Investigation of the Relationship between General health and Sleep Disorders among Nurses Working in Zanjan’s Hospitals (Iran)

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ABSTRACT: Sleeping is one the most important cycles of day and night and a complicated biological pattern which has profound impacts on physical and mental health. Nurses and Physicians involve in occupations which requires them to have shifts and therefore, this results in sleep disorders; particularly nursing which is intertwined with working on shifts and gives rise to sleeping disorders, and jeopardizes the nurses’ physical and mental health. Therefore, the present study aims at investigating the relationship between mental health and sleeping disorders among nurses working in fixed and flexible shifts at hospitals of Zanjan, Iran in year 2011. This research was a descriptive-correlative study. 385 nurses working in different shifts at hospitals of Zanjan were selected using stratified Random sampling method. Demographic Information Form was used to collect the data and GHQ-28 and Sleep disorder questionnaire (SDQ) were used to investigate general health. The collected data were analyzed using SPSS software and descriptive and inferential statistics (T-test, correlation coefficient and ANOVA). The findings of this study showed that from the subjects observed 59 were men (15.3%) and 326 were women (84.7%). The age group of 25-34 had the largest number and (74%) were married. 55 people were in fixed shifts and 330 subjects were in circulating shifts. The mean and standard deviation for fixed shift and circulating shifts were 10.18±3.81 and 11.2±5.57, respectively. The mental health state and sleeping disorder of the nurses working in fixed shifts are the same as those of the nurses working in circulating shifts. The results of mono-lateral variance analysis and regression correlation coefficient revealed an indirect relation between sleeping disorder and general health as sleeping disorder decreases the general health level among the nurses. According to the results and since nurses’ psychological health is directly related to their performance at the hospital taking care of patients, congruent, preventive and treating programs for this important community seems necessary.

Keywords: Mental health, Sleeping Disorder, Nurses

INTRODUCTION

Sleeping is a phenomenon and is one of physiological needs of human being. Sleeping is also necessary for maintaining physical and mental balance. Sleeping disorder is often an initial sign of mental diseases (Hagck & Mullington 2005). Working in rotating shifts and night shifts is a potential risk for health care staff which, in turn, jeopardizes patients’ health as well (Almasi et al. 2006). Shift work disorder (SWD) is a sleep disorder characterized by sleepiness and insomnia, which can be attributed to the person’s work schedule (American Academy of Sleep Medicine 2005). Doctors and nurses are involved in working in shifts and suffer from subsequent sleep disorders. Nursing specifically is intertwined with shifting work times and sleep disorder and this gives rise to physical and mental fragmentation of individuals and problems such as digestive and cardiac disorders, exhaustion, nervousness, distraction, improper behavior, illusion, emotional repugnance, and aggression (Himashree et al. 2002, Muecke 2005).
Nursing more than any other occupation requires working in shifts especially night shifts (Ohaida et al. 2001). In our country, Iran, nurses make up 80% of health and treatment system (Mehrabi & Ghazavi 2005). Nurses randomly work in morning, evening and night shifts and compared to other occupations, they are more exposed to mental tensions (Suzuki et al. 2004).

Taking the influence of working shifts on sleeping into account, research has shown that the immediate and short-term impact is quantitative and qualitative diminish in working shifts and exhaustion. Rotating shifts also impact on physical and mental health, staff absence, occupational satisfaction and professional efficiency among nurses (Demeroutle et al. 2004). Shift work can have an impact on sleep, well-being, performance, and organizational outcomes. The existing scientific studies indicate that shift work affects both sleep and waking by disrupting circadian regulation, familial and social life (Admi et al. 2008).

Nurses are among those groups which are subject to insomnia. And irregular sleeping patterns cause decrease in sleeping and performance quality in them (Kolagary 2006, Potter & Perry 2003). Night shift workers are prime candidates for developing health problems associated with lack of sleep and are at a greater risk of being injured on the job because of sleep deprivation (Simpson & Dinges 2007). Working in night shifts has unfavorable side-effects and subsequences on the health and life quality among nurses working in rotating shifts; many of which uncontrollable. Working in night shifts has negative physical, mental and social effects on nurses’ lives which may eventually influence their family, as well (Samaha et al. 2007, Garbarino et al. 2002). Due to long working shifts and resulting exhaustion, nurses are always susceptible to health risks in various dimensions (Ohaida et al. 2001). Needless to mention, nurses who are not healthy enough will not be able to offer good health care such as physical and mental support to patients and of course there will be higher risks of making professional mistakes where both patients and nurses will be affected (Soleimany et al. 2007). Increased caregivers burden decreases their mental health status. This in turn, may result in increasing psychiatric stress of caregivers and decreasing of their participation in patients care (Hosseini et al. 2010). Mental tensions of work place are among stressful factors which influence nurses’ health and which may influence their efficiency and their and clients’ safety in health-care centers.

Therefore, the present study aims at investigating the relationship between mental health and sleeping disorders among nurses working in fixed and flexible shifts at hospitals of Zanjan, Iran in year 2011.

METHODS

The present research is a correlation-descriptive study. Statistical population is all the nurses working in hospitals of Zanjan university of medical science. 385 nurses were selected using stratified random sampling method. This number was calculated using the formula for estimating the samples for qualitative variables:

\[
 n = \frac{z^2 \left(1 - \alpha^2\right) p(1-p)}{d^2}
\]

Tools for data collection in this study included a demographic inventory and two standard questionnaires, including general health questionnaire (GHQ-28), in order to investigate general health and sleep disorder questionnaire (SDQ), in order to study sleeping disorders. General health questionnaire, which was developed by Goldberg in 1978 and was based on self-report method, was normalized in Iran and is used by Iranian researchers. This questionnaire is scored based on Likert Scale. In this scale 0 in given for the answer option ‘not at all’, for ‘in normal level’ 1 score is allocated. For ‘more than usual’ and ‘very much’ options, 2 and 3 scores are given respectively. Total score of below 27 is considered as desirable general health, 28-54 shows partial general health and 55-84 is regarded as undesirable general health.

The Other part of the questions is about sleep disorder questionnaire. In this part, there were 18 questions about sleeping state, namely, sleepiness, parasomnia and insomnia. Each group of questions was answered with 3-5 answering options and scored using Likert scale. ‘Never’ had 0 score, ‘rarely’ 1, ‘often’ 2 and ‘always’ had 3 scores. Validity of this questionnaire was investigated using content validity and its reliability was tested using test-retest which resulted in correlation coefficient of 0.89.

Physical and mental diseases of nurses for which they were under care and treatment were considered as a criterion for excluding them from the study. In order to collect the data, having taken permission from the university officials and selecting the units of interest and holding an introductory session, giving necessary explanation about objectives of the study and getting the nurses fill the consent
form, the subjects completed the questionnaires. In order to analyze the data, descriptive analysis, unilateral variance analysis test, correlation coefficient and t-test were used. Significant level for all variables was considered (p<0.05).

**Ethical considerations**

This study abided by the Helsinki Declaration at all stages of its running and has been authorized by the Hospital and University ethics committee.

**RESULTS**

Demographic properties showed that 15.3% of subjects was men and 84.7% of them was women. 26% was single and 74% was married. Most of the subjects were between 25 and 34 years. Most of them 63.6% had been working for less than 10 years. 55 people worked in fixed shifts and 330 people worked in rotating shifts.

As it could be seen in (table 1), health state of the nurses who worked in fixed shifts was better than that of nurses who worked in rotating shifts, for example about 2.4% of the nurses working in rotating shifts had improper mental health state while none of the nurses who worked in fixed shifts had such a problem.

The studies conducted on mental health for nurses in different countries ranges between 34% and 48% for mental disorder which mostly accords with the results of the present study(Yang et al .2004).The findings of (table 2) shows that from the 350 nurses selected, 55 people worked in fixed shifts and 330 people worked in rotating shifts. The score for sleep disorder of all nurses working in fixed shifts was mild while the same item for 90% of nurses working in rotating shifts was mild and for the rest (10%) was average.(Table 3) shows that there is a difference between mean and standard deviation of sleep disorder of nurses, but in order to find out whether this difference is so significant which could be generalized about the two societies, t-test was utilized.

It could be observed in the table below (table 4) that regarding (P-value = 0.193) there was no significant difference between the two societies under study; therefore, it could be concluded that sleep disorder was about the same in nurses working in both fixed and rotating shifts.

Another finding of this study was that most of the nurses (47.8%) reported problems in going to sleep, interrupted sleep (18.2%) and light sleep (33%). After working through night, most of them (80%) had interrupted sleep and only %20 of them had continuous sleep.The most percentages reported by the units under study included: need for more sleep after waking up (58.4%), severe sleepiness during day (72.2%), wake-up disorders (85.7%), disorders in starting or continuing sleep (73.5%) and struggle for remaining awake (61.8%).

In order to investigate the relationship between sleep disorder and mental health, correlation coefficient was used and the result (R= -0.582) shows an indirect relationship between sleep disorder and mental health. Regarding the value of P (P-value= 0.001), the relationship between these two variables in significance level of 0.05 is significant; therefore, it could be told that sleep disorder causes a drop in mental health level. Investigating the relationships between demographic properties (age, gender, marital status, etc.) and mental health and sleep disorder, only the relationship between mental health and gender was significant.

**DISCUSSION**

In our study, 35.8% of nurses had desirable health level. Suzuki (2004) showed in his study that only 31.2% of nurses was in desirable mental health level and 68.8% was in undesirable health state(Suzuki et al .2004).

The findings of the present study showed that the means for sleep disorder in nurses working in fixed and rotating shifts were different, although this difference was not statistically significant.

Demos et al., investigating health and occupational factors in 188 nurses found out that nurses who mostly work in night shifts make more medical and occupational mistakes, and have less energy and more sleep disorders in comparison with the nurses who worked in other shifts(Demos et al .2004).

In the present study, there was a significant relationship between health state of nurses working in fixed and rotating shifts. Erin’s study results supported the findings of the present study. He showed in his research that nurses who worked in rotating shifts had less favorable physical and mental health state(Erin &Kristin 2003).In this study, there was a significant relationship between gender and mental health wich
accords with those of Hosseini’s research (Hosseini et al., 2010). Muecke et al. (2005) investigated working shifts of nursing staff and found out that rotating working shifts brings about psychologically detrimental effects on them.

This study indicated that sleep disorder may decrease mental health level of nurses; therefore, nursery managers should try to assign fixed shifts to nurses as much as possible in order to decrease the side effects of rotating shifts. It is possible to conduct proper treating interventions for nurses through investigation and diagnosing sleep disorder in them to augment the mental health of nursing society.

**Limitations of the study**

Individual differences and the compatibility way of individuals with different working shifts, mental and emotional conditions and age of units under study were not under the researcher’s control.

**CONCLUSION**

Therefore, through upgrading mental and social health of nurses it could be expected that quality of health care would improve, since nurses often deal with patients who need a strong support from the treating team, specifically nurses. Nurses should be mentally and emotionally fit to fulfill their tasks well.

**Table 1. Mental health state of nurses working in fixed and rotating shifts**

<table>
<thead>
<tr>
<th>Shift</th>
<th>Mental health status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>somehow favorable</td>
<td>29</td>
<td>52.7</td>
<td>52.7</td>
</tr>
<tr>
<td></td>
<td>favorable</td>
<td>26</td>
<td>47.3</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>55</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Rotating</td>
<td>unfavorable</td>
<td>8</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>somehow unfavorable</td>
<td>204</td>
<td>61.8</td>
<td>64.2</td>
</tr>
<tr>
<td></td>
<td>favorable</td>
<td>118</td>
<td>35.8</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>330</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2. Sleep disorder of nurses working in fixed and rotating shifts**

<table>
<thead>
<tr>
<th>Sleep disorder</th>
<th>Mild</th>
<th>Average</th>
<th>Sever</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed</td>
<td>55(100%)</td>
<td>0</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>Rotating</td>
<td>297(90%)</td>
<td>33(10%)</td>
<td>0</td>
<td>330</td>
</tr>
<tr>
<td>Total</td>
<td>352</td>
<td>33(10%)</td>
<td>0</td>
<td>385</td>
</tr>
</tbody>
</table>

**Table 3. Frequency Distribution of the studied samples according to sleep disorder**

<table>
<thead>
<tr>
<th>Sleep disorder</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed shift</td>
<td>55</td>
<td>10.1818</td>
<td>3.09590</td>
<td>.61319</td>
</tr>
<tr>
<td>Rotating shift</td>
<td>330</td>
<td>11.2000</td>
<td>5.57426</td>
<td>.30685</td>
</tr>
</tbody>
</table>

**Table 4. T-test result for comparison mental health among nurses**

<table>
<thead>
<tr>
<th>Sleep Disorder</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>d.f</td>
</tr>
<tr>
<td>Sleep Disorder</td>
<td>1.304</td>
</tr>
</tbody>
</table>

**ACKNOWLEDGEMENT**

The researchers would like to state their appreciation to all the authorities, nurses and staff of the hospitals affiliated Medical University and Medical-Treatment services of Zanjan who were very helpful in conducting the research.

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