Investigation of Workers' Sleep Quality in GoleGohar Mineral Industries Co., Sirjan

Sajad Zare[1], Nader Shabani[2], Akbar Babaei Heydarabadi[3], Alireza Kazemi Nodeh*[,4], Mehdi Asghari[5], Vahid Arab Parizi[6], Masoumeh Imanzad[7]

[1]Department of Occupational Health, School of Public health, Tehran University of Medical Sciences, Tehran, Iran.
[2]Human Resource Management, Health and Safety Environment Management ,GoleGohar Mineral Industries Co., Sirjan,Iran.
[3]Department of Public Health, Faculty of Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
[4]Proteomics Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
[5]Department of Occupational Health, School of Public health, Tehran University of Medical Sciences, Tehran, Iran.
[6]Environmental Health Expert, GoleGohar Mineral Industries Co., Sirjan,Iran.
[7]Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

*Corresponding author: e-mail address: alirezakazeminodeh@gmail.com (A.KazemiNodeh)

ABSTRACT

Sleeping is an important physiological process, wielding deep effect on the spiritual and physical health of individuals. The present study has been carried out to investigate workers' sleep quality in GoleGohar Mineral Industries Co., Sirjan, Iran. This cross-sectional and descriptive-analytical study has been carried out in 2012. The statistical society included 345 workers in of psychological health of workers in Hematite and Pelletizing section in GoleGohar Mineral Industries Co., Sirjan. The sampling method was simple random selection. Pittsburg Sleep Quality Index (PSQI) was applied in the study, with the Cronbach validity of 0.83. Analysis of data was carried out under SPSS 19 software using descriptive and inferential statistics tests. Workers averaged 30.92±4.78 years of age and their working experience averaged 5.47±3.24 years. 82.9 percent of the workers responding to the questionnaire were satisfied with their jobs, and 17.1 percent were not satisfied. Body Mass Index (BMI) for workers averaged 24.5±3.51 Kg/m3.51 Kg/m^2 46.9 percent of workers experienced satisfactory sleep and 53.1 percent of them experienced unsatisfactory sleep. The present study has reported workers' sleep quality in a modest level. With high influence of sleep quality on individual performance and on their general health, and high incidence of workplace events, this aspect of workers' health should be in the focus of policy-makers and relevant authorities in health sector.

Key words: Sleep, Sleep Quality, Pittsburg Questionnaire, GoleGoharSirjan

INTRODUCTION

Sleeping is an important daily cycle and a complex biological pattern [1]. Sleep and awake cycle is an important biological cycles, and is affected by physiological function, night and daylight shift, and other activities. Biological hour plays an important role in this cycle [2]. An average person sleeps a third of his life. Sleep is important due to the impact of disorders in sleeping and awake cycle on human life style [3]. Living quality [4] and waking time activities [5] is largely affected by individuals' sleeping quality. Sleeping wields effect on body's immunity system response [6- 8].

Many sleeping disorders would indirectly threaten individuals' lives. A significant number of accidents occur due to sleeping disorders [9, 10]. Many accidents in industrial environment occur because workers feel sleepy during working hours [11, 12].

The present study has been carried out to evaluate the sleeping quality of workers in GoleGohar Iron-casting Industrial Co.Sirjan, Kerman. Given the importance of professional workers' sleeping quality and the paucity of literature on workers' sleeping quality, the authors carried out the present study to provide the health authorities and decision-makers with information in order that they enhance performance, and prevent frustration among workers and improve their occupational yield.

MATERIALS AND METHODS

The present study is a cross-sectional descriptive-analytical study carried out in 2012. The sample society consisted of 345 workers in

GoleGohar Iron-casting Industrial Co. Sirjan, Kerman, Iran. Sampling was carried out through simple random sampling. The data-collecting tool was standard Pittsburg Sleep Quality Index (PSQI) questionnaire. The validity of the questionnaire was 0.83 calculated through Kroenbach's alpha. The questionnaire evaluated the individual attitudes toward sleeping quality in the recent four weeks. Pittsburg Sleep Quality Index consisted of seven scales of:

1- Individual's general description of sleeping quality;
2-Difficulty in going asleep;
3-effective sleeping hours;
4-Sleeping quality (based on the ration of effective sleeping hours to total time spend in bed);
5-Sleeping disorders (measured as nightly awaking);
6-Somniferous drugs dosage uptake; and
7-Morning performance (as consequence of sleeping disorders experienced by the worker during working hours, and a total score).

Each component takes scores between zero and three[13]. Scores zero, 1, 2, and 3 in each scale denote natural, mild, moderate, and severe sleeping disorder. The sum of all seven scales scores provides a total score falling to a range of zero to 21. A total score of more than or equal to 6 indicates poor sleeping quality [14]. Before filling in the questionnaire, the researcher provided comments for subjects on the research objectives and how to fill in the questionnaire. Data was collected during an interview by the researcher, and fed into a machine with SPSS 18 statistical software. Descriptive and inferential statistics were employed to analyse the data. Through descriptive statistics biaxial charts were created, and Man-Whitney, Cruise-Calvalis, χ-squared and two-way Fischer's test were used in the case necessary.

RESULTS

Workers averaged 30.92±4.78 in age and 5.47±3.24 in work experience. Of total sample population 81.6 per cent were married and 18.4 per cent were singles. 82.9 per cent of workers were satisfied and 17.1 per cent were not satisfied with their working conditions. Workers' Body Mass Index (BMI) averaged 24.5±3.51kg/m^2.

Total PSQI score averaged for all seven scales was calculated as 5.86±2.35 from possible highest score of 21. Our findings indicated that sum of 46.9 per cent of workers experienced a better sleeping quality and 53.1 per cent of them did not. 16.5 per cent of workers stated that they had to uptake somniferous pills in order to go asleep, and 83.5 per cent of them did not use pills. 13.9 per cent of workers evaluated their total sleeping quality as very good, 60.9 per cent evaluated it as good, 21.4 per cent of them described their sleeping quality as almost poor, and 3.8 per cent of workers reported their sleeping quality as extremely poor. Table 1 gives the smoking status, education, job satisfaction, work shift, and secondary job.

Table1. Demographic description of workers (N=345)

Variable	*Variable*	*Percentage*
Education	Guidance School	26.4
	High School Diploma	46.7
	Pre-college education	12.8
	BA/BSc	14.2
Smoking status	Yes	12.5
	No	87.5
Job satisfaction	Yes	82.9
	No	17.1
Shift work status	Day shift	54.5
	12-hour shift	2.6
	8-hour shift	39.4
	6-hour shift	1.5
	24-hour shift	2
Secondary job	Yes	7.2
	No	92.8

Our findings indicated that during a working year, 75.4 per cent of workers experienced accident-free working condition, and 24.6 per cent of them experienced accident. Among them, 14.2 experienced an accident; 8.4 per cent experienced two accidents; 1.4 per cent experienced three accidents, and 0.3 per cent experienced 4 accidents. 9.9 per cent of workers experienced free fall; 9.9 per cent experienced a sudden impact; and 4.8 per cent experienced chemical fluids spray.

Table 2:shows the average sleeping quality score and distribution of PSQI scales.

Table 2. Sleeping quality average and PSQI scale scores Variable Frequency (Per Cent)	
Mental Sleep Quality	
Very Good	48 (13/9)
Almost Good	210 (60/9)
Almost Poor	74 (21/4)
Extremely Poor	13 (3/8)
Difficulty Falling Asleep	
Less Than 15 Minutes In Last Month	69 (20)
16-30 Minutes, Less Than Once A Week	145 (42)
31-60 Minutes, Once Or Twice A Week	110 (31/9)
More Than 60 Minutes, Three Or More Times In A Week	21 (6/1)
Sleeping Time	
More Than 7 Hours	138 (40)
6-7 Hours	136 (39/4)
5-6 Hours	69 (20)
Less Than 5 Hours	2 (0/6)
Sleep Performance	
More Than 85 Per Cent	319 (92/5)
74-84 Per Cent	11 (3/2)
65-74 Per Cent	13 (3/8)
Less Than 64 Per Cent	2 (0/6)
Sleeping Gap	
Without Gap	12 (3/5)
1 To 9 Points	248 (71/9)
10-18 Points	80 (23/2)
19-27 Points	52 (1/4)
Sleeping Pills Intake	
Did Not Intake In Last Month	288 (83/5)
More Than Once A Week	39 (11/3)
Once Or Twice A Week	16 (4/6)
Thrice Or More A Week	2 (0/6)
Daytime Activity Disorder	
Without Disorder	79 (22/95)
1-2 Points	159 (46/1)
3-4 Points	86 (24/9)
5-6 Points	21(6/1)
Sleep Quality	
Desirable	162 (46.9)
Undesirable	183 (53/1)
Mean And Standard Deviation Of Sleeping Quality 2/35 ± 5/86	

Using Cross-Calvalis, we found that there was a significant relationship between sleep quality scores and job satisfaction, education, and shift work. Using Man-Whitney test indicated a significant relationship between sleep quality mean score and marital status (P=0.025).

Using Spearman correlation test indicated a significant relationship between age and sleeping quality score. X-square indicated a significant relationship between shift work and desirable and undesirable sleep quality (P=0.010). Fischer two-way precision test indicated also a significant relationship between marital status and desirability and undesirability of sleep quality (P=0.039).

DISSCUSSION

This cross-sectional, descriptive-analytical study examined the sleep quality of workers. The results indicated that 46.9 per cent of workers experienced desirable sleep quality and 53.1 per cent of workers experienced undesirable sleep quality. Research by Hassanzadeh et al (2006) indicated that 73.5 per cent of workers had sleeping disorders [15]. In another research by SadeqNiat on nurses, he found that 87.3 per cent of nurses suffered sleep disorders [16]. This research indicated that in terms of mental perception of sleeping, 13.9 per cent of workers described their sleep quality as very good, 60.9 per cent reported it as good, 21.4 per cent of them described it as almost poor, and 3.8 per cent described sleep quality as very poor. However, research by Kakuyi et al on professional drivers indicated that 5.5 per cent of drivers described their sleeping quality as very good, 81.8 per cent described it as good, and 12.7 described it as almost poor [17]. Research by Hassanzadeh et al (2006) indicated that 46.8 per cent of workers described their sleeping quality as very good, 38.4 described it as good, 12.8 described it almost poor, and 2 per cent described it as very poor [15].

In the present study, the average sleeping hours was 6.4±1.8 hours. Castro et al (1994) working in Peru demonstrated that 55 per cent of bus drivers slept less than 6 hours per day [18]. In our study, other sleep-related problems were need for bathroom during the night (32.5 per cent), feeling extreme cold (10.4 per cent), and feeling extreme heat (11.5 per cent). Research by Hassanzadeh et al (2006) indicated the following scores: need for bathroom in night (25.2 per cent), feeling extreme cold or heat (22.5 and 19.8 per cent, respectively).

In the present study, it was demonstrated that there was a significant relationship between age and sleeping quality, but research by Kakuyi and Tavallayi indicated that there was no significant relationship between age and sleeping quality[14].

CONCLUSION

In the present study, the average time for falling asleep was estimated as 27.9±8.7 minutes. Due to the fact that sleeping can wield impact on the health and incidence of workplace accidents, it is recommended that further research is carried out on the possible relationship between general health and sleeping quality and the frequency of incidence of work-related accidents.

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