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Original Paper

The sleep habits in labors — Dissatisfaction of sleep in shift workers

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Abstract

Characteristics of sleep in workers and distinction of sleep in shift workers were investigated in this study by using data obtained through sleep questionnaires. 20% to 25% workers in all subjects had some troubles in their sleep for the points of sleep latency, sleep time and subjective satisfactions with sleep. Over 20% of subjects experienced disturbed day-time activities and 20% subjects in all subjects assessed their sleep bad or very bad. 80 subjects (5.8%) showed short sleep time less than 5 hour. The subjects who had sleep time of less than 6 hour were significantly higher in shift workers in comparison to day-time workers. The number of subjects who had trouble sleeping, lack of good sleep out of bed and difficulty to leave from bed over 7 days during the past month was significantly increased in shift workers comparison to that in day-time workers. The number of subjects who assessed their sleep bad or very bad in shift workers was significantly increased compare with that of day-time workers.

Key words: Sleep, Occupational health, Shift workers, Mental health

Introduction

Recently, sleep disorders and sleep/awake disorders are receiving interest in occupational heath. Especially in the fields of labor heath and safety, surprising large scale industrial incidents that may be related to the sleep disorders or sleep/awake disorders are an increasing interest.

Many reports[2, 3, 4] indicated a remarkable increase in sleep disorders and sleep/awake disorders showed an increasing over last 20–30 years. The changes of life style and increasing the sleep disorder might be correlated to the changes of structure of industry, complication of industry and the condition of work on 8 hour or 12 hour shift and working day and nigh. Thesis factors might also be connected to strong stressors. These psychological and somatic hard stressors might cause some psychosomatic diseases, depression and many sleep related disorders.

An investigation[5] into general populations demonstrated that 1 for 5 subjects had a sleep related disorder including disturbed sleep onset, wakefulness in midnight. Another report[8] showed that 40% of males and 50% of females had a poor sleep.

It was reported that the prevalence of sleep apnea syndrome was ranges between 1.5% and 5.3% in males aged 40 to 50 years old[7]. Sleep apnea syndrome is a serious disease, because the apnea in sleep caused heavy tired feelings in day-time and caused to doze off. This sleepiness and nap might provoke severe industrial incidents.

From the viewpoints of occupational health it is necessarily to clarify the natures of sleep in labors. In this study, characteristics of sleep in workers, relationships between sleep and stressor and distinction of sleep in shift workers were investigated by using data obtained through sleep questionnaires.

Methods

The subjects were 1405 employees of some companies involved in manufacture, transportation, and security service. (Male subjects N=1118, mean age 45.1±13 years, Female subjects N=287, mean age 54.3±10years) in Saitama Prefecture. 578 employees (41.1%)

worked on eight-hour shifts, and 85% of these employees were male. All employees were informed and all gave consent to participate in this study.

The questionnaire included questions on working condition, items to evaluate the stress, check items for the sleep apnea syndrome. The Pittsburgh Sleep Quality Index[1] was used for evaluating the sleep habits.

Results

Fig. 1 shows the distribution of time to fall in sleep (sleep latency). Large numbers of subjects (92%) got to sleep within 30 minutes but 96 subjects (7%) had a long time (over 30 minutes) to asleep.

Fig. 2 shows the distribution of time in sleep (sleep time). 80 subjects (5.8%) showed short sleep time less than 5 hour. 277subjects (20%) reports between 5 to 6 hour of sleep, 505 subjects (36.5%) 6 to 7 hour, 364 subjects (26.3%) 7 to 8 hour and 158 subjects (11%) reports over 8 hour of sleep.

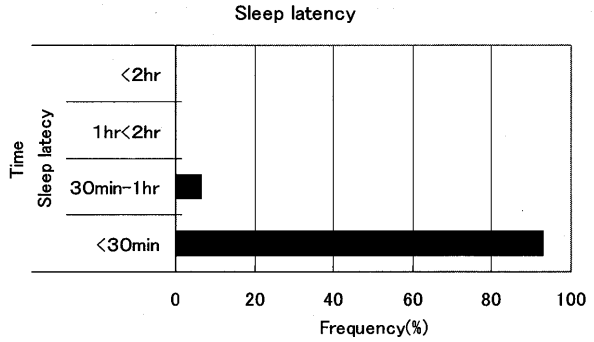

Fig. 1 The distributions of sleep latency
92% subjects in all subjects got to sleep within 30 minutes but for 96 subjects (7%) took a long time to fall asleep (over 30 minutes)

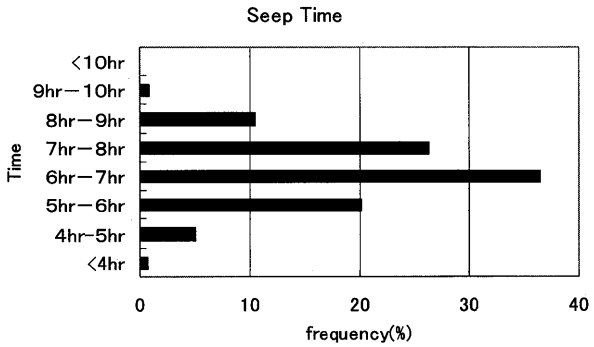

Fig. 2 The distribution of sleep time
80 subjects (5.8%) in all subjects show a short time of sleep less than 5 hour. 277subjects (20%) show a time of 5-6hour, 505 subjects (36.5%) show a time of 6-7hour, 364 subjects (26.3%) show a time of 7-8hour and 158 subjects (11%) show a time of over 8hour

291 subjects (20.8%) had trouble sleeping over 7 days during the month proceeding the day the questionnaire was completed. The reasons of trouble with sleeping were waking up in the middle of the night or early morning, having long time to fall asleep and dozing off in daytimes.

274 subjects (19.5%) had trouble after awaking up for more than 7 days during the month that preceded the day that questionnaire was completed. Reported problems were lack of good sleep, remaining of fatigue, difficulty getting out of bed and having a headache.

Fig. 3 shows the global assessment to sleep, day-time activity and day-time sleepiness. For the sleepiness in day-time, 50 subjects (5%) answered bad or vary bad, 20%-25% subjects answered bad or very bad for the night sleep or day-time activity.

The correlation between global assessments to night sleep and the sleep time are shown in Fig. 4. 42% subjects who had a sleep time less than 6 hour answered their sleep were very bad for the global assessment. A negative correlation was found between sleep time and the global assessment to sleep.

Information on snoring in sleep and/or noticing sleep apnea by family was useful to make diagnosis of sleep apnea syndrome. 75 subjects (5.3%) were pointed out sleep apnea and 69 subjects (4.8%) reported that family

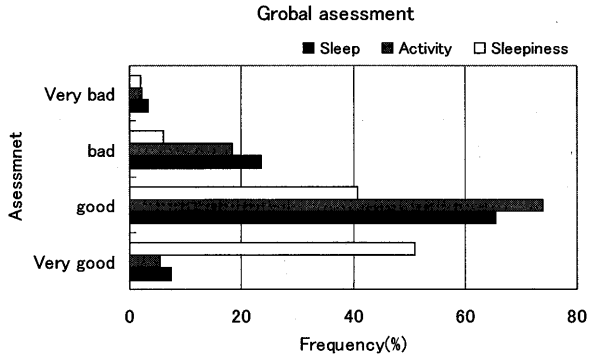

Fig. 3 The global assessment of night sleep (showed in the figure as Sleep), day-time activity (showed in the figure as Activity) and daytime sleepiness (showed in the figure as Sleepiness)
50 subjects (5%) answered bad or very bad to the sleepiness in daytime. But 20%-25% subjects answered bad or very bad to night sleep or daytime activity

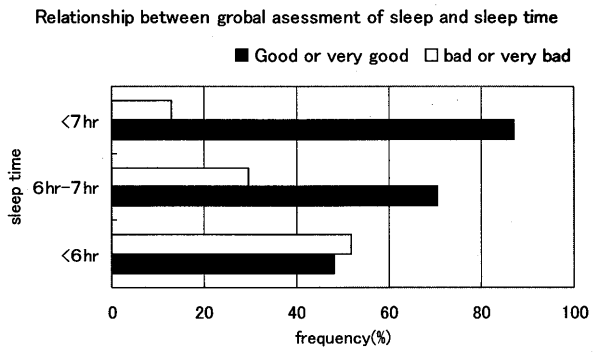

Fig. 4 The correlation between global assessment of sleep and sleep time
42% subjects whose sleep time was less than 6 hour had a tendency to answer that their sleep was bad or very bad

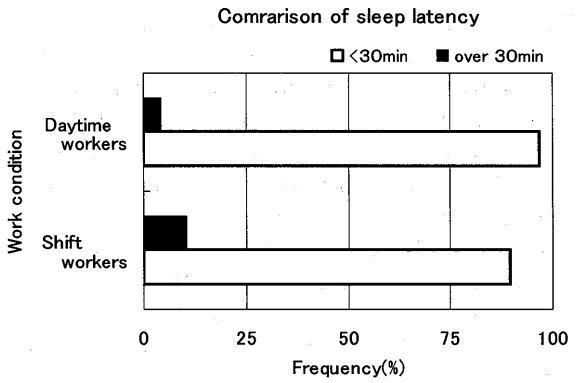

Fig. 5 The comparisons sleep latency between shift workers and day-time workers
The subjects who had long sleep latency of more over 30 minutes were significantly increased in shift workers comparison with day-time workers

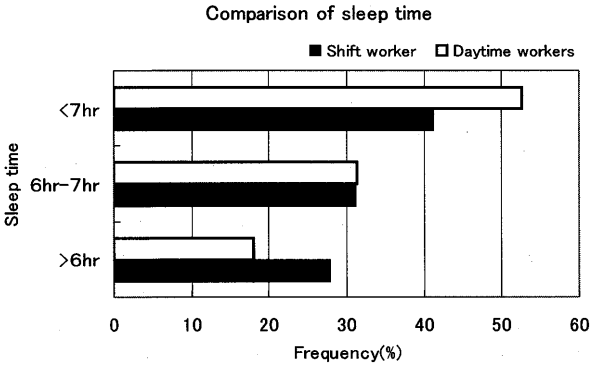

Fig. 6 The comparison of sleep time between shift workers and day-time workers
The subjects who had sleep time of less than 6 hour were significantly increased in shift workers as compared with day-time workers. On the other hand, the subjects who had a sleep time of more than 7 hour were significantly higher among of shift workers as compared with day-time workers

had noticed their snoring.

To the point of stress and global assessment to night sleep, the subjects who reported stress from their duties or work load assessed their night sleep as bad or very bad in global assessment of sleep. A significant negative correlation was found between global assessment of sleep and strength of feeling of stress.

The comparison of sleep latency between shift workers and day-time workers is shown in Fig. 5. The subjects who had long sleep latency of more than 30 minutes were significantly higher in shift workers as compared to day-time workers. The comparison of sleep time between shift workers and day-time workers is showed in Fig. 6. The subjects who had sleep time of less than 6 hour were significantly higher in shift workers in comparison to day-time workers, and subjects who had sleep time of more than 7 hour were significantly decreased against shift workers as compare to day-time workers. The number of subjects who had trouble sleeping over 7 days during the past month was significantly increased compared to among shift workers as to day-time worker (shift works; 27.7%, daytime worker; 15.4%). The number of subjects who had lack of good sleep out of bed was significantly increased in shift workers comparison to that in day-time workers significantly. The number of subjects who had difficulty to leave from bed in shift workers was significantly increased compare to that of daytime workers.

In the point of global assessment to sleep, the number of subjects who assessed their sleep bad or very bad in shift workers was significantly increased compare with that of day-time workers.

Discussion

20% to 25% workers in all subjects reported some troubles in their sleep for the points of sleep latency, sleep time and subjective satisfactions with sleep. Moreover, over 20% of subjects experienced disturbed day-time activities. 20% subjects in all subjects assessed their sleep bad or very bad. These present results pointed that many participants had some problems related to sleep and sleep/awake rhythms. These results were analogue to pre-

vious reports about in general populations[2-5, 8]. The results in this research showed 20%–25% subjects had troubled sleep and had bad evaluation to the quality and quantities of sleep were also analogue previous researches[9].

Our result that 5% of subjects reported snoring in sleep and/or had sleep apnea noticed by family, was the same degree prevalence of high risk for the sleep apnea syndromes who were inspected by the polysomnography (PSG)[6]. Other reports[7] showed that 4.2% male subjects between 50 and 59 years old had sleep apnea in night sleep.

About 10% of subjects reported strong stress related to their work load and qualities of their jobs, family problems, economical problems and somatic troubles. About 20% of subjects in all subjects gave bad and very bad evaluations for the elevation of status and salary.

The global assessment for the sleep was significantly correlated with the assessment for the intensity of stress. Such strong stress might provoke hypertension in limbic system and hypothalamus which might have caused the sleep disorders, sleep/awake disorders and day-time sleepiness.

The subjects who had sleep time of less than 6 hour were significantly higher in shift workers in comparison to day-time workers. The number of subjects who had trouble sleeping, lack of good sleep out of bed and difficulty to leave from bed over 7 days during the past month was significantly increased in shift workers comparison to that in day-time workers.

The number of subjects who assessed their sleep bad or very bad in shift workers was significantly increased compare with that of day-time workers. Our results suggested that labors on shift condition have poor and dissatisfaction to sleep. And these results indicated the significance of countermeasures to raise the mental health of shift workers for an occupational heath point of view.

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