

Prevalence of Sleep Disorders in Nurses Working on Rotating Shifts

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Abstract: Sleep disorder in nurses may not only adversely affect on their own health, but also endanger their patients' health. The purpose of this study was to evaluate sleep disorders in nurses working on rotating shifts in Shahid Beheshti Hospital, Kashan. We Used Sleep Disorder Questionnaire (SDQ) of Michigan University, sleeplessness sheet of City College of New York and Epworth Sleepiness Scale. The questionnaire was prepared and filled for all nurses of Shahid Beheshti Hospital. Out of 128 nurses who completed questionnaires, more than 96% were suffering from sleep disorders. Among them 0.8% had only sleepiness during the day, 30.4% had only nightly sleeplessness and 68% had both nightly sleeplessness and sleepiness during the day. All nurses enrolled in the study 96.9% of women and 96.7% of men had sleep disorders. Rate of sleep disorders in RN staff was 98.5%, in high school graduated nurses 93.75% and in technician nurses was 100%. Rates of sleep disorders in married and single nurses were 99 and 90.32%, respectively. Rate of sleep disorders among nurses who worked on rotating shifts was 97.54%, while this rate in nurses who worked only on day shift was 83.33%. Results of this study demonstrated high prevalence of sleep disorder among enrolled nurses-most probably because of shift working and extra working-that needs a serious attention. Rate of sleep disorders was higher in nurses who worked on shift, but the difference was not statistically significant.

Key words: Sleep disorder, sleeplessness, sleepiness, sleep questionnaire, nurse

INTRODUCTION

Sleep is a regular and frequent state that is easily reversible. Relative immobility and considerable increased threshold of response to external stimuli are some characteristics of sleep in comparison to wakefulness^[1].

Sleep is affected by biologic rhythms. Disturbance in this rhythm as a result of shift working is one of sleep disorders. The most common symptom of this disorder is intermittent sleeplessness and sleepiness periods. However, many physical problems like peptic ulcer may occur after a time. Symptoms are usually most sever in first days after changing work program, however in some people disturbed pattern of sleep and wakefulness may last for a long time^[2].

Nowadays a large number of people work on changing work programs and unusual shifts. Shift working has not been sufficiently studied. Many people cannot cope with shift working and should not be employed in shift works^[3].

Working in different hours of day and night is a necessity for health care personnel, especially nurses. For a nurse full awareness, carefulness, concentration and good temper are must. On the other hand, all of these characteristics may be influenced by sleeplessness and its complications.

Different studies on sleep disorders in nurses have presented different results. For instance, in a study that carried out on nurses of five hospitals in Japan, 2001 prevalence of sleep disorders was 29.2%^[4], while Mehrdad *et al.*^[5] study on shift working nurses of Imam Khomeini Hospital in Tehran, Iran, in 2001, reported a prevalence of 87.7%. There is an obvious difference between reported results.

In Iran, unfortunately less attention has been paid to this matter and its affecting factors. So we have no comprehensive data on the condition of sleep health in Iran.

With respect to different prevalence rates of sleep disorders and considering its serious impact on nurses' and indirectly patients' health, this study carried out to determine prevalence of sleep disorders in Kashanian nurses. This study may lead researchers and authorities pay more attention to different aspects of sleep disorders and finally provide a suitable job condition for health care staff, especially nurses, through minimizing sleep disorders and their outcomes.

MATERIALS AND METHODS

In this descriptive study all nurses of Shahid Beheshti Hospital who were 128 people and worked in

different wards of the hospital in 2004, were given questionnaire. There are some different methods for determining the type and causes of sleep disorders. Polysomnography for evaluating sleep disorder and using MSLT method for evaluating day sleepiness are of best methods. But till now they are not available in Iran. Therefore we preferred to make a questionnaire in order to evaluate sleep disorders. In our questionnaire we used Sleep Disorder Questionnaire (SDQ) (produced by Alan B. Douglass from Michigan University) as a base. Also we used the questionnaire of City College of New York (CCNY). To evaluate sleepiness during the day, we used sleepiness questionnaire of Epworth instead of MSLT. It should be mentioned that several studies (such as studies of Murray W. Johns in Epworth Hospital, Melbourne, Australia) has shown that scores of Epworth questionnaire are significantly correlated with scores resulted from MSLT and Polysomnography.

To investigate sleeplessness, we used the questionnaire published by CCNY. Nightly sleeplessness and sleepiness during the day were particularly considered as main symptoms of sleep disorders.

Also we considered all possible kinds of shift working. Then working in extra hours and second job were asked. Since rest in a shift especially in nighttime has an important effect on sleep disorders, allowed time to rest in each shift was questioned.

Age, sex and marital status, especially being divorced or widow, can affect sleep situation; so these items were asked.

Epworth questionnaire is used to investigate sleepiness during day. This questionnaire asks 7 questions about probability of sleepiness in different daily situations and social activities and then classifies the day sleepiness. In this questionnaire every situation in which there is a probability of fall asleep has a special score. Sum scores of 6 or less don't indicate on day sleepiness. Scores of 7 and 8 are considered medium and scores of 9 or more are considered sever sleepiness.

In another part of our questionnaire, using SDQ and CCNY questionnaire, different types of sleeplessness were separately asked and classified. In this section following problems were asked: difficulty in going to sleep, difficulty in sleep continuation, frequently waking up during a night sleep, unwanted waking up in early morning, feeling inadequate sleep and having light sleep which can be interrupted by any little sound or stimulus. After preparing the questionnaire, distribution stage was begun. Each nurse was given a questionnaire and was explained about it. Then he/she was asked to fill the questionnaire in the presence of questioner. In the case that some items of questionnaire were not clear for a nurse, they were explained by the questioner.

Each questionnaire had a unique code. Writing the name on questionnaire was not necessary, but the nurses were told that if they wanted, they could be informed about their test results by keeping their codes.

Gathered data in questionnaires were checked and revised for descriptive analysis.

RESULTS AND DISCUSSION

In this research, 128 nurses were studied in Shahid Beheshti Hospital Kashan, Iran. 76.5% of them were women and others men. The range of their ages were 18% (20-25 years), 37% (25-30 years), 22% (35-40 years), 19.5% (40-45 years), 3.9% (45-50 years). 95.3% nurses worked with rotating shift and 4.7% were non shift work (day work). 3.4% of them were occupied in afternoon-night rhythm, 2.5% in morning-afternoon and 94.1% in irregular rotation. 79.7% of nurses had a rest time in work time and 20.3% didn't.

Prevalence of sleep disorder in nonmarried nurses was 90.32% but in married was 99%.

Out of 128 nurses enrolled in the study 122 nurses worked in rotating shifts. Out of them, 119 nurses (97.54%) had sleep disorders, while 5 nurses (83.33%) of day working nurses were involved in sleep disorders (Table 1).

Rate of sleep disorders in nurses who worked extra hours was more than the others, but the difference was not statistically significant (Table 2).

Sleep disorders in nurses who had a second job was more than the others, but the difference was not statistically significant (Table 3).

Eighty three point six percent of nurses had difficulty in going to sleep. Men had more difficulty in going to sleep (Table 4).

In sleep continuation 83.6% of nurses had problem. Women had more problems in sleep continuation (Table 5).

Results of this study obviously showed the high prevalence of sleep disorder among nurses of Shahid Beheshti Hospital, as 96.9% of nurses in this study had sleep disorders. In the study of Mehrdad and colleagues on nurses of Imam Khomeini Hospital in Tehran, prevalence of sleep disorders has reported as 87.7%.

Kageyam and Nishikido^[6] in a study on 825 female nurses of five hospitals in Japan, reported a prevalence of 29.2%

Comparing the above mentioned results indicates that prevalence of sleep disorders among Iranian nurses is significantly higher than Japanese. This obvious difference can be resulted from different factors such as: irregularity in working shifts, financial requirements of nurses and their need to work extra hours and doing a second job.

Table 1: Number of nurses with or without sleep disorders according to shift work

Sleep disorder	Rotating work		Total
	Positive	Negative	
positive	119(97.54)	5(83.33)	124
negative	3(2.46)	1(27.66)	4
total	22	6	128

Table 2: Number of nurses with or without sleep disorders according to extra work hours

Sleep disorder	Extra hours		Total
	Positive	Negative	
Positive	99(97.05)	25(96.15)	124
Negative	3(2.94)	1(3.85)	4
Total	102	26	128

Table 3: Number of nurses with or without sleep disorders according to having second job

Sleep disorder	Second job		Total
	Positive	Negative	
Positive	14(100)	110(96.46)	124
Negative	-	4(3.51)	4
Total	14	114	128

Table 4: Frequency of difficulty in going to sleep in day and shift work nurses

Difficulty in going to sleep	Rotating workers	Day workers	Total
Sometimes	54(55.1)	3(76.67)	77(60.1)
Usually	8(8.16)	1(3.31)	9(7.1)
Always	16(16.33)	5(16.67)	21(16.4)
Never	20(20.4)	1(3.33)	21(16.4)
Total	98	30	128

Table 5: Frequency of sleep continuation in day and shift work nurses

Sleep continuation	Rotating workers	Day workers	Total
Sometimes	60(61.22)	17(56.67)	77
Usually	17(17.35)	4(13.33)	21
Always	9(9.18)	0	9
Never	12(12.25)	9(30)	21
Total	98	30	128

Results of this study revealed that nurses who work in extra hours and do second job, are more involved in sleep disorders. Study of Mehrdad *et al.*^[5] in Tehran has resulted in a similar conclusion. We couldn't find any study about extra hours working or second job in other countries, most probably because of financial security of nurses in most countries.

In this study, male nurses had more difficulty in onset of sleep than female, but female nurses had more difficulties in continuation of sleep. Totally 23.5% always or often had difficulties in onset of sleeping and 60% sometimes such a problem. Furthermore, about continuation of sleep, similar statistics were resulted. Theses results are in accordance with the results of Mehrda *et al.*^[5].

It seems that lack of financial security and necessity for over working and in unusual hours has exposed the nurses to sleep disorders. Physical and psychological health of nurses as well as their function and quality of work can be adversely affected by sleep disorders. Any malfunction of nurses due to sleep disorders may lead to endanger a human life.

RECOMMENDATIONS

- Night shift nurses should not be engaged when they are below 25 years old, or over 50.
- Nurses with a tendency to ailment of sleeplessness should not be employed on night work.
- Nurses who live far away from hospital or in noisy neighbours, are unsuitable for night work.
- The usual 3-shift system, changing over at 6-14-22 h would be better altered to 7-15-23 or 8-16-24 h.
- Nurses work program should not be included more than 1 or 2 night shifts in a week.
- Short-term rotations are better than long-term ones, and continuous night work without change should be avoided.

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