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Association of Job Shift Length with Quality Nursing Care in Tertiary Care Hospitals, Khyber Pakhtunkhwa

Abdul Karim[1], Abdal Khan[1], Mansoor Khan[1], Jamal Khan[1], Tariq Habib[1], Muhammad Ali Shan[1], Muhammad Yaseen[1] and Sheraz Khan[2*]

[1]Swabi College of Nursing and Health Sciences, Swabi, Pakistan
[2]Harvard Institute of Medical Sciences, Swabi, Pakistan

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ABSTRACT

Nurses are the backbone of hospitals, as they spend more time with patient care compared to other health care professionals. Consistently, nurses are doing their duties in various shifts of different lengths. Usually, long shift duty hours are commonly associated with poor-quality nursing care. **Objective:** To assess the association of job shift length with quality nursing care in a tertiary care hospital in Khyber Pakhtunkhwa. **Methods:** An analytical study design was used to find out the association between study variables. The target population was the registered nurses working in public hospitals in Khyber Pakhtunkhwa, Pakistan. A convenient sampling approach was used to collect data from 377 nurses working in tertiary care hospitals in Khyber Pakhtunkhwa via an adapted questionnaire. Data were analyzed through SPSS version 26.0 for the frequency, percentage, and mean for demographic variables, and the association, the Spearman rank correlation test was used. **Results:** The findings show that the majority of the participants were male (56.2%), and more than half were young nurses (54.9%). There was a strong positive relationship between small shift length and quality nursing care and a weak negative in the case of long shifts. However, individual subscales show a positive association between shift duration and quality nursing care. **Conclusions:** It was concluded that there was a mixed association between shift length and quality care. The study suggests that proper documentation and working in medium shifts instead of long shifts can enhance patient safety and quality care.

INTRODUCTION

Health organizations throughout the world are struggling with issues including a lack of medical professionals and a severe scarcity of nurses globally [1]. According to the International Council of Nurses (ICN), by 2030, more than 13 million nurses will be needed globally to make up for the nursing shortfall [2]. Moreover, nurse turnover has a detrimental effect on a nurse's capacity to meet patient demands and provide high standards of care. Globally, nurses perform their duties in various shifts and different shift lengths have a great influence on nurses as well as on patient care. Shift length refers to the specific duration of time during which an employee or a worker is to be scheduled on duty, performing their job responsibilities. Shift length has an inverse relation with quality nursing care [3]. Quality nursing care can be defined as competence and personal caring supported by professionalism and delivered with an appropriate demeanor [4]. Quality nursing care was also defined by the American Nursing Association in 2021 as "the degree to which nursing services for healthcare consumers' families, groups, communities, and populations increase the likelihood of desirable outcomes and are consistent with evolving nursing knowledge [5]. According to Donald Berwick, there are six aspects of quality health care including safety, effectiveness, patient-centeredness, timeline, efficiency, and equity [6]. Hospital nurses frequently work unconventional schedules, including shift rotation and extra hours, to offer patient care around the

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clock. Nurses have reported feeling less worn out and having more job satisfaction when their hours are shorter and there is more time between them [7]. According to a study conducted in South Korea, they claimed that long-duty shifts have negatively affected the quality of nursing care [3]. Moreover, nurses working more than 50 hours per week have significantly more adverse nurse outcomes than nurses working less than 40 hours respectively. Similarly, another study found that individuals who worked more than 10 hours per day had two-fold depression levels compared to those who worked less than 10 hours [8]. Furthermore, they also added that working at night increased their levels of work dullness and hopelessness by twice. Based on the result of the above-mentioned studies it could be argued that there is strong evidence to support the idea that exhaustion and insufficient sleep may be linked to extended workdays, which may result in loss of focus and a perceived decline in patient satisfaction and care quality. Similarly, another study was conducted on the association of nurses' shift length with patient safety and quality and their results indicated that longer working hours were shown to be negatively correlated with quality and safety [9]. The Pakistani population is rapidly growing and in 2020, it was 220 million, and now according to the 2023 survey, it has expanded to 240 million [10]. Expansion in population leads to a high disease burden because of the poor healthcare status of Pakistan. Pakistan has also made very languid progress in the health sector over the last fifty years, as evidenced by its health indicators [11]. Life expectancy is frequently used as a gauge for a country's healthcare system, and life expectancy in Pakistan is 65 years, putting it behind other South Asian countries in the decent Asian average [12]. Due to the poor healthcare status of Pakistan, the disease ratio increases, which requires a sufficient number of medical staff to deal with. In the hospital, the patient is mainly dependent on nurses, and they are responsible for their care and help the patient in their daily activities to make them independent. The current nurse-patient ratio in Pakistan is 1:10.6, whereas the recommended ratio is 1:4 patients [13]. There is a scarcity of nurses in Pakistan. Hence, because of the populous country, poor health care system, burden of diseases, and increased burnout of nurses have further decreased the quality of nursing care in our country. Moreover, there is limited published literature on the impact of long shifts on nurses on the quality of the care they provide to patients in our country. According to the researcher's best knowledge, no published study was observed that found an association between shift length and quality nursing care in the country.

This study aims to assess the impact of shift length on quality nursing care in one of the provinces in Pakistan.

METHODS

An analytical study design was employed. This design was useful to assess a phenomenon at a single time point. The target population was the registered nurses working in public hospitals in Khyber Pakhtunkhwa, Pakistan. The hospitals included in the study were Mardan Medical Complex, Mardan; Naseerullah Khan Babar Memorial Hospital, Peshawar, Qazi Hussain Ahmad Medical Complex, Nowshera; and Bacha Khan Medical Complex, Swabi. The data were collected in different shifts, including morning, evening, and night. The informed consent form was signed by all the participants. The study utilized Power Analysis through Raosoft Incorporated for the calculation of the sampling size, which resulted in 375 staff nurses. In the calculation of the sample, the margin of error is 5%, the degree of confidence is 95%, with the response distribution of 50%. Therefore, the final sample was 400 with a 10% attrition rate. A convenient sampling technique was used in which 400 questionnaires were distributed to ensure an adequate number of samples about the targeted sample size. In the final data collection, 377 questionnaires were returned with complete answers, giving a 94.25% response rate. The participants included in our study were registered nurses working in different shifts and nurses with at least six months of experience in any tertiary care hospital. The participants excluded for the study were outpatient clinics, operating rooms, and recovery room nurses because their duties differed from those of inpatient unit nurses. Nurses who were on vacation during the data collection period and staff nurses who work in other hospitals like district headquarters hospitals, tehsil headquarters hospitals, etc. After approval from the college ethical review committee, the target hospital nursing directors were approached to get permission for the study, and after receiving approval from hospital administration the nurses were approached through the nursing supervisor or team leader of the shift and informed consent was taken before data collection. The study purpose, benefits and possible drawbacks were communicated to study participants and after the study explanation the consent form was signed and the participants assured that they voluntarily agreed to participate in the study. Moreover, participants were free to exit the study at any moment, and their participation was entirely voluntary. The data were collected through questionnaires. The tool used in the data collection was the "Varghese and Joseph survey tool [14]. The permission was taken from the author through e-mail. The tool contains demographic data that have information about age, gender, education, marital status, speciality area, shift duration, and work experience. Section B contains information regarding quality nursing care and has a 45-item scale consisting of 9 subscales measuring Fatigue (5 items), Stress and Burnout (5 items), Job Satisfaction (5

items), Physical Health (5 items), Documentation (5 items), Service Quality (5 items), Patient Safety (5 items), Adverse Events (5 items), and Communication (5 items). The items are rated on a 5-point Likert scale of 1=I strongly agreed, 2=I agree, 3=I am neutral, 4=I disagreed, and 5=I strongly disagreed. Data were analyzed through SPSS version 26.0 utilizing descriptive statistics from demographic data and inferential statistics (Spearman Rank test) to find the association between shift length and quality care.

R E S U L T S

The participants of study were mostly (56.2%) male nurses, whereas female participants made up about 43.8% of the participants. Similarly, the majority (55%) of study participants were young nurses whose age was between 26 and 35 years. The ages of nurses 25 years or less were 26.5% of the total participants; from 36-45 were 12.9%; from 46-55 were 3.2% of study participants; and from 56 and above were 2.7% of study participants. Moreover, 63.7% of participants were married and 36.3% were single. Furthermore, there were also participants of different educational backgrounds. The participants who had a diploma in nursing were 247, which made up 65.5% of the total participants. 124 nurses did BSN, which made up 32.9%, and also 6 participants who did MSN, which made up 1.6% of the total participants. As well, participants were working in different wards of the hospital. There were 21.2% of participants working in the medical ward, 13.3% in surgical, 25.7% in ICU, 12.5% in ED, 10.6% in CCU, 7.4% in pediatric, 4.2% in NICU, and 5% working in other wards of the hospitals. Also, the participants had different work experiences in tertiary care hospitals. The nurses who had 1-5 years of experience made up 49.1%, 6-10 years made up 33.2%, 11-15 years made up 10.6%, 16-20 years made up 3.4%, and those hthe aving experience of more than 20 years made up 3.7% of the total study participants. Likewise, the nurses were classified according to their shift length. Nurses who work 6-hour shifts were 259, a percentage of 68.7% of the total participants, and nurses who work 12-hour shifts made 31.3% (Table 1).

Table 1: Demographic Characteristics of the Participants

Variables	Frequency (%)	Mean
Gender		
Male	212 (56.2%)	1.4377
Female	165 (43.8%)	
Age		
25 or Less Years	100 (26.5%)	2.0053
26-35 Years	207 (54.9%)	
36-45 Years	48 (12.7%)	
46-55 Years	12 (3.2%)	
56 Or More Years	10 (2.7%)	

Marital Status		
Married	240 (63.7%)	1.3634
Single	137 (36.3%)	
Educational Qualification		
Diploma	247 (65.5%)	1.3607
BSN	124 (32.9%)	
MSN	6 (1.6%)	
PhD	0 (0%)	
Years of Experience in TCH		
1-5 Years	185 (49.1%)	1.7958
6-10 Years	125 (33.2%)	
11-15 Years	40 (10.6%)	
16-20 Years	13 (3.4%)	
>20 Years	14 (3.7%)	
Specialty of Work		
Medical	80 (21.2%)	3.4244
Surgical	50 (13.3%)	
ICU	97 (25.7%)	
ED	47 (12.5%)	
CCU	40 (10.6%)	
Pediatrics	28 (7.4%)	
NICU	16 (4.2%)	
Others	19 (5.0%)	
Shift Length		
6-Hours	259 (68.7%)	1.3130
12-Hours	118 (31.3%)	

BSN=Bachelor of Science in Nursing, ICU=Intense Care Hospital, ED=Emergency Department, CCU=Critical Care Unit=Neonatal Care Unit, TCH=The Clearing House

It clearly described that nurses who worked in 6-hour shifts have a positive association (0.78) with quality care, which means that when nurses work in short and medium shifts quality nursing care is provided effectively. In contrast, nurses who worked in 12 hours shifts had a weak negative association (-0.10) with quality care. An association of shift length with quality care which is measured through 9 subscales was indicated (Table 2).

Table 2: Association Between Shift Length and Quality Care

Shift Length	Pearson Correlation Value (p)
6 Hours	0.78
12 Hours	-0.10

For inferential statistics, we used Spearman rank for correlation. After the analysis, we obtained different data about the nine subscales of questionnaire related to quality nursing care. To accomplish the study's objectives, a correlation was used to ascertain whether a rise in a variable's qualities might result in an increase or reduction in other variables. The respondents' shift lengths were correlated with quality nursing care using correlation to established shift lengths. Nine subscales are fatigue, stress and burnout, job satisfaction, physical health, documentation, service quality, patient safety, adverse events, and communication. The results of the study show

the overall weak positive association (0.14) of shift length with the nine subscales of quality nursing care. However, some subscales show a significant relationship, like physical health (0.022), documentation (0.045), communication (0.026), and patient safety (0.006) subscales. The remaining subscales, like fatigue, stress and burnout, job satisfaction, and service quality, show results that are not statistically significant (Table 3).

Table 3: Correlation Coefficient of Individual Subscale

Subscales	Correlation Coefficient	p-Value
Fatigue Total	0.102	0.048
Stress Burn Out Total	0.049	0.339
Job Satisfaction Total	0.086	0.095
Physical Health Total	0.118*	0.022
Documentation Total	0.103*	0.045
Service Quality Total	0.54	0.300
Patient Safety Total	0.142**	0.006
Adverse Event Total	0.084	0.103
Communication Total	0.115*	0.026
Overall Total	0.148	–

DISCUSSION

The results of the study show that shift length and quality nursing care are associated, and some subscale associations are significant. Moreover, the majority were young and they did not feel any exhaustion during duty, and their quality care may be maintained. Current study findings were consistent with other international studies [3, 15]. Similarly, in the present study, shift length also affects patient safety and shows highly significant results (p=0.006), which means that when shift length increases, patient safety (PS) is difficult to maintain, and these findings were also carried out by other studies [16, 17]. In contrast, the majority of the international literature carried out on shift length and quality care has a negative association, and is inconsistent with current findings [18-20], they reported that nurses working long shifts have significant adverse outcomes in terms of low patient safety and quality care like, increase medication error, decrease efficiency and fail to complete many important nursing care factors. Moreover, working for long hours also reduces enthusiasm and passion for care which leads to job dissatisfaction and increases nurse burnout. In addition, longer shifts are associated with increased care omission and reduced quality care. Although data on nurse-related accidents is scarce, examinations of performance tests show that nurses on twelve-hour simulated shifts tend to make more mistakes when it comes to grammatical reasoning and analyzing medical records. However, the results of the current study are incongruent with the past research, as there was a weak positive association (0.086) of shift length with job satisfaction (JS), and the p-value (p=0.095) was greater than 0.05, which means that the

association was not significant. The results of this study were quite different from previous research due to the following reasons: Most (65.5%) of the participants were 3-year nursing diploma holders, and maybe they did not know the importance of research and filled out the questionnaire without proper concentration. Also, the study participants were mostly (70%) young nurses whose age was up to 35 years, so they were most energetic and strong and could manage their shift length to give quality nursing care. Furthermore, the majority (54%) of nurses working in critical areas may have had more workload, due to which they did not fill the questionnaire with full attention. Additionally, 69% of study participants were working 6-hour shifts, and maybe they could easily provide quality nursing care. Due to all these factors, the results of present study were affected and showed a weak positive association, which was opposite to the results of other research.

CONCLUSIONS

It was concluded that there was a strong positive relationship between 6-hour shift length and quality nursing care, whereas, there was also a weak negative relationship between 12-hour shifts and quality nursing care. Moreover, the overall sub-scales also indicate a weak positive association between shift length and quality of nursing care; however, some areas like patient safety and documentation are negatively associated with quality nursing care. The study recommended that to increase patient safety and properly document nursing care, nurses need to work in short or medium shifts.

Authors Contribution

Conceptualization: AK[1],
Methodology: MK, JK, MAS, MY
Formal analysis: MAS, SK
Writing review and editing: AK[2], JK, TH

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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