related to patient safety and do not have open cases in the medical errors committee, but some experienced safety-related events due to working hours' overload. Table... represents the mean values for patient safety in the study variables and shows a clear rise in the mean in those who received training in patient safety. It also shows that the awareness of patient safety increases as the age of the nurse increases, and the nurses who work in isolation departments get the highest scores. Finally, a drop in the mean was found in those who were working more than 12 hours daily. Table 3 shows the bivariant test of mean score with the different sociodemographic and study factors using a t-test for one group variable and an ANOVA for more than two group variables shows insignificant results.

Table 1: Descriptive analysis of the study variables

Variable	Frequency (No.)	Percentage (%)
Department (No.)		
Emergency	13	9.6%
ICU	11	17.8%
Isolation	8	5.9%
Medical	22	16.3%
Surgical	44	32.6%
Other	37	27.4%
Gender (%) (No.)		
Male	29	21.5%
Female	106	78.5%
Age (years)		
21-25	4	3%
26-30	42	31.1%
31-40	53	39.3%
41-50	28	20.7%
>50	8	5.9%
Degree (%) (No.)		
Diploma	28	20.7%
Bachelor	105	77.8%
Master	2	1.5%

Variable	Frequency (No.)	Percentage (%)
Previous training in patient safety (%) (No.)		
Yes	107	79.3%
No	28	20.7%
Daily working hours (%) (No.)		
< 8	26	19.3%
8-12	107	79.3%
> 12	2	1.5%
Previous or current patient complaint related to patient safety		
Yes	21	15.6%
No	114	84.4%
Had a working hours overload-event affected patient safety		
Yes	35	25.9%
No	75	55.6%
Maybe	25	18.5%
Mean of patient safety		
Min	1.1	
Max	5.56	
Mean	4.8/0.85	

Table 2: Mean of patent safety score with sociodemographic variable

Variable	Mean
Department	
Emergency	4.94
ICU	4.32
Isolation	5.16
Medical	4.67
Surgical	4.87
Other	4.92
Gender	
Male	5.04
Female	4.74
Age	
21-25	4.52
26-30	4.66
31-40	4.83
41-50	4.88
>50	5.23
Degree	
Diploma	4.55
Bachelor	4.87
Master	4.5
Previous training in patient safety	
Yes	4.96
No	4.19
Daily working hours	
8-12	4.85
> 12	3.44
Had a working hours overload-event affected patient safety	
Yes	4.72
No	4.98
Maybe	4.37

Table 3: Bivariate test

Variable	Test	p-value
Male	T-test	0.59
Female	T-test	0.59
Department	ANOVA	0.25
Age	ANOVA	0.44
Degree	ANOVA	0.19
Working hours	ANOVA	0.56

Table 4: Likehood model

Effect	-2 Log Likelihood of Reduced Model	Chi-square	df	Significance
Intercept	27.931	0	0	.
Department	48.682	20.751	5	0.001
Gender	43.962	16.031	1	0
Age	37.191	9.26	4	0.055
Degree	32.287	4.356	2	0.113
Previous training in patient safety	30.502	2.571	1	0.109
Old or current complaint	33.498	5.567	1	0.018
Daily working hours	43.54	15.609	2	0
Weekly working hours	39.942	12.011	2	0.002
Effect of Working Hours Overload	92.146	64.215	2	0
Mean	81.379	53.448	23	0

DISCUSSION

This study examines the effect of the working hours' overload on nurses' work. Overworking hours caused issues with patient safety for more than a quarter of the study population. All the results were linked to nurses' working circumstances. We compared our results with those of previous global studies. Greece (17%) and Poland (18%)[14]. had a higher proportion of nurses who rated their hospital's patient safety as poor or failing than the United States (6%) and the majority of European countries that participated in the Registered Nurse Forecasting (RN4CAST) project, including Belgium, Finland, Germany, Ireland, Norway, Spain, Sweden, Switzerland, The Netherlands, and the United Kingdom (4-11) percent[15]. Our data demonstrates that Aseer Central Hospital nurses are overworked owing to a high patient-to-nurse ratio, at least in part. Working overtime and leaving jobs undone were examples of this. Inadequate nurse staffing and excessive workload result in poor patient safety and care quality. We also found some countermeasures are implemented in the south region to minimize the high patient-to-nurse ratio and working hour overload. One source of worry in the southern region is the inadequate nurse staffing in many small and medium-sized hospitals. The effect was higher than the global average (6-18%). There were some drawbacks in this study. First, because this study was a cross-sectional one; the findings cannot be proved as a causation between variables. Second, the research was based on nurse self-reports on patient safety, and quality of treatment, and rather than objectively assessing these, care was left undone parameters. Even though the findings of this study show that patient, outcomes are strongly linked to nursing staffing. A high level of safety and a high level of care

CONCLUSION AND RECOMMENDATIONS

It has been concluded that adequate nurse staffing and average working hours are critical for improving patient safety and quality and also reducing the volume of left-undone work. This indicates a clear distinction between decision-making and putting

these decisions into action. It is not clear how this discrepancy relates to the concept of time usage autonomy. Nursing practice decisions necessitate the allocation of nursing time to carry them out; hence, decisions regarding what care to offer, how to provide it, and how to devote time to it are all interconnected. Due to established schedules, policies, and workflows, the responses to the items that loaded on the autonomy of time component suggest that nurses may not be able to effectively execute autonomous time-use decisions. Actually, more quantitative studies are needed to better understand how nurses feel about their time management autonomy.

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Competing Interest: None

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