Investigating the Relationship between Sleep Quality and Mental Health in Chemical Veterans in Comparison with Their Spouses and a Control Group

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ABSTRACT

Aim: This study was aimed to determine the relationship between sleep quality and mental health of veterans in comparison with that of their spouses and a control group. Methods: Thirty-seven chemical veterans with moderate to severe injury based on the standards of Foundation of Martyrs and Veterans Affairs were selected from Mazandaran province. Then, the spouses of 31 of them were selected and 15 of their close relatives also enrolled in the study as the control group. The three groups were evaluated by GHQ for their mental health and Pittsburg Sleep Quality Index (PSQI) for sleep quality. Collected data were analyzed using SPSS software 16 and descriptive and analytic statistical methods. Results: The mean score of mental health in veterans, their spouses and close relatives were 44.13 ± 14.4, 34.19 ± 15.2 and 21.73 ± 17.32, respectively. The mean scores of PSQI test in veterans, their spouses, and their close relatives were 10.94 ± 5.6, 8.7 ± 5.5 and 4.27 ± 1 that the difference was statistically significant among the three groups (P ≤ 0.0001). A positive relationship was seen between mental health and sleep quality in veterans and their spouses respectively (r = 0.4, P = 0.02) and (r = 0.83, P < 0.0001). Conclusion: Poor sleep quality in chemical veterans compared to their spouses and close relatives could be due to mental health, rather than chemical effects and chronic lung disease. Therefore, treatment of mental health might be an important step to improve the sleep quality of veterans.

KEYWORDS

Sleep Quality; Mental Health; Chemical Veterans

1. Introduction

Mental health is more than absence or lack of disease. The positive aspect of mental health, which is emphasized and defined by World Health Organization (WHO), is: “Health is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity [1].” In other words, mental health is a state of welfare in which the individuals know their capabilities and can cope with the normal life stress. They can also be practical and productive in their occupation and cooperate with others as a member of the society [2]. Since we spend one-third of our lives asleep and sleep cycle has a great impact on individual’s life quality, people’s quality of life and activities in the waking hours is largely influenced by their quality of sleep [3-5]. Sleep also affects the immune response of the body [6,7]. There is a complex relationship between the formation of psychiatric symptoms and the occurrence of various events in the life, especially the negative unpredictable threatening ones. Generally, these unwanted events bring about individuals’ nervous breakdown and make them susceptible to show mental symptoms like sleep distur-
bance which is one of the common complications of veterans [8].

One of the most common mental disorders resulting from war is called “post-traumatic stress disorder” [9]. Generally, there is no history of mental illness in these patients and the acute stress reaction recovers after a short period of time. The clinical features of post-traumatic stress disorder include: the painful re-experience of the event, attempt to avoid recalling the incident, flashbacks, difficulty in falling asleep and sleep continuity [10].

A considerable number of chemical veterans suffer from a range of physical and mental disorders which can potentially influence their sleep [11,12]. Research has shown that mental health of chemical veterans is threatened by the incident and the stress caused by the individuals’ physical conditions [13]. Despite the passage of so many years from the imposed war, one of the fundamental problems of veterans, especially chemical ones, is their post-war psychological problems and the damage to their mental health and social performance [1]. As mentioned, one of the psychological problems in these patients is sleep disorder; therefore, in this study we aimed to investigate the relationship between sleep quality and mental health in chemical veterans in comparison with that of their spouses and a control group.

2. Patients and Methods

The current study is a case-control research in which all the chemical veterans living in Mazandaran province with injury magnitude of moderate and severe, based on the standards of Foundation of Martyrs and Veterans Affairs, took part in this study. The study was approved by the ethics committees of research vice chancellor of Mazandaran University of Medical Sciences and informed consent was obtained from all participants after full explanation of the procedure. The participants were 37 chemical veterans (Group 1), spouses of 31 of them (Group 2) and 15 of their close relatives as the control group (Group 3). All three groups were examined for their mental health through GHQ and for their sleep disorder and finally a score of 15 - 21 is an indicator of severe disorder in each scale. The global score is between 0 - 3 and the total score of more than 23 shows poor general health of the person during the previous month [16]. Demographic information including age, occupation, educational level, injury magnitude, educational level of the spouse, all were collected in a questionnaire through the interview carried on by a psychiatrist. Data were analyzed using SPSS software.

3. Results

The mean age of veterans was 45 years old (SD of 8.2). Eleven participants were employees, 16 employing state, 4 were of military personnel and 3 were unemployed. The analysis of their educational level showed that one of them was illiterate, four were at primary school level, 5 at secondary school level, 21 had got diploma, and 6 had associate degree and higher. The magnitude of their injuries was as follow: 65% of them suffered 25% - 50% and 34.5% had 51% - 70% of injuries (Table 1).

The percentage of sleep quality disorder in three groups of veterans, their spouses and relatives were 86.1%, 63% and 37.5%, respectively, which showed a statistically significant difference among them (P = 0.009, df = 2) and the percentage of those suffering from mental health disorder in three groups of veterans, their spouses and relatives were 94.6%, 80.6% and 33.3% respectively, indicating statistically significant difference among the three groups (P = 0.0001, df = 2).

The mean scores of General Health Questionnaire...
(GHQ-28) in veterans, their spouses and close relatives were 44.13 ± 14.4, 34.19 ± 15.2 and 21.73 ± 17.32, respectively which showed a significant difference between the three groups (P = 0.0001) (Table 2).

The mean scores of Pittsburg Sleep Quality Index (PSQI) were 10.94 ± 5.6, 8.7 ± 5.5 and 4.27 ± 1 in veterans, their spouses and close relatives (Table 3); the difference in three groups was statistically significant (P ≤ 0.001).

There was a relationship between mental health and sleep quality of the veterans and their spouses, which were (r = 0.4, P = 0.02) and (r = 0.83, P = 0.0001), respectively. However, no significant relationship was observed in the mental health and sleep quality of their close relatives (r = 0.01, P = 0.96) (Table 4).

4. Discussion

Our study reveals that 86.1% of the chemical veterans suffer from poor sleep quality, while only 13.9% of them had good sleep quality, which is similar to the findings of Tavallaii et al. [17]. Poor sleep quality was observed in 63% of the veterans’ spouses, which was also in correspondence with the findings of Tavallaii et al. for veterans’ companions [18]; however, their study did not specify the relation of the companions with the veterans. Few studies have investigated the chemical veterans’ sleep conditions and those who have worked on it have studied the veterans’ irregular sleep, sleep disorder, periodic changes in sleep, insomnia and nightmares [19-21]. Hence, we could not find a study with a similar design and these 3 groups.

In the current study 37.5% of veterans’ close relatives had poor sleep quality, however, it has been reported 10% - 60% in different studies conducted on poor sleep quality with different age ranges (adolescents, normal population and adults) [18,22,23].

From mental health point of view, 94.6% of the veterans faced some problems; this was similar to the results of Vafaii et al. regarding depression in chemical veterans [24]. In their study, the intensity of depression was higher in chemical veterans than non-chemical ones and the prevalence was higher in this study compared to Zarghami et al., which might be due to the time of investigation and type of the veterans [25]. In the present study, 80.6% of the veterans’ spouses suffered from mental problems; therefore, the prevalence of psychiatric problems is higher than that of Saki and Ghanbari’s [26]. A study conducted by Dezhkam comparing the mental health of the spouses of the veterans and those of the psychiatric patients showed that both suffered from mental health problems [27]. The results of the study carried on by Zarabi et al. showed that Iranian spouses with PTSD (Post-Traumatic Stress Disorder) suffered from mental health more than other women. In addition, they had more physical disorders, anxiety, insomnia and poor social performance [28]. The findings of this study indicated that 33% of veterans’ close relatives had mental health problems; this finding is in line with the study worked on the prevalence of mental disorders in general population of Iran in different areas which showed that it varies from 9 to 36 percent, and 36.6% of the participants over 15 had emotional problems. This shows that our control group can be considered as the representative of the whole society [29].

On the other hand, the current study showed that there is a relationship between mental health and sleep quality of veterans and their spouses; however, such relationship was not found in their close relatives. It should be mentioned that different studies attribute the cause of poor sleep quality in the chemical veterans to different problems such as lung diseases following the chemical intoxication, which occurs in 50% of cases [10,11] PTSD symptoms reported in 90% of chemical veterans [30], anxiety disorder reported in 57%, depression symptoms reported in 57% - 92% of cases [20,31,32], and also to taking drugs such as Theophylline that prevents night bronchial contractions but leads to poor sleep quality [33].

According to the present study, the correlation between mental health and sleep quality in veterans and
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Table 2. Comparison of test scores of GHQ in the three groups.

<table>
<thead>
<tr>
<th>Scales</th>
<th>Groups</th>
<th>Veterans</th>
<th>Veterans’ spouses</th>
<th>Close relatives</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td></td>
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</tr>
<tr>
<td>Physical symptoms</td>
<td>4.83 ± 13.48</td>
<td>4.88 ± 9.64</td>
<td>5.56 ± 5.53</td>
<td>0.000 F = 14</td>
<td></td>
</tr>
<tr>
<td>Anxiety and insomnia</td>
<td>4.53 ± 13.08</td>
<td>5.88 ± 10.45</td>
<td>6.39 ± 6.86</td>
<td>0.001 F = 7</td>
<td></td>
</tr>
<tr>
<td>Performance failure</td>
<td>4.37 ± 11.43</td>
<td>4.62 ± 9.32</td>
<td>4.69 ± 7.06</td>
<td>0.007 F = 7</td>
<td></td>
</tr>
<tr>
<td>Depression symptoms</td>
<td>5.07 ± 6.83</td>
<td>4.63 ± 4.80</td>
<td>4.28 ± 2.60</td>
<td>0.015 F = 4.4</td>
<td></td>
</tr>
<tr>
<td>GHQ global score</td>
<td>44.13 ± 14.4</td>
<td>34.19 ± 15.2</td>
<td>21.73 ± 17.32</td>
<td>0.0000 f = 12</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Comparison of scores of Pittsburg Sleep Quality Index (PSQI) in the three groups.

<table>
<thead>
<tr>
<th>Scales</th>
<th>Groups</th>
<th>Veterans</th>
<th>Veteran’s spouses</th>
<th>Close relatives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td></td>
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</tr>
<tr>
<td>Subjective sleep quality</td>
<td>0.92 ± 2.09</td>
<td>1.15 ± 1.4</td>
<td>0.99 ± 0.87</td>
<td></td>
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<tr>
<td>sleep onset latency</td>
<td>0.99 ± 2.06</td>
<td>1/31 ± 1/84</td>
<td>1.03 ± 0.66</td>
<td></td>
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</tr>
<tr>
<td>sleep duration</td>
<td>0.92 ± 2.41</td>
<td>1/36 ± 1/88</td>
<td>1.21 ± 0.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep efficiency</td>
<td>1.38 ± 1.50</td>
<td>1/27 ± 1</td>
<td>1.21 ± 0.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sleep disturbances</td>
<td>1.12 ± 2.34</td>
<td>1/60 ± 2/23</td>
<td>1.38 ± 1.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sleeping medication</td>
<td>1.27 ± 1/72</td>
<td>1/26 ± 0/95</td>
<td>1.18 ± 0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>daytime dysfunction</td>
<td>0.96 ± 1.4</td>
<td>0/95 ± 1/21</td>
<td>1.18 ± 0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSQI global score</td>
<td>10.94 ± 5.6</td>
<td>8.7 ± 5.5</td>
<td>4.27 ± 1</td>
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<td></td>
</tr>
</tbody>
</table>

Table 4. Comparison of results of GHQ and PSQI in the three groups.

<table>
<thead>
<tr>
<th>Groups</th>
<th>GHQ scores</th>
<th>PSQI scores</th>
<th>R</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterans</td>
<td>44.13 ± 14.4</td>
<td>10.94 ± 5.6</td>
<td>0.4</td>
<td>0.02</td>
</tr>
<tr>
<td>Veterans’ spouses</td>
<td>34.19 ± 15.2</td>
<td>8.7 ± 5.5</td>
<td>0.83</td>
<td>0.0001</td>
</tr>
<tr>
<td>Close relatives</td>
<td>21.73 ± 17.32</td>
<td>4.27 ± 1</td>
<td>0.01</td>
<td>0.96</td>
</tr>
</tbody>
</table>

their spouses was positive and strong, although their spouses did not have any history of lung diseases. Thus, it seems that the major predictor of sleep quality is mental health, including PTSD, other anxiety disorders and depression. It can be concluded that by appropriate treatment of the psychiatric disorders in veterans, sleep quality will likely improve.

It is recommended that other researchers design nationwide studies and simultaneously investigate the pulmonary problems and match the veteran groups in order to confirm and generalize the investigated hypothesis of this study.

Competing Interests
None declared.

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