

SLEEPING DISTURBANCE AMONG FAMILY MEDICINE AND EMERGENCY MEDICINE PHYSICIANS AT PRINCE SALMAN ARMED FORCES HOSPITAL IN TABUK CITY

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ABSTRACT

Background: Difficulty in sleeping under stressor due to various living style needs appears to be a great risk factor for physical and mental health status. Physicians are a population that appears to be at increased risk for sleep deprivation due to demanding academic and clinical duties.

Aims & Objective: To estimate the prevalence of different forms of sleeping disturbance and determine its associated factors among family medicine and emergency medicine (ER) physicians at military hospital in Tabuk.

Materials and Methods: A cross-sectional analytical study was adopted. All Family medicine (n=80) and ER (n=25) physician in Prince Salman Armed Forces hospital in Tabuk, KSA were invited to participate in the study. A validated questionnaire was used based on Pittsburgh Sleep Quality Index (PSQI) and Pittsburg Insomnia Symptoms questionnaire. It differentiates "poor" from "good" sleep by measuring seven areas: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction over the last month.

Results: The study included 92 physicians out of 105 invited to participate in the study, giving a response rate of 87.6%. Their age ranged between 26 and 55 years with a mean of 34.3 years and standard deviation of 5.4 years. Males represent almost two-thirds of them (64.1%). Most of them (78.3%) were poor sleepers during the past month, based on Global PSQI Score. Sleep complaints were reported by 77.2% of the participants. Of them, 18.5% suffered from difficulty falling asleep. Difficulty staying asleep and frequent awakening from sleep were reported as frequent or always complaints by 10.9% and 18.5% of them, respectively. Feeling that sleep is not sound and it is unrefreshing were mentioned frequently or always by 18.4% and 26.1% of them, respectively. Sleep complaints had extreme impact on concentration and caused extreme sleepy feeling during the day among 7% of physicians.

Conclusion: Poor sleep quality is a common problem affecting most of physicians in Prince Salman Armed Forces hospital in Tabuk, KSA. It is more reported among ER physicians than family physicians. Sleep complaints have consequences on physician's work, social and other important parts of life. They are significantly associated with irritability, sleepy during the day and fatigue feelings as well as trouble in concentration.

Key Words: Sleep Quality; Pittsburgh Sleep Quality Index; Family Physician; Emergency Room; Saudi Arabia

Introduction

Sleeping disturbance or insomnia is defined as repeated difficulty with the initiation, duration, maintenance, or quality of sleep that occurs despite adequate time and opportunity for sleep and results in some form of daytime impairment.^[1] Disturbed sleep has been considered a mechanism that is likely involved in the development of the burnout syndrome symptomatology, which is understood as the chronic depletion of an individual's energy resources.^[2,3]

In recognition of the importance of sleep to the nation's health, CDC surveillance of sleep-related behaviours has increased in recent years. Additionally, the Institute of Medicine encouraged collaboration between CDC and the National Center on Sleep Disorders Research to support development and expansion of adequate surveillance of the U.S. population's sleep patterns and associated

outcomes. Two new reports on the prevalence of unhealthy sleep behaviours and self-reported sleep-related difficulties among U.S. adults provide further evidence that insufficient sleep is an important public health concern.^[4]

Sleep is increasingly recognized as important to public health, with sleep insufficiency linked to motor vehicle crashes, industrial disasters, and medical and other occupational errors.^[5] Unintentionally falling asleep and having difficulty performing daily tasks because of sleepiness may contribute to these hazardous outcomes. Persons experiencing sleep insufficiency are also more likely to suffer from chronic diseases such as hypertension, diabetes, depression, and obesity, as well as from cancer, increased mortality, and reduced quality of life and productivity.^[5] Sleep insufficiency may be caused by broad scale societal factors such as round-the-clock access to technology and work schedules, but sleep disorders such as insomnia or obstructive sleep apnea also play an

important role.^[5] An estimated 50-70 million US adults have sleep or wakefulness disorder.^[5]

Difficulty in sleeping under stressor due to various living style needs appears to be a great risk factor for physical and mental health status, At first glance; low sleep may result in over activity and increase productivity, but in long term lack of sufficient sleep may lead to psychological distress and low productivity.^[6] Study recruiting healthy samples revealed that even low levels of sleepiness have an adverse influence on general health.^[7] Studies have demonstrated that poor sleep quality, sleep disruption and change in regular Sleep-wake pattern may cause physical and psychological burden such as impairment in job performance, decreased work efficiency and learning disability.^[8-13] For example, Partinen et al reported an association between Inadequate sleep and cardiovascular disease and mortality.^[14,15]

Family medicine physicians is a populations that appears to be at increased risk for sleep deprivation due to demanding academic and clinical duties which in coexistent with change in living style such as poor accommodation, being away from family put them at greater risk of poor sleeping and its subsequent mental and physical morbidity. A long prospective study at the John Hopkins University showed that insomnia during medical school is indicative of a subsequent depression and other psychiatric distress persisting at least for 30 years.^[16]

Emergency medicine (EM) is a unique specialty whose focus is upon providing a breadth of acute care whenever it is needed.^[17-19] Because emergencies happen at any time of the day or night and require immediate expert care, shiftwork is an essential component of EM practice around the world. Unfortunately, shiftwork has deleterious effects on individuals, organizations and communities. It is a serious concern for health care providers, a risk factor for many diseases^[20-23], and one of the main reasons physicians leave emergency practice; consequently, it threatens the viability of EM as a medical specialty.^[24-29]

This study aimed to evaluate sleeping disturbance among family medicine and emergency medicine physicians in Tabuk, KSA.

Materials and Methods

This is a cross-sectional study included all family medicine and emergency medicine physicians working in Prince Salman Armed Forces Hospital in Tabuk, 2013. Estimated number is 80 family medicine physicians and 25

emergency medicine physicians. Prince Salman Armed Forces hospital in Tabuk, KSA. Health Care provision started in Tabuk area since 1375H at a dispensary level. The first hospital started its operation in the North West area in 1960G and in Tabuk by the year 1964 with 100 beds initially and later increase up to 150 beds. Today, the bed capacity in Prince Salman Armed Forces Hospital is 624 providing primary, secondary and tertiary care. Prince Salman Armed Forces Hospital came to be known not only as a good health care provider but also the best educational training center for medical and paramedical activities in the region.

A validated questionnaire was used based on Pittsburgh Sleep Quality Index (PSQI) and Pittsburg Insomnia Symptoms questionnaire. The study questionnaire is composed of demographic and personal characteristic of family medicine and ER physicians (age, gender, department, position, marital status, smoking status, taking sedatives or stimulant medications, past medical history and past psychiatric disorders and PSQI. This measures the quality and patterns of sleep. It differentiates "poor" from "good" sleep by measuring seven areas: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction over the last month. Scoring of answers is based on a 0 to 3 scale, whereby 3 reflect the negative extreme on the Likert Scale. A global sum of "5" or greater indicates a "poor" sleeper. Reliability and validity of PSQI produced a sensitivity of 89.6% and a specificity of 86.5% of patients versus control subjects. This cutoff score correctly identified 84% of patients with disorders of initiating or maintaining sleep, 89% of patients with disorders of excessive sleepiness, and 97% of depressed patients.^[30,31]

The main tool of the study was a self-administered questionnaire with a cover letter explaining the purpose of the study without mentioning names to ensure confidentiality. The questionnaires were distributed to family and ER physicians by the researcher himself hand to hand during their break and then recollected in the same way either immediately or after a period of time with follow up through phone or e-mail to those who were not responding within a week.

Data Entry and Analysis

Data entry and analysis was performed using the Statistical Package for Social Sciences (SPSS version 20.0) software. Descriptive statistics were computed in the form of frequency and percentage for categorical data and in the form of measures of central tendency (mean, median and

mean rank) and measures of dispersion (standard deviation "SD" and inter-quartile range "IQR") for continuous variables. Analytic statistics were computed where chi-square test was utilized to test for the association and/or difference between categorical variables. Fisher exact test was applied for small frequencies. Kolomongrove-Smironove (K-S test) test was performed for PSQI score to test its normal distribution. The data were abnormally distributed as evidenced by significant K-S test. Therefore, non-parametric statistical tests were applied. Mann Whitney statistical test was utilized for comparison of two groups and Kruskal-Wallis test for comparison of more than two groups. Differences were considered as statistically significant when the p-value is less than 0.05.

The researcher conducted a pilot study on ten family medicine physicians and 5 ER physicians. It helped in adaptation and modification of the study tool and methodology. Data of the pilot study was included in the actual study as there was no significant variation found with the actual study. Approval of Medical director, Prince Salman Armed Forces Hospital and heads of Family Medicine and ER departments were obtained. All collected data were kept confidential. Verbal consent was obtained from each participant.

Results

The study included 92 physicians out of 105 invited to participate in the study, giving a response rate of 87.6%. The response rate was higher among family physicians [73 out of 80 (91.3%)] than ER physicians [19 out of 25 (76%)].

Baseline Characteristics of the Physicians: Table 1 presents the baseline characteristics of the physicians who participated in the study. Their age ranged between 26 and 55 years with a mean of 34.3 years and standard deviation of 5.4 years. Males represent almost two-thirds of them (64.1%). Most of them were from family medicine department (79.3%). More than half of them (51.1%) were registrars. Most of them (81.5%) were married. Smoking history was reported by 14.1% of the physicians. Six physicians (6.5%) reported history of taking any sedative or stimulant medications. Almost one-third of physicians (29.3%) had a history of chronic diseases.

Sleep Quality: As evident from figure 1, 56.2% of physicians described their sleep quality during the past month as fairly good while 12.0% and 7.6% described it as fairly bad and very bad, respectively. As shown in table 2,

female physicians had better sleep quality than male physicians (mean rank was 60.2 versus 49.0). This difference was statistically significant, $p=0.029$. Family medicine physicians had better sleep quality than ER physicians (mean ranks were 56.5 and 42.9, respectively, $p=0.039$). Senior registrars had the highest score of sleep quality (mean rank=53.6) while registrars had the lowest score (mean rank=44.9). This difference was statistically significant, $p=0.043$. Non-smokers had better sleep quality than smokers (mean rank was 57.9 versus 43.3). This difference was statistically significant, $p=0.040$. Other studied factors (age, marital status, history of taking sedative or stimulant medications and history of chronic diseases) were not significantly associated with sleep quality during the past month among physicians.

Sleep Latency: As shown in figure 2, sleep latency ranged between 15 and 30 minutes among 42.4% of physicians while it was more than one hour among 8.7% of them. History of taking sedative or stimulant medications was associated lower duration of sleep latency (mean rank was 81.3 among those with history of taking sedative versus 53.8 among those who did not take sedatives). This difference was statistically significant, $p=0.002$. Other studied factors (age, gender, speciality, marital status, position, history of smoking, and history of chronic diseases) were not significantly associated with sleep latency during the past month among physicians. Table 3

Sleep Duration: Figure 3 shows that almost one-fifth of physicians (22.8%) reported sleep duration of less than 5 hours and almost one-third of them (34.8%) reported sleep duration ranged between 5 and 6 years. All studied factors (age, gender, speciality, marital status, position, history of smoking, history of taking sedative or stimulant medications and history of chronic diseases) were not significantly associated with sleep duration during the past month among physicians.

Habitual Sleep Efficiency: As illustrated in figure 4, habitual sleep efficiency was less than 65% among 4.3% of physicians while it was more than 85% among more than half of them (53.3%). None of the studied factors (age, gender, speciality, marital status, position, history of smoking, history of taking sedative or stimulant medications and history of chronic diseases) were significantly associated with habitual sleep efficiency during the past month among physicians.

Sleep Disturbances: It is demonstrated in figure 5 that most of physicians (76.1%) reported mild sleep disturbances and 10.9% reported moderate sleep

disturbances while none of them reported severe sleep disturbances. Twelve physicians (13.0%) did not report any sleep disturbances during the past month. None of the studied factors (age, gender, speciality, marital status, position, history of smoking, history of taking sedative or stimulant medications and history of chronic diseases) were significantly associated with habitual sleep efficiency during the past month among physicians.

Use of Sleep Medication: It is obvious from figure 6 that most of physicians (88.0%) reported no use of sleep medications while 8.7% and 3.3% of them reported usage of sleep medications in a dose of less than once per week and once or twice weekly, respectively. Physicians with history of chronic illness tended to less use of sleep medication compared to those without history of chronic illness (mean ranks were 56.1 versus 47.9). This difference was statistically significant, $p=0.039$. Other studied factors (age, gender, speciality, marital status, position, history of smoking, history of taking sedative or stimulant medications and history of chronic diseases) were not significantly associated with use of sleep medications during the past month among physicians. (Table 4)

Daytime Dysfunction: As displayed from figure 7, almost one-third of physicians (32.6%) had no daytime dysfunction while 42.4%, 19.6% and 5.4% of them reported mild, moderate and severe daytime dysfunction, respectively. Table 5 shows that family medicine physicians (mean rank=64.5) reported more daytime dysfunction than ER physicians (mean rank=48.5). This difference was statistically significant, $p=0.012$. In addition, registrars reported more daytime dysfunction than consultants (mean rank = 60.2 versus 41.9). This difference was statistically significant, $p=0.008$ (56.1 versus 47.9). This difference was statistically significant, $p=0.039$. Other studied factors (age, gender, marital status, position, history of smoking, history of taking sedative or stimulant medications and history of chronic diseases) were not significantly associated with daytime dysfunction during the past month among physicians.

Overall Sleep Quality: As shown in figure 8, most of physicians in Prince Salman Armed Forces Hospital in Tabuk City (78.3%) were poor sleepers during the past month, based on Global PSQI Score. Table 6 shows that ER physicians reported poor sleep quality more than family medicine physicians (94.7% versus 74%, $p=0.041$). None of the other studied factors (age, gender, marital status, position, history of smoking, history of taking sedative or stimulant medications and history of chronic diseases) were not significantly associated with overall sleep quality.

Table-1: Baseline characteristics of physicians (n=92)

| Characteristics | Frequency | Percent | |
|-----------------|------------------|------------|------|
| Age (Years) | <35 | 53 | 57.6 |
| | ≥35 | 39 | 42.4 |
| | Range | 26 – 55 | |
| | Mean ± SD | 34.3 ± 5.4 | |
| Gender | Male | 59 | 64.1 |
| | Female | 33 | 35.9 |
| Speciality | Family Medicine | 73 | 79.3 |
| | Emergency room | 19 | 20.7 |
| Position | Consultant | 9 | 9.8 |
| | Senior registrar | 24 | 26.1 |
| | Registrar | 47 | 51.1 |
| | Resident | 12 | 13 |
| Marital Status | Single | 17 | 18.5 |
| | Married | 75 | 81.5 |

Table-2: Factors associated with sleep quality in the past month among physicians

| Factors | Score of sleep Quality (0-3) | | | p-value | |
|--|------------------------------|-----|-----------|---------|---------|
| | Median | IQR | Mean Rank | | |
| Age (years) | <35 (n=53) | 1 | 1-1 | 51.6 | 0.753* |
| | ≥35 (n=39) | 1 | 1-1 | 52.9 | |
| Gender | Male (n=59) | 1 | 0-1 | 49 | 0.029* |
| | Female (n=33) | 1 | 1-2 | 60.2 | |
| Speciality | Family medicine (n=73) | 1 | 1-2 | 56.5 | 0.039* |
| | ER (n=19) | 1 | 1-1 | 42.9 | |
| Marital status | Single (n=17) | 1 | 0-1 | 51.3 | 0.498* |
| | Married (n=75) | 1 | 1-1 | 52.7 | |
| | Consultant (n=9) | 1 | 1-1 | 51.1 | |
| Position | Senior registrar (n=24) | 1 | 1-1 | 53.6 | 0.043** |
| | Registrar (n=47) | 1 | 0-1 | 44.9 | |
| | Resident (n=12) | 1 | 1-1 | 49.7 | |
| Smoking | Yes (n=13) | 1 | 0-1 | 43.3 | 0.040* |
| | No (n=79) | 1 | 1-1 | 57.9 | |
| Taking sedative or stimulant medications | Yes (n=6) | 1 | 0.75-2.25 | 59.6 | 0.521* |
| | No (n=86) | 1 | 1-1 | 53.4 | |
| History of chronic diseases | Yes (n=27) | 1 | 1-1 | 51.6 | 0.627* |
| | No (n=65) | 1 | 1-1 | 52.8 | |

* Mann-Whitney test; ** Kruskal-Wallis test; IQR: Inter-quartile range

Table-3: Factors associated with sleep latency in the past month among physicians

| Factors | Score of sleep Latency (0-3) | | | p-value | |
|--|------------------------------|-----|-----------|---------|---------|
| | Median | IQR | Mean Rank | | |
| Age (years) | <35 (n=53) | 1 | 1-2 | 51.9 | 0.831* |
| | ≥35 (n=39) | 1 | 1-2 | 54.1 | |
| Gender | Male (n=59) | 1 | 1-2 | 52.2 | 0.211* |
| | Female (n=33) | 1 | 1-2 | 57 | |
| Speciality | Family medicine (n=73) | 1 | 1-2 | 52.7 | 0.895* |
| | ER (n=19) | 1 | 1-2 | 52.6 | |
| Marital status | Single (n=17) | 1 | 1-2 | 53.7 | 0.703* |
| | Married (n=75) | 1 | 1-2 | 52.9 | |
| | Consultant (n=9) | 1 | 1-2 | 56.9 | |
| Position | Senior registrar (n=24) | 1 | 1-2 | 49.5 | 0.175** |
| | Registrar (n=47) | 1 | 1-2 | 53.2 | |
| | Resident (n=12) | 1 | 1-2 | 52.9 | |
| Smoking | Yes (n=13) | 1 | 1-3 | 60.3 | 0.328* |
| | No (n=79) | 1 | 1-2 | 54.9 | |
| Taking sedative or stimulant medications | Yes (n=6) | 2 | 2-3 | 81.3 | 0.002* |
| | No (n=86) | 1 | 1-2 | 53.8 | |
| History of chronic diseases | Yes (n=27) | 1 | 1-2 | 50.1 | 0.428* |
| | No (n=65) | 1 | 1-2 | 54.5 | |

* Mann-Whitney test; ** Kruskal-Wallis test; IQR: Inter-quartile range

Sleep Complaints: Sleep complaints were reported by 77.2% of physicians (family medicine and ER) in Prince

Table-4: Factors associated with use of sleep medication

| Factors | Score of use of sleep medication (0-3) | | | p-value | |
|--|--|-----|-----------|---------|---------|
| | Median | IQR | Mean Rank | | |
| Age (years) | <35 (n=53) | 0 | 0-0 | 52.6 | 0.899* |
| | ≥35 (n=39) | 0 | 0-0 | 53.1 | |
| Gender | Male (n=59) | 0 | 0-0 | 52.9 | 0.401* |
| | Female (n=33) | 0 | 0-0 | 50.1 | |
| Speciality | Family medicine (n=73) | 0 | 0-0 | 49.3 | 0.297** |
| | ER (n=19) | 0 | 0-0 | 50.8 | |
| Marital status | Single (n=17) | 0 | 0-0 | 50.4 | 0.399* |
| | Married (n=75) | 0 | 0-0 | 52.7 | |
| Position | Consultant (n=9) | 0 | 0-0 | 53.5 | 0.688** |
| | Senior registrar (n=24) | 0 | 0-0 | 52 | |
| | Registrar (n=47) | 0 | 0-0 | 54.9 | |
| | Resident (n=12) | 0 | 0-0 | 50.7 | |
| Smoking | Yes (n=13) | 0 | 0-0 | 52.2 | 0.768* |
| | No (n=79) | 0 | 0-0 | 53 | |
| Taking sedative or stimulant medications | Yes (n=6) | 0 | 0-0 | 47.9 | 0.039* |
| | No (n=86) | 0 | 0-0 | 56.1 | |
| History of chronic diseases | Yes (n=27) | 0 | 0-0 | 48.2 | 0.328 |
| | No (n=65) | 0 | 0-0 | 52 | |

* Mann-Whitney test; ** Kruskal-Wallis test; IQR: Inter-quartile range

Table-5: Factors associated with daytime dysfunction

| Factors | Score of daytime dysfunction (0-3) | | | p-value | |
|--|------------------------------------|-----|-----------|---------|---------|
| | Median | IQR | Mean Rank | | |
| Age (years) | <35 (n=53) | 1 | 0-2 | 53.6 | 0.542* |
| | ≥35 (n=39) | 1 | 0-1 | 51.3 | |
| Gender | Male (n=59) | 1 | 0-1 | 52.5 | 0.985* |
| | Female (n=33) | 0 | 0-2 | 52.3 | |
| Speciality | Family medicine (n=73) | 1 | 0-2 | 64.5 | 0.012* |
| | ER (n=19) | 1 | 0-1 | 48.5 | |
| Marital status | Single (n=17) | 1 | 0-1.75 | 55.2 | 0.601* |
| | Married (n=75) | 1 | 0-1 | 52.3 | |
| | Consultant (n=9) | 1 | 1-2 | 41.9 | |
| Position | Senior registrar (n=24) | 1 | 1-2 | 45.1 | 0.008** |
| | Registrar (n=47) | 0 | 0-1 | 60.2 | |
| | Resident (n=12) | 1 | 1-2 | 49.2 | |
| Smoking | Yes (n=13) | 1 | 0-1.5 | 50.5 | 0.686* |
| | No (n=79) | 1 | 0-1 | 52.5 | |
| Taking sedative or stimulant medications | Yes (n=6) | 1.5 | 0.75-2 | 62.3 | 0.376* |
| | No (n=86) | 1 | 0-1 | 52 | |
| History of chronic diseases | Yes (n=27) | 1 | 0-1 | 48.2 | 0.407* |
| | No (n=65) | 1 | 0-2 | 54.5 | |

* Mann-Whitney test; ** Kruskal-Wallis test; IQR: Inter-quartile range

Table-6: Factors associated with overall sleep quality

| Factors | Overall Sleep Quality | | χ ² | |
|--|-------------------------|-------------|----------------|--------|
| | Good (N=20) | Poor (N=72) | | |
| Age (years) | <35 (n=53) | 13 (24.5) | 40 (75.5) | 0.449 |
| | ≥35 (n=39) | 7 (17.9) | 32 (82.1) | |
| Gender | Male (n=59) | 11 (18.6) | 48 (81.4) | 0.336 |
| | Female (n=33) | 9 (27.3) | 24 (72.7) | |
| Speciality | Family medicine (n=73) | 19 (26.0) | 54 (74.0) | 0.041* |
| | ER (n=19) | 1 (5.3) | 18 (94.7) | |
| Marital status | Single (n=17) | 4 (23.5) | 13 (76.5) | 0.535* |
| | Married (n=75) | 16 (21.3) | 59 (78.7) | |
| | Consultant (n=9) | 3 (33.3) | 6 (66.7) | |
| Position | Senior registrar (n=24) | 4 (16.7) | 20 (83.3) | 0.722 |
| | Registrar (n=47) | 11 (23.4) | 36 (76.6) | |
| | Resident (n=12) | 2 (16.7) | 10 (83.3) | |
| Smoking | Yes (n=13) | 4 (30.8) | 9 (69.2) | 0.299* |
| | No (n=79) | 16 (20.3) | 63 (79.7) | |
| Taking sedative or stimulant medications | Yes (n=6) | 1 (16.7) | 5 (83.3) | 0.612* |
| | No (n=86) | 19 (22.1) | 67 (77.9) | |
| History of chronic diseases | Yes (n=27) | 5 (18.5) | 22 (81.5) | 0.629 |
| | No (n=65) | 15 (23.1) | 50 (76.9) | |

* Fisher exact test

Table-7: Sleep complaints among physicians

| | Never/ do not know N (%) | Rarely N (%) | Sometimes N (%) | Frequently N (%) | Always N (%) |
|------------------------------------|-----------------------------|-----------------|--------------------|---------------------|-----------------|
| Difficulty falling asleep | 39 (42.3) | 26 (28.3) | 10 (10.9) | 9 (9.8) | 8 (8.7) |
| Difficulty staying asleep | 36 (39.1) | 22 (23.8) | 14 (15.2) | 7 (7.6) | 3 (3.3) |
| Frequent awakening from sleep | 43 (46.8) | 20 (21.7) | 12 (13.0) | 9 (9.8) | 8 (8.7) |
| Felling that sleep is not sound | 46 (50.0) | 12 (13.0) | 17 (18.6) | 12 (13.0) | 5 (5.4) |
| Felling that sleep is unrefreshing | 31 (33.7) | 17 (18.5) | 20 (21.7) | 18 (19.6) | 6 (6.5) |

Table 8: Affection of daily life by sleep complaints among physicians

| | Not at all N (%) | A little bit N (%) | Moderately N (%) | Quite a bit N (%) | Extremely N (%) |
|---|---------------------|-----------------------|---------------------|----------------------|--------------------|
| Botheing effect | 10 (14.1) | 27 (38.0) | 20 (28.2) | 7 (9.9) | 7 (9.9) |
| Impact on Work | 16 (22.5) | 20 (28.2) | 22 (31.0) | 6 (8.5) | 7 (9.9) |
| Impact on social life | 21 (29.6) | 24 (33.8) | 13 (18.3) | 11 (15.5) | 2 (2.8) |
| Impact on other important parts of life | 22 (31.0) | 20 (28.2) | 23 (32.4) | 4 (5.6) | 2 (2.8) |
| Irritability feeling | 19 (26.8) | 19 (26.8) | 13 (18.3) | 12 (16.9) | 8 (11.3) |
| Trouble in concentration | 10 (14.1) | 25 (35.2) | 19 (26.8) | 12 (16.9) | 5 (7.0) |
| Feeling fatigue | 5 (7.0) | 24 (33.8) | 20 (28.2) | 13 (18.3) | 9 (12.7) |
| Sleepy feeling during the day | 8 (11.3) | 26 (36.6) | 26 (36.6) | 6 (8.5) | 5 (7.0) |

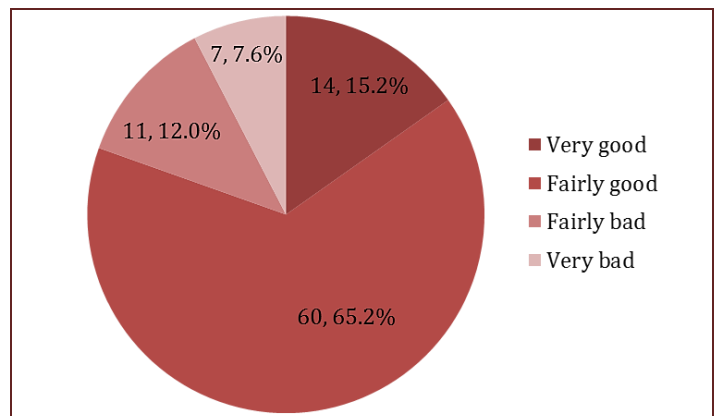


Figure-1: Sleep quality during the past month among physicians

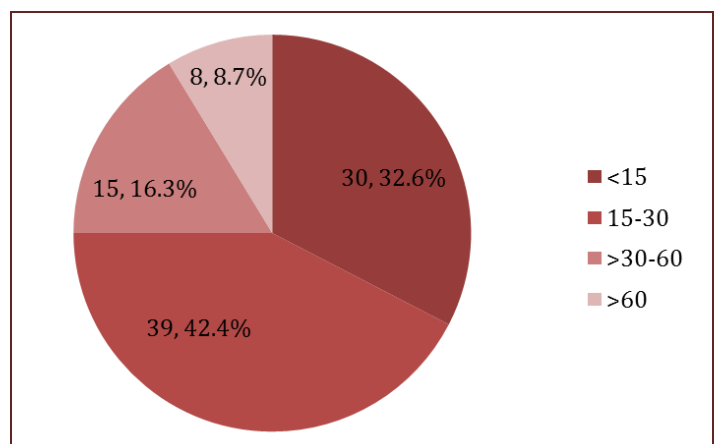


Figure-2: Sleep latency in minutes during the past month among physicians

Salman Armed Forces Hospital in Tabuk City. Table 7 shows that among those who reported sleep complaints, 18.5% suffered frequently or always from difficulty falling asleep. Difficulty staying asleep and frequent awakening

from sleep were reported as frequent or always complaints by 10.9% and 18.5% of them, respectively. Feelings that sleep is not sound and it is unrefreshing were mentioned frequently or always by 18.4% and 26.1% of physicians who reported sleep complaints, respectively.

sleep complaints. Nine physicians of those reported sleep complaints (12.7%) reported extreme fatigue and eight of them (11.3%) reported extreme irritability.

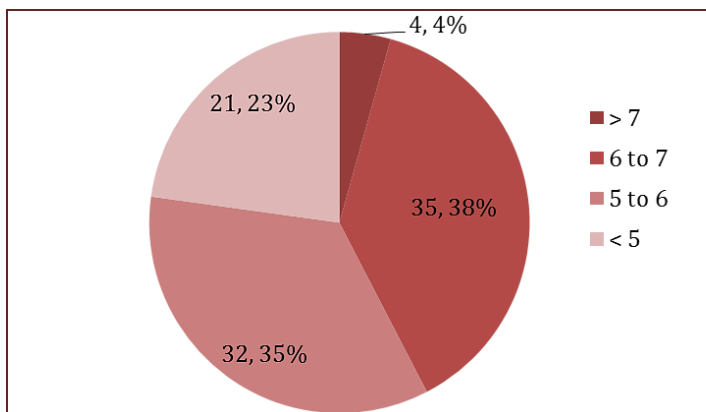


Figure-3: Sleep duration in hours during the past month among physicians

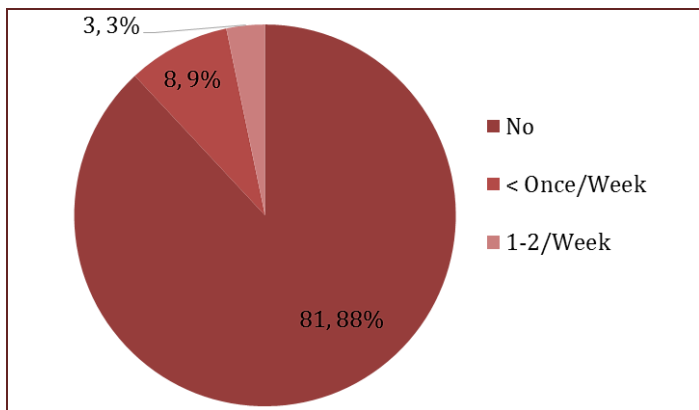


Figure-6: Use of sleep medication during the past month among physicians

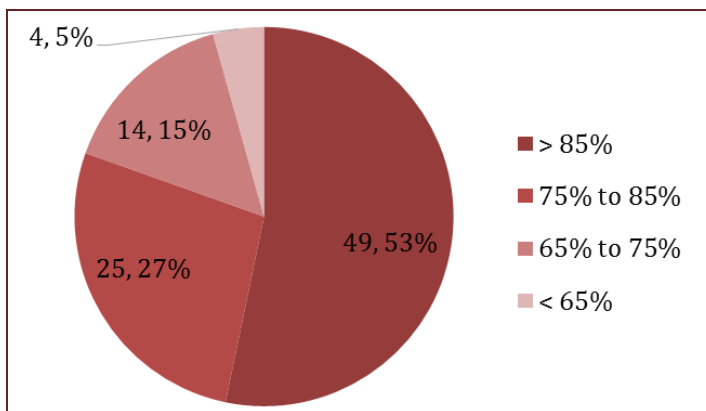


Figure-4: Habitual sleep efficiency during the past month among physicians

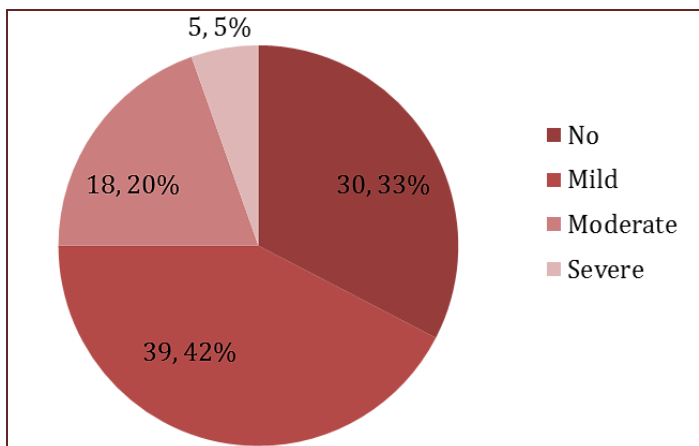


Figure-7: Daytime dysfunction during the past month among physicians

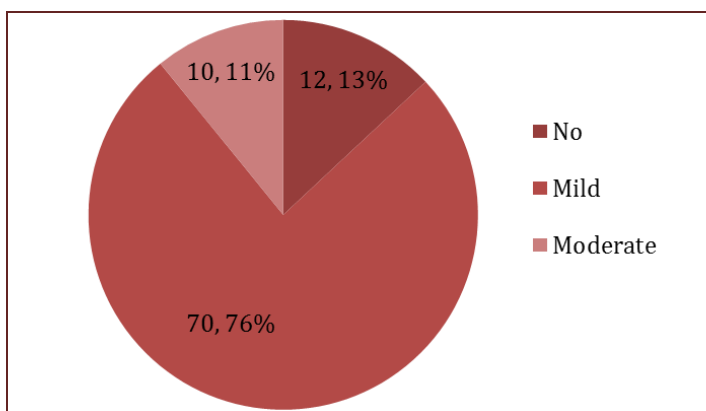


Figure-5: Sleep disturbance during the past month among physicians

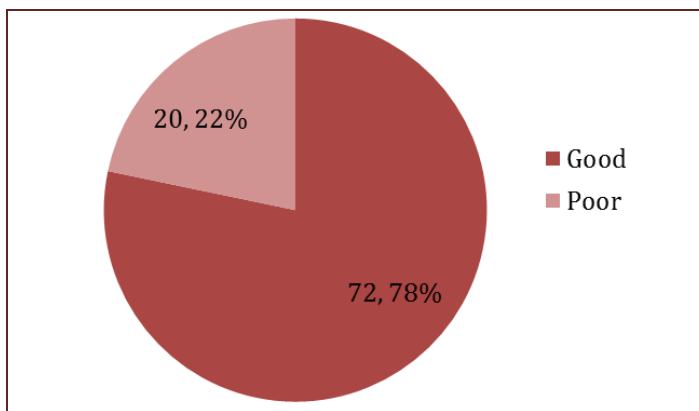


Figure-8: Sleep disturbance during the past month among physicians

Impact of Sleep Complaints on Daily Life: Sleep complaints had extreme bothering effect and impact on work of 9.9% of physicians who reported sleep complaints while they had extreme effect on social life and other important parts of life of only 2.8% of them. They had extreme impact on concentration and caused sleepy feeling during the day among 7.0% of physicians who reported

Discussion

The homeostatic and circadian processes of the sleep-wake cycle in physicians are challenged by the number of consecutive work hours, interruption of sleep from pagers and phone calls, inadequate sleep recovery, and shift work.^[32] The consequences are acute and chronic sleep deprivation and poor sleep quality, with concomitant

deterioration in performance and patient safety.^[32]

In the present study, almost 78.3% of the physicians reported poor sleep quality. There may be several explanations for this poor sleep quality among them. It has been hypothesized that physicians, particularly newly graduated, have difficulties unwinding after working hours.^[33] In addition, it has been found that individuals with insomnia tend to think excessively about their sleep and the consequences for the next day if they do not get enough sleep.^[34,35] This represents a hyperactive state, which may involve increased activation of the hypothalamic–pituitary–adrenal (HPA) axis, resulting in a chronic allostatic load.^[36] In this regard, Melamed et al.^[37] suggested that the link between burnout documented among physicians and sleep disturbances may be mediated by a disturbance of the HPA axis, which is considered the central stress–physiological system for an organism's long-term adaptation to stress.^[38] Other researches showed similar results.^[39,40]

Evidence points toward impaired performance, cognition, mood and overall well-being and safety among physicians.^[41] There appears to be a dose-response relationship between number of hours of acute sleep debt and these impairment. Chronic partial sleep deprivation causes similar consequences on mood, cognition and motor skills.^[41] The adverse effects may accumulate dangerously overtime with inadequate recovery sleep. In the present study, we failed to confirm an effect of physician's age on sleep quality.

In a study involving 149 physicians from 5 US academic medical centers and 6 different specialties, multiple adverse effects of sleep loss on the ability to learn or think, cognitive function, attention, professionalism, and task performances were described.^[42] Physicians felt a lack of motivations to learn, as well as an impairment in their short- and long- term acquisition of knowledge and high-order thinking skills pertaining to medical decision making. The subjects also admitted to feeling moderately sleepy during teaching grand rounds. Most physicians expressed frequent concerns about errors in patient's care, such as misdiagnoses, not entering relevant information in the patient's record, writing prescriptions with incorrect dosages, or prescribing medications to the wrong patient. In the present study, sleep complaints had extreme bothering effect and impact on work of 9.9% of physicians who reported sleep complaints. They had extreme impact on concentration and caused sleepy feeling during the day among 7.0% of physicians who reported sleep complaints. Extreme fatigue and irritability were reported by more than 11.3% of physicians who had sleep complaints.

Shift work, which is common in the medical field, poses health risks and concerns for practicing physicians. Various studies have shown an increased mortality rates, as well as other negative health consequences associated with shift work and sleep deprivation.^[43]

In a recent survey of emergency medicine physicians, 89% reported use of caffeine during their night shifts, with more than half of them using it an every night shifts. Thirty-eight percent reported using sedatives to fall asleep after their night shift.^[44] Other studies^[45,46] demonstrated the negative effects of sleep deprivation coupled with circadian-process changes associated with work shift. In the present study, residents and registrars had night shifts and this could explain the higher score of daytime sleeping among them than consultants and senior registrars. In addition, 12% of physicians reported using of sedative or stimulant medications.

The existing literature that largely assesses the effects of sleep deprivation among physicians is methodologically limited, as most are survey studies that are prone to recall bias. It is difficult to ascertain the degree to which the adverse effects and impairments are attributable to sleep loss or scheduling factors resulting in physicians having to work during their natural sleep time. Although there is some conflicting evidence as to whether actual sleep deprivation or circadian process disturbances are responsible for the commission of medical errors, overall the data suggest that there is a deleterious effect of long work hours and shift-work on numerous physician-and patient-related outcomes.^[42,45-47] In accordance with these studies, in the present work, most of physicians who had sleep complaints reported fatigue, irritability and trouble concentration, regardless their frequency.

Papp, et al reported in their study that most physicians felt that sleep complaints adversely affected their physical and psychological health and mood. In addition, they perceived lack of time for activities of daily living and leisure. They described difficulties in starting or maintaining relationship and being effective parents during their training period. Also, in their survey, physicians reported being more irritable with their children and feeling guilty about not spending enough time with them.^[42] In accordance with these findings, the present study revealed that almost two-thirds of physicians who had sleep complaints reported adverse impact on their social and other important parts of life.

The present research has its strengths and limitations. The most notable strength is that the study population

constituted all Family medicine and ER physicians in Prince Salman Armed Forces Hospital in Tabuk, KSA. In addition, the participation rate (87.6%) of the present study is quite high, given that values in surveys among physicians are around 50%^[48,49] or even lower^[50]. This suggests that selection bias in the study is limited, and that we may generalize our conclusions. In contrast, an important limitation is the cross-sectional design of the study, which precludes evaluation of the temporality and causality of the observed relationships. Another limitation is that data were collected by means of self-reports. However, empirical research has indicated that self-report measures of insomnia are highly correlated with objective measures such as polysomnography or actigraphy.^[51]

Conclusion

Conclusively, Poor sleep quality is a common problem affecting most of physicians in Prince Salman Armed Force Hospital in Tabuk, KSA. It is more reported among ER physicians than family physicians. There is no difference between them regarding age, sex, position, marital status, smoking history, taking sedatives or stimulant medications and history of chronic diseases. Sleep complaints have consequences on physician's work, social and other important parts of life. They are significantly associated with irritability, sleepy during the day and fatigue feelings as well as trouble in concentration.

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