



Assess the Quality Of Life of Nurses Working In Shift Duties In Public Sector Hospital

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Abstract

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Working in shifts is a prerequisite for nurses to help patients, jeopardizing their own physical and mental health as well as having an influence on their social and family life, consequently leading to a lack of attentiveness and subpar job performance, putting the patients' lives in peril. This study aims to assess the nurses' quality of life working in shift duties. 255 nurses participated in a cross-sectional analytical study of a public sector hospital. Participants were selected through consecutive non-probability sampling techniques. Data was collected using demographic characteristics and the WHO SF36 questionnaire and analyzed through SPSS version 21.0. The mean age was 31.6 ± 7.3 years with the majority of 67.8% female nurses. The mean experience was 8.7 ± 6.4 years, duty hours 39 ± 11.7 hours, and 31% were working night shifts. Comparing the shift duties with all seven health parameters of quality of life, and general health, social activities energy and emotions were found statistically significant $P < 0.05$. Compared with experience, only general health was found to have a statistically significant association at $P < 0.005$ whereas no other parameter was found to have any association. Age and marital status showed a statistically significant association moreover, education also had an association with 3 health parameters. However, the experience was found to have a statistically significant association with mental health ($P < 0.007$). The current study concluded that the health and quality of life of nurses are negatively impacted by the stress of their shift work. It may also cast a shadow over the delivery of care, which may be one of the variables influencing patients' outcomes.

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INTRODUCTION

Work Shift rotation is a working schedule where workers rotate for set periods of time in 24 hours. In Europe around 20% workers and in America, 15.2 million workers are doing their jobs with the same pattern¹. The picture is worst in other parts of the world where, about 15-30% workers are doing shift work (Abdalkader, et al., 2008). Similarly 1/5 of the population of Tunisia is doing jobs with a rotating shift and their ratio, who works in shifts, is increasing day by day (Al-Ameri, 2017). In the entire world, developed, developing or under developed, health professionals especially nurses are working on shift basis to

facilitate the ill people which disrupt their own health and environment. It is documented that night shift duties have developed adverse physical and psychological effects³. It also effects on the body circadian rhythmic city, sleep alertness and performance and in the long period the chances of development of obesity, diabetics and cardiovascular diseases increases(Anbazhagan et al.,2016).

The health professional especially nurses have to do shift work, for the provision of round the clock patient care. It is documented in different studies that fatigue development in nurses is directly associated with inadequate sleep and timely consumption of food both in quantity and quality. However senior nursing staff tackles it with different strategies for proper diet and thus minimize impacts of these factors (Bazazan, et al.,2019). It is documented in a study⁸ that due to poor sleep quality and generalized fatigue in shift work nurses have significant impacts on their overall mood like irritability, less social events interest and exhaustion(Belingheri et al.,2022). It was also concluded that the major concern of nursing staff is night shift schedule thus there is an increased risk of sleep deprivation and family stress. A general perception in these nurses was negative health issues including obesity and fatigue. In another study (Blachowicz,et al.,2006), it was assessed through mean score that nurses working in night shift have less score for quality sleep, quantity of sleep, satisfaction with job, psychological problems and fatigue comparatively with nurses working in day shift.

In a study, conducted in Tunisia, the physical and mental loads in health professionals were heavily seen in workers on shift basis. The BMI score was higher in senior nurses as compared to less experienced nurses (less than ten years of shift working nurses.) Therefore they concluded that for consistent better performance of nurses, normal shift duty systems should be reduced especially for senior nurses (Bookset al.,2020). In another study it was reported that in nurses working in night shift have high level of sleepiness and chronic fatigue which effects their proper functioning at work as well as home also.⁹ Study conducted in Iraq concludes that there is a strong relationship with the age and gender regarding life quality status(Camerino et al.,2008). It is recommended that the management should provide sufficient off duty hours to nurses so that they could take proper sleep and maintain their life normally. Similar findings were found in studies (Du, et al.,2020: Estry-Béhare et al.,2012) that health complaints, stress, work performance and sleep impairments are highly associated in nurses working on rotating work shift. Therefore steps should be taken for their proper rotation of duty hours. On the basis of the above facts, this study has been designed to determine the physical and mental health issues of nurses in Pakistan and to assess the difference of it in public hospital.

Through this study, we can evaluate the level of physical and mental health of the nurses working in shifts and gain control on the adverse effects of the work shift to prevent our nurses as well as the focused patient care. This study will also help the families of nurses on one hand and on the other hand it improves patient's care. It helps policy makers to make some polices in favor of nurses regarding their rotation duties specifically in specialized discipline(Fadeyi et al.,2018). In Pakistan according to researcher's knowledge, no work has been done directly to assess the effect of duties in shifts on the nurse's physical and mental health. In our society the education of nurses is important to remain up to date for proper care of the patients. However nurses specially student nurses to whom it is compulsory to attend their classes very after the nightshift not only effect their academic career as well as patient care. Therefore this study has been designed to

assess such effects and develop a recommendation for the health managers to manage these things in favor of the nurses.

LITERATURE REVIEW

Nurses are considered playing main role in any health care delivery system. They have to work 24 hours in shift duties and their night shift has a major role in providing of health care delivery. In night, also they are not responsible for patient care but they work without any support in a difficult working environment (Ferri et al., 2016). They work at night under fatigue conditions along with other hardships. It is a common practice all over the world that health care professionals are working in shifts. Mostly they have to work in 8 hours shift. But at the same time it is also presumed that hospital nurses should maintain the maximum work performance. However by working in shifts, they are suffering with fatigue along with lack of sleep which results in unfavorable care of patients¹⁰. Shift work is a gift of modern technology and currently, 1/5th of world labor is working in shifts rotation. In European Union countries, 19% workforce working in night shift which shows a complex pattern of work (Ganesan et al., 2019). Health's professionals' especially nurses are bound to do rotate night shift for 24 hours' patient care. Nurses working in shift facing main problems such as high level of fatigue, sleepiness, poor health, poor family and social life, and mainly less quality of work and job satisfaction. Female nurses already having chronic illness have more problems specially, cardiac and gastrointestinal¹¹.

In a study¹², lack of sleep was found to be the major problem (39.9%), followed by fatigue (4.7%) in staff of hospital whereas excessive daytime sleepiness was found in 19.8% of the staff. Study recommend that in nurses and other health providers, education on health related matters like practicing good sleep should be made from time to time, to improve the perfect care of patients (Gifkins et al., 2018). In another study, poor quality of life, fatigue and other psychological issues were found interrelated in nurses (Griep et al., 2014). All factors of WHO QOL-BREF questionnaire were positively related with nurses mental health status. In a study, negative relationship was found between psychological wellbeing and psychological experience of shift work. It is an internationally recognized fact that for continued care of patient either in hospital or at home, shift work specially night shift for health care providers is a must. In a study, it was concluded that young nurses working on rotation night shift were more frequently single (Griffiths, et al., 2014).

Studies conducted on students concluded that prevalence of less sleep, daytime sleep, and irregular sleep was high in college students with a result of low grade points, high risk of academic failure, compromised learning and increased risk of vehicle accidents (Hayset et al., 1993). In another study, it was concluded that female health workers who gets opportunity for only daytime sleep is influenced by their routine housework demands. This aggravates them for sleep deprivation. Through naps allowing in night shifts could help in reduction of the effects of sleep deprivation (Heyam et al., 2018). It is a fundamental fact that Clinical placement is an important component of nursing education for the attainment of its desired goal. For this purpose, it is essential to provide round the clock clinical teaching for nurses. If so, then the night duty will not be only a working position with anxiety and fatigue, but also a learning experience (Houot, et al., 2022). Similarly according to another study, 73% respondents indicate that learning is taking place during night duty. The skill most learnt is administrating medications (52%). and attending procedure demonstrations by registered nurses (50%). however due to shortage of staff,

negative attitude of senior nurses and inadequate preparation for teaching were the major handlers' in learning. According to other studies, poor quality of sleep was found in night shift nurses compared to day shift nurses. However, rotational shift working among health care providers is necessary to continue care of hospital and residential patients(Jordakieva et al.,2022).

RESEARCH METHODOLOGY

A cross-sectional analytical study was conducted in a tertiary care public hospital in Karachi, Pakistan from November 2019 to July 2020 after seeking approval from the institutional review board of Dow University of Health Sciences, Karachi. The sample size was determined using criteria in the literature (Naz, Hashmi, & Asif) and Open Epi software version 3.0. The calculated sample size was 255. A structured questionnaire of demographic characteristics and a WHO SF36 questionnaire were used to collect data. Participating nurses had full-time jobs and assigned to rotational duties. The Performa was distributed among nurses after obtaining verbal as well as written consent from each participant explaining the purpose of the study and collected after half an hour. Two scales were used for data collection, Demographic Characteristics and Quality of Life Questionnaire. The demographic variables included age, gender, marital and educational status, nature of the job, experience, working hours per week, work schedule, shift system and their working shift. Mental and physical health data was collected using the Quality of Life SF36 questionnaire by the World Health Organization consisting of seven sections including general health, limitation of activities, physical health problems, emotional health problems, social activities, pain and energy & emotions. Each item is graded on a scale of 0 to 100, with 0 and 100 serving as the lowest and highest possible scores, respectively(Hays et al.,1993).

RESULTS

A total of 255 nurses were approached and the response rate was 100%. Their mean age was 31.6 ± 7.3 years. Majority of them were female respondents 173 (67.8%) and unmarried 139 (54.5%). Out of these, 190 (74.5%) were registered nurses and 230 (90.2%) were working as a permanent employee. Their mean experience of job was 8.7 ± 6.4 years and normal duty hours were 39.0 ± 11.7 hours per week. Their duty was assigned as per monthly system 249(97.6%). Amongst them, 90 (35.3%) were working on the morning shift, 86 (33.7%) on the afternoon shift and 79 (31.0%) on the night shift. (Table 1)

Table 1.
Basic demographic characteristics of the nursing participants

S.No	Characteristics (Means and standard Deviations)	Number with percentage (n=255)
1.	Age: Mean age: 31.6 ± 7.3 years Range: 34(22-56 years)	
2.	Gender : a. Male b. Female	82(32.2%) 173(67.8%)
3.	Marital status: a. Unmarried b. Married	139(54.5%) 116(45.5%)

4.	Educational status	
	a. Registered Nurse	190(74.5%)
	b. BSN	54(21.2%)
	c. MSN	11(4.3%)
5.	Nature of job	
	a. Temporary	25(9.8%)
	b. Permanent	230(90.2%)
6.	Experience	
	Mean 8.7 ± 6.4 years	
7.	Work per week	
	Mean 39.0 ± 11.7 hours	
8.	Work schedule	
	a. Part time	236(92.5%)
	b. Full time	19(7.5%)
9.	Shift system	
	a. Monthly	249(97.6%)
	b. Yearly	6(2.4%)
10.	Shift in which working	
	a. Morning	90(35.3%)
	b. Afternoon	86(33.7%)
	c. Night	79(31.0%)

Correlation between seven health parameters of quality of life

Physical and mental health status variables were recorded in seven sections. According to the general health section, overall, 95.7% stated their health as good, very good or excellent. Only 4.3% were stated as fair or poor. Comparing health status one year ago and now, the majority (87%) said the same or much better whereas only 13% said it is worse or much worse. 95.7% of respondents who filled out the general health part said they were in good, very good, or excellent health. Fair or poor performance was indicated by only 4.3% of respondents. The majority (87%) responded that the health status was the same or significantly better than it was a year earlier, while only 13% said that it was worse or significantly worse. When asked whether it makes you feel like you catch illnesses a little quicker than other people, the majority (48.6%) responded that it did, while just 36.5% disagreed. The others remained silent about it. When asked if they felt as healthy as anyone, 79.2% responded they did, while just 9.8% indicated they didn't and that they expected their health to deteriorate.

Only 34.1% of respondents stated they expected their health to deteriorate, while 42.0% claimed they did not. When asked whether it is true or false that your health is outstanding, the majority (80.8%) responded that it is true, while only 10.6% responded that it is false. The second part of the survey asked about activity restrictions for responding nurses. When asked how much your health now restricts you from engaging in intense activities like running, carrying heavy objects, or playing sports, the majority (54.9%) responded a little while 28.2% said hardly at all. Only 18.4% of respondents to a question about moderate activities like moving a table, using a hover, playing badminton or skipping a rope were limited in this way; all other respondents stated they were either less constrained or not at all. The responses of the participants (22.7% to 29.8%) similarly show several limitations about lifting or carrying groceries, climbing stairs once or several times, and walking for one or many blocks (Koh, et al., 2015). The remaining participants all stated that they experienced very little or no restriction during the aforementioned activities. However, 38.85 to 45.9% of participants felt a limitation when

walking more than a mile or getting dressed or bathing themselves, but the majority did not.

The third section was about physical health problems faced by the participants during the last 4 weeks and facing any four conditions in their daily activities. Reducing time on your normal activity 58.8% replied yes. 54.1% of participants stated that they were facing numerous challenges in daily work and being forced to curtail their activities. Doing limited work and daily activities 61.6% agreed and faced difficulty in performing daily activities, the majority (57.6%) reported yes it is a problem. Section 4 consisted of three questions regarding Emotional health problems. The majority (55.7%) said they cut down the amount of time they normally spent on their work or other activities.

However, the majority (55.7%) did not agree with the statement that they achieved less than accomplished than they would normally, and 54.1% of respondents couldn't perform as carefully as usual. Two items were included in the questionnaire's fifth section, which dealt with the social activities of the participating nurses (Kowitlawkul, et al., 2019). In response to the first question, "How much do emotional issues interfere with your regular social interactions?" Only 13.4% said it was severe or very severe, compared to 55.6% who said it was neither bad nor not at all. When asked how often their physical and emotional problems had interfered with their social activities over the previous four weeks, just 11.3% responded that it was not a problem for them. Instead, 61.6% stated that it had done so rarely.

The last section of the questionnaire was energy and emotion having 9 statements regarding feeling and thinking during the last 4 weeks. In reply to the first statement, whether you felt full of activity, the majority 67.3% said yes all or most of the time. The remaining response was that it did sometimes or a little bit at times or not at all. In reply to the question of whether you were very nervous, only 23.9% said first 3 options that yes, whereas 76.1% of participants said not at all or a very little bit at times. The next question was whether they had felt so down that nothing could cheer them up, and only 29.0% said all or most of the time.

The next statement was did you feel peaceful and calm most of the time? According to 76.1%, yes it is true. In reply to whether you had a lot of energy, 80.4% said it is all or most of the time. The subsequent issue was that whether they felt downhearted or blue, only 20.3% of participants replied, all or most of the time whereas the majority did not agree with it. In response to a question about whether they felt worn out, only 24.3% of participants responded yes it is all or most of the time whereas mostly 75.7% did not agree with it. When asked whether you are a happy person, the majority 81.1% said, they were all or most of the time. In reply to, whether they felt tired, only 33.0% said all the time or most of the time.

Each of the seven health markers was associated with the number of years of experience and shift work tasks of the participating nurses (Lebni et al., 2021). The results showed that when shift work was compared to general health, social activities, energy, and emotions were found to be statistically significant, but activity limitations, physical health issues, emotional health issues, and pain did not show any statistically significant differences when compared to their shift work (Matheson et al., 2014). Similar correlations between experience and all indicators were also identified in groups, however only general health

was found to be statistically significant at $P=0.005$, whereas no other parameter was found to be so. All seven health indicators are compared with shift work in Table 2.

Table2.**Comparison of all seven health parameters with shift duties**

Health parameters	Shift			Total	P value
	Morning	Afternoon	Night		
	N=90	N=86	N=79		
General health					
a. score 6-10	15	5	12	32	*0.012
b. score 11-15	51	44	28	123	
c. score 16 and+	24	37	39	100	
Limitation of activities					
a. score 10 -15	24	17	10	51	0.428
b. score 16-20	28	32	29	89	
c. score 21-25	20	18	18	56	
d. score 26-30	18	19	22	59	
Physical health					
a. score 4	29	23	21	73	0.644
b. score 5-8	61	63	58	182	
Emotional health problems					
a. score 3	18	16	14	48	0.929
b. score 4-6	72	70	65	207	
Social activities					
a. score 2-5	46	28	41	115	*0.016
b. score 6-10	44	58	38	140	
Pain					
a. score 2-5	56	55	39	150	
b. score 6-10	34	31	40	105	
Energy and emotions					
a. score 10-25	4	4	5	13	*0.040
b. score 26-35	47	38	20	105	
c. score 36 and +	39	44	54	131	

* $P < 0.05$ ** $P < 0.001$

Table 3.**Comparison of all seven health parameters with years of experience**

Health parameters	Experience			Total	P value
	Up to 5 years N=188	6-10 years N=33	11 and+ years N=34		
General health					
a. score 6-10	25	5	2	32	*0.005
b. score 11-15	99	6	18	123	
c. score 16 and+	64	22	14	100	
Limitation of activities					
a. score 10 -15	44	4	3	51	0.131
b. score 16-20	68	8	13	89	
c. score 21-25	38	9	9	56	
d. score 26-30	38	12	9	59	
Physical health					
a. score 4	47	14	12	73	0.107
b. score 5-8	141	19	22	182	

Emotional health problems					
a. score 3	33	8	7	48	0.637
b. score 4-6	155	25	27	207	

* P < 0.05 ** P < 0.001

DISCUSSION

Nurses are considered a fundamental part of the healthcare systems worldwide. Working in shifts is prevalent in the health care services of nurses globally. Nurses' jobs are stressful as they provide their services in shifts for 24 hours beyond conventional hours (Al-Ameri, 2017; Vitale et al., 2015). This study aimed to assess the quality of life of nurses working in shift duties. Numerous prior studies have declared an association between different parameters and nurses' quality of health. World Health Organization developed different tools to assess nurses' quality of life as the questionnaire tool SF 36 (Memon, Rahman, Channar et al., 2021). It is documented that the QOL of nurses may directly or indirectly impact negatively on the safety and quality of care of patients. Therefore, identifying the main factors which impact on nurses' QOL is essential in any system related to healthcare (Nena et al., 2018). In multiple similar studies, the age of the nurses was diverse as given by mean age. In the studies (Nena et al., 2018; Skoufi et al., 2017) mean ages were 35.5 ± 7 years, 39.1 ± 6.9 years, 33.5 ± 8.8 years, 29 years (Heyam, Beshar, & Nesreen, 2018), and 47.32 ± 8.44 years (Ruiz-Fernández et al., 2020). In our study, the average age of participants was 31.6 ± 7.3 years which is just about in between the other studies.

Regarding the ratio of male & female nurses in the previous studies, females were in the majority as in a study conducted in Iraq (Al-Ameri, 2017), female nurses were 67.3. In other studies, ^{42, 50, 52}, the female participants were 82.8%, 84.5%, 78.0%, and 94.2% (Koh et al., 2015; Sansó et al., 2020; Skoufi et al., 2017; L. Wang et al., 2020) respectively. In the current study also, female nurses were in the majority (67.8%) is similar to the previous studies. Regarding marital status, in the study (Al-Ameri, 2017) 81.7% of nurses were unmarried. However, the majority of them were married in preceding studies (61%, 70.6%, and 70.53%) (Naz et al., 2018; Wang et al., 2020). This study revealed only 45.5% of nurses were married. In an earlier study (Heyam et al., 2018), the mean work experience was 6 years whereas in another study (Wang et al., 2020), it was found to be 3 or more years. In the current study, the mean experience of participants was 8.7 ± 6.4 years.

In this study, 97.6% of participants had a monthly rotation schedule; in the corresponding study, 52.4% had a fixed turn rotation, while the remaining 47.6% had a shift rotation plan (Sansó et al., 2020). Numerous studies have determined various aspects of quality of life that are impacted by 12-hour shifts, which are longer than morning and afternoon shifts. According to a study conducted in India (Anbazhagan, Ramesh, Nisha, & Joseph, 2016), the prevalence of shift work disorder was estimated to be 43.07%, whereas the majority (53.8%) were found to have sleep disturbance. The same study discovered a direct correlation between shift work disorder and the number of nights worked annually, as well as between working hours and advancing age. Prior study (Kowitlawkul et al., 2019) indicated that social support from family, friends, colleagues, and supervisors assisted nurses in managing stress and improving their quality of life. In a study comparing nurses working the night shift and nurses working other shifts (Naz et al.), it was found that married nurses (61%) scored higher on burnout and low QOL than single nurses (39%). The findings indicated that younger nurses (20–30 years old) and nurses with 5–10 years of work experience had higher rates of burnout and lower QOL.

In earlier research, (Heyam et al., 2018; Okuyan & Deveci, 2017), it was discovered that amicable interactions lessen the stress of working shifts. Additionally, nurses enjoy a variety of activities outside of the workplace, such as sports and cultural events, which compensate for some of the negative impacts of shift work. Eliminating psychological issues is essentially the foundation of mental health prevention. The work quality of nurses was determined in prior research to be in the medium level with more opportunities for improvement (Wang et al., 2020). Nursing administrators in China are required to put several measures in place to enhance the working conditions for nurses. Another study conducted in China (Du et al., 2020) discovered a direct correlation between clinical nurses' mental health and their knowledge, abilities, and risks.,

However, the majority of nurses in our survey (95.7%) had overall health ratings of good or above. General health, social activities, energy, and emotions were statistically significant at $P < 0.05$ when the seven health parameters of quality of life were compared to shift work, but activity restriction, physical and emotional health problems, and pain could not be statistically connected with shift work. Similarly, comparing with experience, only general health was found statistically significant association at $P < 0.005$ whereas no other parameter was found in any association. The majority of characteristics were determined to be statistically significant related to age and marital status, while three health indicators were also found to be correlated with education. Based on the two groups of all questions, there were no statistically significant associations between physical or mental health and shift work. However, a statistically significant association between experience and mental health was discovered ($P = 0.007$).

CONCLUSION

Therefore it is concluded that shift work is likely to have adverse effects on nurses' everyday life, functionality, and general health, mainly due to the adverse effects of shift work. Such effects are differentiated through this study that shift work has a significant association with the majority of health parameters. There is a certain need to introduce innovative nursing administration practices and a change in the work schedules of shifts in health care. It may ensure service excellence and also improve the personal health of the nurses. Providing cognitive-behavioural intervention programmes to determine sources of stress at the workplace and providing soft skill programmes such as collaborating, developing behavioural and interpersonal skills, and teaching efficient coping mechanisms to reduce stress can improve nurses' quality of life and caring behaviours as well. Modifying nursing administration practices, the creation of successful incentive policies, and flexible work schedules can be helpful in this respect. These steps may be useful in providing efficient care to clients while also taking care of nurses' health and safety.

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