Impact of weak social ties and networks on poor sleep quality: A case study of Iranian employees

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A B S T R A C T

The poor sleep quality is one of the major risk factors of somatic, psychiatric and social disorders and conditions as well as the major predictors of quality of employees' performance. The previous studies in Iran had neglected the impacts of social factors including social networks and ties on adults sleep quality. Thus, the aim of the current research was to determine the relationship between social networks and adult employees' sleep quality. This study was conducted with a correlational and descriptive design. Data were collected from 360 participants (183 males and 177 females) who were employed in Yazd public organizations in June and July of 2014. These samples were selected based on random sampling method. In addition, the measuring tools were the Pittsburgh Sleep Quality Index (PSQI) and Social Relations Inventory (SRI). Based on the results, the prevalence rate of sleep disorder among Iranian adult employees was 63.1% (total PSQI > 5). And, after controlling for socio-demographic variables, there was significant difference between individuals with strong and poor social network and ties in terms of overall sleep quality ($p < .01$), subjective sleep quality ($p < .01$), habitual sleep efficiency ($p < .05$), and daytime dysfunction ($p < .01$). The results also revealed that the employees with strong social network and ties had better overall sleep quality, had the most habitual sleep efficiency, and less daytime dysfunction than employees with poor social network and ties. It can be implied that the weak social network and ties serve as a risk factor for sleep disorders or poor sleep quality for adult employees. Therefore, the social and behavioral interventions seem essential to improve the adult's quality sleep.

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1. Introduction

Sleep disorders are one of the most prevalent mental disorders from which almost 10–30% of people suffer around the world (Ram et al., 2010; Thorpy, 2004). And, it is the second most common type of complaints after pain (Mahowald et al., 1997). These disorders can clinically have important outcomes and overall health. Sleep disorders which are associated with psychiatric problems such as high rates of depression, anxiety, poor performance, mood disorder, and substance abuse may cause medical conditions or psychiatric problems or may exacerbate them (Breslau et al., 1996; Pearson et al., 2006; Roth et al., 2006). The National Health Interview Survey conducted by Pearson et al. (2006) showed that people with insomnia symptoms experienced anxiety and depression five times higher than those without insomnia symptoms. Different symptoms are reported by different studies, such as the comorbidity of sleep

disorder, cardiovascular disease, endocrine disease, and increased perception of pain (Thorpy, 2004; Lockley et al., 2007; Copinschi, 2005), hypertension, congestive heart failure, diabetes and obesity (Suka et al., 2003; Pearson et al., 2006), the risk of death from all causes (Tamakoshi et al., 2004), mental and physical disorders (Taira et al., 2002), and poor quality of life of individuals and families and the healthcare costs (Montgomery and Dennis, 2004). In fact, for worker adults, poor sleep quality can reduce their efficiency and effectiveness in organization. On the same line, several studies have shown that the sleep disorders, including the insomnia, the shift work sleep disorder (SWSD), and the obstructive sleep apnea can influence on employment outcomes (Swanson et al., 2011). Also, following Daley et al. (2008), Kleinman et al. (2009), and Erman et al. (2008), decreased productivity and absenteeism are among the most common occupational injuries in patients with symptoms of insomnia. Furthermore, some studies have concluded that people with symptoms of disruptive sleep apnea (OSA) have more difficulties in concentrating, learning, and higher rates of accidents and occupational injuries in comparison with normal participants (Lindberg et al., 2001; Spengler et al., 2004).

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Epidemiological studies have indicated to the prevalence of sleep disorders in the world from 15% to 45.3% (Buysse et al., 1991; Hoffman, 2003; Sukegawa et al., 2003). In fact, no statistics are available about the prevalence of the sleep disorders in the Iranian employees' population, but among the general population, the prevalence of the sleep disturbances has been reported as ranging from 10% to 71% (Mousavi et al., 2011; Torabi et al., 2013; Masoudnia, 2012). In addition, the use of different measurement tools by researchers was one of the possible reasons for the differences in the reported rates of sleep disorders. Some studies (e.g., Mousavi et al., 2011), applied the self-report questionnaires such as the Sleep and Daytime Habit Questionnaires (SDHQ). And, some other studies (e.g., Torabi et al., 2013), measured the sleep disorder by using the structured interviews. Furthermore, the difference in the population under study was realized as other possible reasons for the difference in reported prevalence of sleep disorders. Some researches were done on a patient population (Nohu et al., 2008; Derakhshanpour et al., 2014). Other studies conducted on healthy people (e.g., Masoudnia, 2012; Panaghi et al., 2004). Obviously, physical or psychological symptoms can lead to sleep disorders.

The etiology of sleep disorder is very complex. Some studies have investigated the effects of different variables on the quality of sleep or insomnia, such as age (Doi et al., 2001; Livingston et al., 1993; Morgan et al., 1988), gender (Rodin et al., 1988; Cheek et al., 2004), physical condition (Morgan et al., 1988), life situations (Livingston et al., 1993; Rodin et al., 1988), health status (Morgan et al., 1988), lifestyle behaviors including smoking, coffee or alcohol consumption (Hoffman, 2003; Cheek et al., 2004; Gislason et al., 1993), exercise (Cheek et al., 2004; Li et al., 2004a,b), and some psychiatric disorders such as depression (Hsu, 2001; Lin et al., 2003). However, one variable that has received less attention in the social etiology of sleep disruption is the impact of social networks and ties on the quality of sleep. Social networks are defined as stable but evolving relational fabrics constituted by family members, friends and acquaintances, work and study connections, and relations that evolve out of each individual participation in formal and informal organizations (Belvis et al., 2008). Moreover, social networks means that most people in order to access to information, resources and situations, rely on personal relationships and on their relatives. On the same line, social scientists used social networks to comprehend the complexities of relationships between the members of social systems (Antonucci and Akyiyama, 1987; Hall and Wellman, 1985). Also, the impacts and the importance of social networks and social ties on health and illness experiences, as well as the quality of life have been demonstrated in several studies (Cohen, 2004; Uchino, 2004; Hall and Wellman, 1985; Jang et al., 2002; Sapp et al., 2003). And, the results of limited researches about the relationship between social networks and quality of sleep indicate a significant effect on the quality of sleep and incidence of sleep disorders. In one study, Cacioppo et al. (2002a) investigated the quality and quantity of sleep among the people without social ties and the people with social ties by using Pittsburgh Sleep Quality Index (PSQI). The results of the mentioned study revealed that although, both individuals without social ties and the individuals with social bonding have the same amount of hours of sleep, the lonely individuals show evidence of poorer sleep quality, poorer sleep efficiency, longer sleep latency, more daily dysfunction, and more time awake after sleep onset in comparison with not lonely individuals. In another research, Cacioppo et al. (2002b) found out that people who slept alone had less productivity, went to sleep a little later, had rapid eye movement latency, and were more frequent awakening during sleep in comparison with not lonely individuals. In addition, Cacioppo et al. (2002a,b) examined the association between social relationship and sleep, in which the

Quality of sleep was assessed by using self-report or using the Nightcap sleep system. It was found out that the individuals who report high levels of loneliness had also the reduced sleep efficiency. In another study, Hawkley et al. (2010), by using the daily diary assessments showed that the loneliness could predict the weakness of daytime functioning independently of the amount of sleep at the previous night. Also, Friedman et al. (2005) showed that the subjective sleep quality, the higher habitual sleep efficiency, and the less sleep latency were associated with higher social relationship and social participation.

In spite of the importance of sleep and the effects of social networks on the health, the information about the relationship between social networks and quality of sleep is very limited. In other words, although sleep is one of the important determining factor of individual performances, little research has been done in the area of social knowledge about sleep. Over the past few decades, sleep researchers believed that sleep patterns were more influenced by biological processes (Beebe, 2008; Carskadon, 2002). In the meantime, the role of social contexts is largely ignored in the studies of sleep patterns. According to our knowledge, on one hand, no study examined the impact of social networks and ties on sleep quality, especially for employed population in Iran. Some studies (Nasrollah Nia et al., 2014) have shown that the rate of labor productivity and efficiency in Iran, especially in the public sector, is very low. Therefore, the etiology of lower labor productivity in Iran is seems necessary. One of the major factors that determine the labor quality performance and productivity is sleep hygiene. On the other hand, low quality of sleep can have many negative effects on the efficiency and quality of the staff. Therefore, identifying the social factors and the variables affecting the disorder can provide the grounds for social and behavioral interventions, with the aim of improving the quality of sleep, and consequently, improving their performance. So, the current study aimed to determine the relationship between social networks and ties and quality of sleep among Iranian employed population.

2. Methods

2.1. Design and participants

This study was performed with a correlational and descriptive design. Data were collected from 360 adults who were employed in 10 public organizations in Yazd, Iran, in June and July 2014. These organizations were located in a particular geographic area for public offices in Student Blvd., Yazd. In this particular space, 10 public organizations were located. In fact, the investigation was carried out on all of the 10 spaces. These organizations had different activities, including economic, political, cultural, educational, social and rehabilitation, and technical activities. Due to lack of access to employee population of public organizations, a multi-stage cluster sampling was used to select the required samples. In this way, two office units in each organization were selected randomly. The number of selected clusters was 20. Then, all staff of the selected 20 units were studied. Moreover, social network inventory and Pittsburgh Sleep Quality Index (PSQI) were given to the selected samples by trained interviewers. The criterion of selecting the sample for this study were being employed in public organization and being older than 20 years. To determine the sample size, we used the modified Cochran's sample size formula. First, because of the unavailability of the variance in sleep quality in adults, a pre-test was performed on 30 samples. Also, the amount of variance sleep disorder was obtained .234. On the same line, confidence interval (CI) in this study was 95% (α = .05). In the next step, by using Cochran's sample size formula, 360 adults were selected.