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Socio-demographic and life style determinants of insomnia among adult patients attending primary healthcare centers, Jeddah

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Abstract

Background: Insomnia is the most prevalent sleep disorder. However, 40% of primary health care (PHC) physicians think that sleep disorders are not common.

Objectives: To assess the association between socio-demographic and lifestyle determinants in one hand and the occurrence of insomnia in another hand.

Methodology: This is a cross-sectional study conducted in 10 PHC centers of Jeddah City. A total of 378 adult participants were interviewed by a questionnaire was used for data collection. The questionnaire included questions about sociodemographic characteristics and life style factors. In addition to the Pittsburgh Sleep Quality Index and the Insomnia Severity Index.

Results: More than half of participants (51.1%) had poor sleep quality. In addition, highest prevalence of poor sleep quality was observed among those who perform physical exercise 4 times or more weekly (67.3%). The poor quality of sleep was higher among those who drink coffee (p=0.001). Regarding risk factors for grades of insomnia, higher prevalence of severe insomnia was observed among younger participants (p=0.001), Saudi participants (p=0.032), obese participants (p=0.045), and university educated participants (p<0.001), and those who practiced exercise 4 times or more weekly (p=0.001).

Conclusions: lifestyle activities associated with poor sleep quality include performing physical exercise 4 times or more weekly, drinking coffee and consumption of energy drinks. Severe insomnia among adult attendants of PHC centers include younger age, Saudi nationality, obesity, and university education while lifestyle activities associated with severe insomnia include performing physical exercise 4 times or more weekly.

Keywords: Insomnia, Primary health care, Risk factors, Jeddah City.

Introduction

Sleep hygiene is influenced by environmental conditions and lifestyle practices that influence sleep [(1)]. The importance of sleep hygiene was formally recognized in 1990 when “inadequate sleep hygiene” was added as a diagnostic category to the International Classification of Sleep Disorders [(2)]. Insomnia is a common sleep disorder that is associated with fatigue irritability, impaired daytime functioning, and disturbed mood, in severe cases even suicide [(3,4)]. The prevalence of insomnia accompanied by daytime consequences among the general population worldwide is approximately 9–15% [(5)]. Several factors can maintain insomnia, (e.g., age, gender, work-shifts, poor sleep hygiene), all represent significant risks components for insomnia [(6).]

Common lifestyle practices known to affect sleep include: taking caffeine, drinking alcohol, smoking nicotine cigarettes, exercising (amount and timing), napping, bedtime routine, and consistency of getting-up- and

bedtimes [7,8]. Conceptually, insomnia occurs when a combination of predisposing, precipitating, and perpetuating factors reaches a threshold [9]. Precipitating factors are those initiating the onset of insomnia include dramatic events such as grief, divorce or exams, while perpetuating factors play a role in sustaining of insomnia.

Caffeine, a commonly ingested psychoactive substance present in coffee, tea, cocoa, soft drinks, and many medications, stimulates the central nervous system and delays sleep onset by increasing alertness and vigilance in direct proportion to the amount consumed [10]. Although alcohol does expedite sleep onset, it is not recommended as a sedative since it disturbs sleep cycles. After alcohol intake, the time to sleep onset decreases [11,12]. Smoking cigarettes containing nicotine has been associated with disturbed sleep, but the changes are inconsistent and a cause-and-effect relationship has not been established [13]. Changes in sleep due to smoking cigarettes are often complicated by simultaneous use of caffeine and alcohol. A combination of alcohol and caffeine and/or nicotine may disturb sleep more than any one substance taken individually.

Regular exercise is recommended for improving sleep but the mechanisms remain uncertain [14]. Because exercise is arousing, the essential recommendation is to practice regularly but to avoid exercise 3 hrs. before sleep to prevent delayed sleep onset.

Having regular bed- and waking-up times is thought to strengthen the circadian timing of sleeping by means of a homeostatic mechanism [15], and by consistent exposure to light/darkness cycles which enable the brain/body to regulate sleeping and waking-up times.

Therefore, this study aimed to assess prevalence and severity of insomnia among adults attending PHC centers and to determine the association between insomnia and lifestyle determinants.

Methodology

Following a cross-sectional design, this study was conducted in 2016 in the governmental PHC centers of Jeddah City. Inclusion criteria comprised adults attending PHC centers in Jeddah City, while being pregnant was an exclusion criterion. With 95% confidence interval and a 30% estimated prevalence rate for insomnia and 5% accepted error margin, the minimum sample size was calculated to be 322. However, the actual sample size was increased to 376 to allow for about 10% expected non-response rate.

Following simple random sampling technique 2 PHC centers were selected from each of the 5 geographic locations of Jeddah City, i.e., a total of 10 PHC centers constituted the study setting. By systematic random sampling, with one-third sampling fraction, at least 37 adult patients were interviewed. A study questionnaire has been used for data collection. It comprised sociodemographic variables, the Pittsburgh Sleep Quality Index (PSQI) and the Insomnia Severity Index (ISI).

The PSQI is a self-rated questionnaire. It assesses sleep disturbances and quality of during one-month time interval. It includes 19 individual items that generate 7 “component” scores, i.e., sleep duration, sleep latency, subjective sleep quality sleep disturbances, daytime dysfunction, habitual sleep efficiency and use of sleeping medication. The sum of these scores for the 7 components yields one global score. With a global sum of “>5” indicating a “poor” sleep, its validity 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 [17-19].

The ISI is a brief instrument that was designed to assess the severity of both night-time and day-time components

of insomnia. It is increasingly used as a metric of treatment response in clinical research. Four patient groups are formed, i.e., no clinically significant insomnia (score: 0-7); subthreshold insomnia (score: 8-14); moderate clinical insomnia (score: 15-21) and severe clinical insomnia (score: 22-28) [20].

Prior to data collection, the researcher fulfilled all necessary official permissions and approvals, including that from the Joint Program of Family and Community Medicine and the Primary Health Care Administration. Written informed consents were obtained from each patient before his/her participating in the current study. All collected data were kept confidential and were not used except for the purpose of this research.

The statistical Package for Social Sciences (SPSS, version 23) was used for data entry and analysis. Descriptive statistics (i.e., frequency, percentages, mean and standard deviation) were calculated. The Chi square (χ^2) test was applied to test significance of differences between groups. P–values less than 0.05 were considered as statistically significant.

Results

Table (1) shows that more than one fourth of participants (27.7%) aged less than 28 years, 37.2% aged 28-37 years, 18.4% aged 38-47 years, 11.2% aged 48-57 years, while 5.5% aged more than 57 years. More than half of participants (53.2%) were males, while the majority (83%) were Saudi. About two thirds of participants (62.5%) were married, 31.4% were single, 4% were divorced and 2.1% were widowed. The majority of participants (91%) lived in Jeddah. Regarding participants' body mass index, 45.7% had normal body mass index, 31.4% were overweight while 22.9% were obese. Regarding educational status of study sample, 3.2% were illiterate, 6.4% could read and write, 19.9% had school education, while 70.5% were university graduates. Regarding employment status of participants, 16% were unemployed, 62.5% were employed, 17.3% were students while 4.3% were retired. Only 14.4% had work shifts. The monthly income of 12.2% of participants was less than 3000 SR, 15.4% had 3000-4999 SR, 29.5% had 5000-9999 SR, while 42.9% had more than 10000 SR.

Regarding practices of lifestyle activities, about half of participants (49.8%) did not practice physical exercise, 37.2% perform physical exercise 1-3 times weekly while 13% perform physical exercise 4 times or more weekly. About one fourth of participants (23.9%) were smokers. About three fourths of participants (72.1%) drink coffee regularly, 75.8% drink tea regularly, while 18.9% consume energy drinks regularly, as shown in Table (2). Using the PSQI, with scores ranging from 0 (worst sleep quality) to 21 (best sleep quality) and that of ">5" indicating a "poor" sleep, Table (3) shows that participant mean PSQI score was 6.0 and a standard deviation of 3.3. More than half of participants (51.1%) had poor sleep quality. Regarding severity of insomnia, using the ISI, whose scores range from 0 to 28, and those with scores above 14 were considered as having clinical insomnia, more than half of participants (51.6%) had no clinically significant insomnia, while insomnia severity was "subthreshold" among almost one third of participants (32.2%), "moderately severe" among 12.5% and "severe" among 3.7%. Therefore, prevalence of clinical insomnia among participants is 16.2%.

Table (4) shows that, regarding the impact of participants' sociodemographic characteristics, as risk factors for poor sleep quality, participants' sleep quality differed significantly according to their age groups (p=0.01), with higher prevalence of poor sleep quality among younger participants. Female participants had significantly higher prevalence of poor sleep quality than males (p=0.007). Saudi participants had significantly higher prevalence of

poor sleep quality than non-Saudi participants (p=0.001). Sleep quality differed significantly according to participants' marital status (p=0.007), with highest prevalence of poor sleep quality among those who were divorced or single (66.7% and 61.9%, respectively). Participants who were living outside Jeddah had significantly higher prevalence of poor sleep quality than those who were living in Jeddah (67.6% and 49.4%, respectively, p=0.043). Quality of sleep did not differ significantly according to participants' body mass index. Regarding the impact of participants' socioeconomic characteristics, as risk factors for poor sleep quality, participants' quality of sleep differed according to their educational level (p<0.001), with higher prevalence of poor sleep quality among higher educated participants. Quality of sleep differed according to participants' employment status (p=0.008), with highest prevalence of poor quality among students (64.6%). However, quality of sleep did not differ among participants according to having work shifts. Quality of sleep differed significantly according to participants' income (p=0.008), with highest prevalence of poor sleep quality among those with monthly income more than 10000 SR (59.6%).

Regarding the impact of participants' lifestyle activities, as risk factors for poor sleep quality, Table (5) shows that sleep quality differed among participants according to practicing physical exercise (p=0.01), with highest prevalence of poor sleep quality among those who perform physical exercise 4 times or more weekly (67.3%). Quality of sleep did not differ significantly among participants according to their smoking status. Participants' poor quality of sleep was higher among those who drink coffee (p=0.001) and those who do not consume energy drinks (p<0.001), but did not differ significantly according to drinking tea.

Regarding the impact of participants' sociodemographic characteristics, as risk factors for grades of insomnia, Table (6) shows that grades of insomnia among participants differed according to their age groups (p=0.001), with higher prevalence of severe insomnia among younger participants. Grades of insomnia did not differ significantly according to participants' gender. Grades of insomnia differed according to participants' nationality (p=0.032), with higher percentages of moderate and severe insomnia among Saudi than non-Saudi participants. Grades of insomnia did not differ significantly according to participants' marital status or residence. Grades of insomnia differed according to participants' body mass index (p=0.045), with highest prevalence of severe insomnia among obese participants (9.3%). Severity of insomnia differed according to participants' educational level (p<0.001), with highest prevalence of severe insomnia among university educated participants (4.5%). However, severity of insomnia did not differ significantly according to participants' employment status, work shifts or monthly income.

Regarding participants' lifestyle activities, as risk factors for grades of insomnia, Table (7) shows that severity of insomnia among participants differed according to their practice of physical exercise (p=0.001), with highest severity of insomnia among those who practiced exercise 4 times or more weekly. Severity of insomnia did not differ according to smoking status or drinking coffee or tea, but differed according to consuming energy drinks (p=0.026) with higher prevalence of severe insomnia among those who do not consume it.

Discussion

Results of the present study showed 51.1% of participants had poor sleep quality. Regarding severity of insomnia, 51.6% had no clinically significant insomnia, while 32.2% had "subthreshold" insomnia, 12.5% had "moderately

severe" insomnia and 3.7% had "severe" insomnia. Therefore, prevalence of insomnia among participants was 16.2%.

These findings are in accordance with those reported by several studies. In Shanghai, China, **Luo *et al***. [16] reported that 41.5% of the elderly in urban areas had poor sleep quality. In Peru, **Sanchez *et al.*** [17] reported that 55.9% of Peruvian College Students had poor sleep quality. In Sweden, **Dragioti *et al*.** [18] reported that among a sample of the Swedish population, 35.7% had no clinically significant insomnia, 44.3% had subthreshold insomnia, 17.8% had moderate clinical insomnia, and 2.2% had severe clinical insomnia. Therefore, 20% of the total sample had clinical insomnia. **Marchi *et al.*** [19], in Brazil reported that prevalence of insomnia among the adult population was 32%. In the USA, insomnia among the general population was reported by **Leger and Poursain** [20] to be 27.1%. **Beck *et al.*** [21] reported that 15.8% of the general population in France presented with insomnia. A high rate has been reported by **Zailinawati *et al.*** [22], who noted that 60% of Malaysian primary health care patients had poor sleep quality. They pointed out that prevalence of sleep disturbances among PHC attendants is usually higher than that for the general population. They ascribed that to the possible underlying physical and/or mental health problems that brought people to primary care clinics.

There are wide variations regarding reported prevalence rates by different studies for poor sleep quality and insomnia [23]. Attributed these variations to the differences in the criteria used by various studies to define insomnia. Studies that use strict definitions for insomnia tended to report lower prevalence rates, while studies which used broader definitions (e.g., using only one sleep symptom to diagnose insomnia or poor sleep quality) tended to report higher rates. For example, when **Chiu *et al.*** [24] included "frequency of sleep disturbances" as a part of their diagnostic criteria for insomnia, the reported prevalence rate was much reduced from 38.2% to 13.7%. Results of the present study showed that that sleep quality and grades of insomnia differed significantly according to participants' age groups, with higher prevalence of poor sleep quality and severe insomnia among younger participants.

Several studies pointed out to the significant association of age and quality of sleep. **Zailinawati *et al.*** [22] found that, in Malaysia, younger people have more sleep problems than older ones. On the other hand, **Luo *et al.*** [16] found that older people have longer sleep latency, poorer sleep efficiency, more sleep disturbances and poorer subjective sleep quality. However, **Su *et al.*** [23] reported that older age did not significantly correlate with increased rate of insomnia.

Results of this study showed that female participants had significantly higher prevalence of poor sleep quality than males. This finding is in agreement with that reported by **Ahmed *et al.*** [25] Similarly, **Morin *et al.*** [26], **Luo *et al***. [16] and **Beck *et al.*** [21] reported that females were more susceptible to insomnia and poor sleep quality than males. **Lopes *et al.*** [27] argued that the reasons why females are more prone than males to poor sleep quality and insomnia are not clear. However, insomnia may occur in association with hormonal changes that are unique to women. **Krystal** [28] stated that there may be a correlation between the decrease in circulating estrogens and progesterone and an increase in prevalence of insomnia.

This study showed that Saudi participants had significantly higher prevalence of poor sleep quality and severe insomnia than non-Saudi participants. This result is consistent with that of **Ahmed *et al.*** [25], who found that insomnia symptoms were highly prevalent among the Saudi adult population. Moreover, this finding may be

also explained that the non-Saudi who work in Saudi Arabia may consider insomnia as a transient complaint due to being away from home that does not necessitate visiting a health facility.

Results of the present study showed that sleep quality differed significantly according to participants' marital status, with highest prevalence of poor sleep quality among those who were not married (i.e., divorced or single). This finding is in accordance with that of **Ahmed *et al.*** [25], in Riyadh, who reported that prevalence rates for insomnia differed widely according to participants' marital status, being more common among widows or divorced participants than married participants. Similarly, **Abd Allah *et al.*** [29], in Zagazig City, Egypt, reported that prevalence of insomnia was significantly higher among non-married participants.

The lower prevalence of insomnia among those who are married may reflect the role played by the family relationships in providing the normal psychological balance that becomes disrupted in case of divorce or loss of a spouse.

Results of the present study revealed that insomnia severity differed significantly according to participants' body mass index, with highest prevalence of severe insomnia among obese participants. This finding has been previously reported by several researchers. **Pearson *et al.*** [30], who indicated that obese persons are significantly more likely to report insomnia or poor sleep quality. On the other hand, insomnia, may predispose to overconsumption of food, thus leading to weight gain [31].

The present study showed a significant association between socioeconomic status of participants and their quality of sleep and severity of insomnia, which differed significantly according to participants' educational level, employment status and monthly income. These results are in accordance with those reported by several researchers. Ogunbode ***et al.*** [32], in Nigeria, who noted that higher prevalence of insomnia was associated with being more educated. This finding may be explained by the relatively increased responsibilities and stresses among those who are more educated compared with those who are not educated.

The present study revealed that sleep quality and severity of insomnia differed significantly among participants according to practicing physical exercise. This finding is in agreement with that of **Luo *et al.*** [16], who noted that regularly performing physical exercise was a protective factor against poor sleep quality. Moreover, experimental evidence has suggested that exercise may be associated with better sleep quality [33].

Participants' poor quality of sleep differed significantly according to drinking coffee and consumption of energy drinks. On the other hand, severity of insomnia did not differ significantly according to smoking status or drinking coffee or tea, but differed significantly according to consuming energy drinks. This finding is in accordance with that of **Sanchez *et al.*** [17], who reported that participants who consumed different types of caffeinated beverages, e.g., popular energy drinks had higher prevalence of poor sleep quality compared with those who abstained from. **Jin *et al.*** [34] stated that the amount of caffeine intake has a significant correlation with insomnia. Ironically, the present study revealed that consumption of energy drinks was significantly associated with lower prevalence of poor sleep quality and also lower prevalence of insomnia. This unexpected finding certainly needs further exploration in another study be fully explained. Higher educational level may be associated with greater knowledge about sleep hygiene practices and more awareness of the strategies that can be used to improve sleep. The more educated may also be more proactive in their attempts to use various personalized strategies to

enhance their sleep quality, as well as having greater recognition of the importance of sleep for health and well-being (e.g. through reading media articles or the internet). Therefore, it is recommended to regularly screen adult attendants of PHC centers for their sleep quality and insomnia, especially those with poor sleep hygiene and those with significant risk factors, e.g., younger age, female gender, Saudi, being divorced or single, those living outside Jeddah, being highly educated, and students. Health education of adult attendants at primary health care centers regarding, management of obesity, proper practice of physical exercise and the necessity to limit intake of coffee and consumption of energy drinks.

Conclusions

About half of adult primary health care attendants have poor sleep quality, with clinical insomnia affecting almost one sixth of them. Risk factors for poor sleep quality included younger age, female gender, Saudi nationality, being divorced or single, those living outside Jeddah, and being highly educated. lifestyle activities associated with poor sleep quality include performing physical exercise 4 times or more weekly, drinking coffee and consumption of energy drinks. On the other hand, severe insomnia among adult attendants of primary health care centers includes younger age, Saudi nationality, obesity, and university education. While lifestyle activities associated with severe insomnia include performing physical exercise 4 times or more weekly, and consumption of less energy drinks.

References

[1]. Kang JH, Chen SC (2009): Effects of an irregular bedtime schedule on sleep quality, daytime sleepiness, and fatigue among university students in Taiwan. BMC Public Health.,9(1):248.

[2]. Association ASD (2005): Diagnostic classification steering committee international classification of sleep disorders: diagnostic and coding manual, ICSD-R. *Westchester, IL*. American Academy of Sleep Medicine.

[3]. Mai E, Buysse DJ (2008): Insomnia: prevalence, impact, pathogenesis, differential diagnosis, and evaluation. Sleep Med Clin.,3(2):167-174.

[4]. Cricco M, Simonsick EM, Foley DJ (2001): The impact of insomnia on cognitive functioning in older adults. J Am Geriatr Soc.,49(9):1185-1189.

[5]. Ohayon MM, Zulley J, Guilleminault C, Smirne S, Priest RG (2001): How age and daytime activities are related to insomnia in the general population: consequences for older people. J Am Geriatr Soc.,49(4):360-36.

[6]. Tanaka H, Shirakawa S (2004): Sleep health, lifestyle and mental health in the Japanese elderly: ensuring sleep to promote a healthy brain and mind. J Psychosom Res.,56(5):465-477.

[7]. Calamaro CJ, Mason TB, Ratcliffe SJ (2009): Adolescents living the 24/7 lifestyle: effects of caffeine and technology on sleep duration and daytime functioning. Pediatr.,123(6):1005-1010.

[8]. Brown FC, Buboltz JR WC, Soper B (2002): Relationship of sleep hygiene awareness, sleep hygiene practices, and sleep quality in university students. Behav Med.,28(1):33-38.

[9]. Ellis JG, Gehrman P, Espie CA, Riemann D, Perlis ML (2012): Acute insomnia: current conceptualizations and future directions. Sleep Med Rev.,16(1):5-14.

[10]. Bonnet MH, Arand D (1992): Caffeine use as a model of acute and chronic insomnia. Sleep.,15(6):526-536.

[11]. Singleton RA, Wolfson AR (2009): Alcohol consumption, sleep, and academic performance among college students. J Stud Alcohol Drugs.,70(3):355-363.

[12]. Roehrs T, Roth T (2001): Sleep, sleepiness, and alcohol use. Alcohol Res Health.,25(2):101-109.

[13]. Phillips BA, Danner FJ (1995): Cigarette smoking and sleep disturbance. Arch Intern Med.,155(7):734-737.

[14]. King AC, Oman RF, Brassington GS, Bliwise DL, Haskell WL (1997): Moderate-intensity exercise and self-rated quality of sleep in older adults: a randomized controlled trial. Jama.,277(1):32-37.

[15]. Chaput JP (2014): Sleep patterns, diet quality and energy balance. Physiol behav.,134:86-91.

[16]. Luo J, Zhu G, Zhao Q, Guo Q, Meng H, Hong Z., et al (2013): Prevalence and risk factors of poor sleep quality among Chinese elderly in an urban community: results from the Shanghai aging study. PloS One.,8(11):81261.

[17]. Sanchez SE, Martinez C, Oriol RA, Yanez D, Castañeda B, Sanchez E., et al (2013): Sleep quality, sleep patterns and consumption of energy drinks and other caffeinated beverages among Peruvian college students. *Health.*,5(8B):26.

[18]. Dragioti E, Levin LÅ, Bernfort L, Larsson B, Gerdle B (2017): Insomnia severity and its relationship with demographics, pain features, anxiety, and depression in older adults with and without pain: cross-sectional population-based results from the PainS65+ cohort. Ann Gen Psychiatry.,16(1):15.

[19]. Marchi NSAd, Reimão R, Tognola WA, Cordeiro JA (2004): Analysis of the prevalence of insomnia in the adult population of São José do Rio Preto, Brazil. Arq Neuropsiquiatr.,62(3B):764-768.

[20]. Leger D, Poursain B (2005): An international survey of insomnia: under-recognition and under-treatment of a polysymptomatic condition. Curr Med Res Opin.,21(11):1785-1792.

[21]. Beck F, Richard J, Leger D (2013): Insomnia and total sleep time in France: prevalence and associated socio-demographic factors in a general population survey. Rev Neurol Paris.,169(12):956-964.

[22]. Zailinawati AH, Mazza D, Teng CL (2012): Prevalence of insomnia and its impact on daily function amongst Malaysian primary care patients. Asia Pac Fam Med.,11(1):9.

[23]. Su TP, Huang SR, Chou P (2004): Prevalence and risk factors of insomnia in community-dwelling Chinese elderly: a Taiwanese urban area survey. Aust N Z J Psychiatry.,38(9):706-713.

[24]. Chiu HF, Leung T, Lam LC, Wing YK, Chung DW, Li SW., et al (1999): Sleep problems in Chinese elderly in Hong Kong. Sleep.,22(6):717-726.

[25]. Ahmed AE, AL-Jahdali H, Fatani A, Al-Rouqi K, AL-Jahdali F, Al-Harbi A., et al (2017): The effects of age and gender on the prevalence of insomnia in a sample of the Saudi population. Ethn Health.,22(3):285-294.

[26]. Morin CM, Gramling SE (1989): Sleep patterns and aging: comparison of older adults with and without insomnia complaints. Psychol Aging.,4(3):290.

[27]. Lopes C, Robaina J, Rotenberg L (2012): Epidemiology of insomnia: prevalence and risk factors In: Sahoo S, editor. Can't sleep.,3-22.

[28]. Krystal AD (2003): Insomnia in women. Clin Cornerstone.,5(3):41-50.

[29]. Allah ESA, Abdel-Aziz HR, El-Seoud ARA (2014): Insomnia: Prevalence, risk factors, and its effect on quality of life among elderly in Zagazig City, Egypt. J Nursing Educ Practice.,4(8):52.

[30]. Pearson NJ, Johnson LL, Nahin RL (2006): Insomnia, trouble sleeping, and complementary and alternative medicine: Analysis of the 2002 national health interview survey data. Arch Intern Med.,166(16):1775-1782.

[31]. Hargens TA, Kaleth AS, Edwards ES, Butner KL (2013): Association between sleep disorders, obesity, and exercise: a review. Nat Sci Sleep.,5:27.

[32]. Ogunbode AM, Adebusoye LA, Olowookere OO, Owolabi M, Ogunniyi A (2014): Factors associated with

insomnia among elderly patients attending a geriatric centre in Nigeria. Curr Gerontol Geriatr Res,2014.

[33]. Grandner MA, Patel NP, Perlis ML, Gehrman PR, Xie D, Sha D., et al (2011): Obesity, diabetes, and exercise associated with sleep-related complaints in the American population. J Public Health.,19(5):463-474.

[34]. Jin MJ, Yoon CH, Ko HJ, Kim HM, Kim A, Moon HN., et al (2016): The relationship of caffeine intake with depression, anxiety, stress, and sleep in Korean adolescents. Korean J Fam Med.,37(2):111-116.

Table 1. Sociodemographic characteristics of study sample

Sociodemographic Characteristics	No.	%
Age groups		
<28 years	104	27.7
28–37 years	140	37.2
38–47 years	69	18.4
48–57 years	42	11.2
>57 years	21	5.5
Gender		
Male	200	53.2
Female	176	46.8
Nationality		
Saudi	312	83.0
Non-Saudi	64	17.0
Marital status		
Married	235	62.5
Single	118	31.4
Divorced	15	4.0
Widow	8	2.1
Residence		
Outside Jeddah	34	9.0
Inside Jeddah	342	91.0
Body mass index		
Normal	172	45.7
Overweight	118	31.4
Obese	86	22.9
Educational level		
Illiterate	12	3.2
Read & Write	24	6.4
School	75	19.9
University	265	70.5
Employment status		
Unemployed	60	16.0
Employed	235	62.5
Student	65	17.3

Retired	16	4.3
Work shifts		
No	322	85.6
Yes	54	14.4
Monthly income		
<3000 SR	46	12.2
3000–4999 SR	58	15.4
5000–9999 SR	111	29.5
>10000 SR	161	42.9

Table 2. Prevalence of different lifestyle activities among participants

Activities	No.	%
Frequency of physical exercise		
None	187	49.8
1-3 times/week	140	37.2
4 or more times/week	49	13.0
Smoking status		
Nonsmoker	286	76.1
Smoker	90	23.9
Caffeine-containing drinks		
Coffee	271	72.1
Tea	285	75.8
Energy drinks	71	18.9

Table 3. Participants' Sleep quality and severity of insomnia

Sleep Quality and Severity of Insomnia	No.	%
Sleep quality [(1)]		
Good	184	48.9
Poor	192	51.1
PSQI score (Mean±SD)		6.0±3.3
Severity of insomnia [(2)]		
No clinically significant insomnia	194	51.6
Subthreshold insomnia	121	32.2
Clinical insomnia (moderate severity)	47	12.5
Clinical insomnia (severe)	14	3.7
ISI score (Mean±SD)		7.8±6.3

According to PSQI

According to ISI

Table 4. Participants' sleep quality according to their sociodemographic characteristics

Sociodemographic Characteristics	Good		Poor		p Value
	No.	%	No.	%	
Age groups					
<28 years	43	41.3	61	58.7	
28–37 years	65	46.4	75	53.6	
38–47 years	34	49.3	35	50.7	
48–57 years	25	59.5	17	40.5	
>57 years	17	81.0	4	19.0	0.010
Gender					
Male	111	55.5	89	44.5	
Female	73	41.5	103	58.5	0.007
Nationality					
Saudi	141	45.2	171	54.8	
Non-Saudi	43	67.2	21	32.8	0.001
Marital status					
Married	128	54.5	107	45.5	
Divorce	5	33.3	10	66.7	
Single	45	38.1	73	61.9	
Widow	6	75.0	2	25.0	0.007
Residence					
Outside Jeddah	11	32.4	23	67.6	
Inside Jeddah	173	50.6	169	49.4	0.043
Body mass index					
Normal	87	50.6	85	49.4	
Overweight	60	50.8	58	49.2	
Obese	37	43.0	49	57.0	0.458
Educational level					
Illiterate	10	83.3	2	16.7	
Read & Write	19	79.2	5	20.8	
School	46	61.3	29	38.7	
University	109	41.1	156	58.9	<0.001
Employment status					
Unemployed	29	48.3	31	51.7	

Employed	119	50.6	116	49.4	
Student	23	35.4	42	64.6	
Retired	13	81.3	3	18.8	0.008
Work shifts					
No	160	49.7	162	50.3	
Yes	24	44.4	30	55.6	0.476
Monthly income					
<3000 SR	31	67.4	15	32.6	
3000–4999 SR	31	53.4	27	46.6	
5000–9999 SR	57	51.4	54	48.6	
>10000 SR	65	40.4	96	59.6	0.008

Table 5. Participants' sleep quality according to their lifestyle activities

	Good		Poor		p
Lifestyle activities	No.	%	No.	%	Value
Frequency of physical exercise					
None	104	55.6	83	44.4	
1-3 times/week	64	45.7	76	54.3	
4 or more times/week	16	32.7	33	67.3	0.010
Smoking status					
Nonsmoker	142	49.7	144	50.3	
Smoker	42	46.7	48	53.3	0.621
Caffeine-containing drinks					
Coffee	66	62.9	39	37.1	
No	118	43.5	153	56.5	0.001
Yes					
Tea	39	42.9	52	57.1	
No	145	50.9	140	49.1	0.183
Yes					
Energy drinks					
No	134	43.9	171	56.1	
Yes	50	70.4	21	29.6	<0.001

Table 6. Participants' grades of insomnia according to their sociodemographic characteristics

Sociodemographic	Absent		Sub threshold		Moderate		Severe		P
Characteristics	No.	%	No.	%	No.	%	No.	%	Value
Age groups									

<28 years	47	45.2	38	36.5	16	15.4	3	2.9	
28–37 years	60	42.9	51	36.4	19	13.6	10	7.1	
38–47 years	41	59.4	19	27.5	8	11.6	1	1.4	
48–57 years	25	59.5	13	31.0	4	9.5	0	0.0	
>57 years	21	100.0	0	0.0	0	0.0	0	0.0	0.001
Gender									
Male	112	56.0	59	29.5	25	12.5	4	2.0	
Female	82	46.6	62	35.2	22	12.5	10	5.7	0.113
Nationality									
Saudi	152	48.7	103	33.0	45	14.4	12	3.8	
Non-Saudi	42	65.6	18	28.1	2	3.1	2	3.1	0.032
Marital status									
Married	133	56.6	68	28.9	25	10.6	9	3.8	
Divorced	5	33.3	7	46.7	2	13.3	1	6.7	
Single	49	41.5	45	38.1	20	16.9	4	3.4	
Widow	7	87.5	1	12.5	0	0.0	0	0.0	0.101
Residence									
Outside Jeddah	17	50.0	14	41.2	1	2.9	2	5.9	
Inside Jeddah	177	51.8	107	31.3	46	13.5	12	3.5	0.245
Body mass index									
Normal	89	51.7	62	36.0	19	11.0	2	1.2	
Overweight	64	54.2	33	28.0	17	14.4	4	3.4	
Obese	41	47.7	26	30.2	11	12.8	8	9.3	0.045
Educational level									
Illiterate	11	91.7	0	0.0	1	8.3	0	0.0	
Read & Write	20	83.3	4	16.7	0	0.0	0	0.0	
School	48	64.0	16	21.3	9	12.0	2	2.7	
University	115	43.4	101	38.1	37	14.0	12	4.5	<0.001
Employment status									
Unemployed	32	53.3	21	35.0	5	8.3	2	3.3	
Employed	124	52.8	69	29.4	32	13.6	10	4.3	
Student	25	38.5	28	43.1	10	15.4	2	3.1	
Retired	13	81.3	3	18.8	0	0.0	0	0.0	0.146
Work shifts									
No	172	53.4	104	32.3	36	11.2	10	3.1	

Yes	22	40.7	17	31.5	11	20.4	4	7.4	0.076
Monthly income									
<3000 SR	31	67.4	13	28.3	2	4.3	0	0.0	
3000–4999 SR	31	53.5	16	27.6	9	15.5	2	3.4	
5000–9999 SR	52	46.9	40	36.0	15	13.5	4	3.6	
>10000 SR	80	49.7	52	32.3	21	13.0	8	5.0	0.404

Table 7. Participants' grades of insomnia according to participants' lifestyle activities

	Absent		Subthreshold		Moderate		Severe		P
Lifestyle activities	No.	%	No.	%	No.	%	No.	%	Value
Physical exercise									
None	105	56.1	61	32.6	12	6.4	9	4.8	
1-3 times/week	72	51.4	44	31.4	23	16.4	1	0.7	
≥4 times/week	17	34.7	16	32.7	12	24.5	4	8.2	0.001
Smoking status									
Nonsmoker	153	53.5	89	31.1	33	11.5	11	3.8	
Smoker	41	45.6	32	35.6	14	15.6	3	3.3	0.534
Caffeine-containing drinks									
Coffee									
No	65	61.9	30	28.6	8	7.6	2	1.9	
Yes	129	47.6	91	33.6	39	14.4	12	4.4	0.054
Tea									
No	44	48.4	29	31.9	13	14.3	5	5.5	
Yes	150	52.6	92	32.3	34	11.9	9	3.2	0.667
Energy drinks									
No	146	47.9	105	34.4	41	13.4	13	4.3	
Yes	48	67.6	16	22.5	6	8.5	1	1.4	0.026