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Sleep-Related Disorders and Quality of Life among Post-menopausal Egyptian Women in Ismailia

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Abstract

Aim: **To determine the prevalence of poor sleep quality among postmenopausal women and its impact on their quality of life.** ***Subjects and Method:*** **After approval of our ethics committee, a total 315 postmenopausal women aged 45–60 were recruited and investigated using an interview questionnaire. The questionnaire contains three main items: Socidemographic data, assessment of sleep quality using an Arabic translated version of the Pittsburgh Sleep Quality Index (PSQI), and Arabic version of the Medical Outcomes Study Short Form-36 Survey (SF-36).** ***Results:*** **69.5% of the participants had poor sleep quality. Poor sleepers have higher prevalence of sedentary lifestyle, poor sleep quality of spouse, and increased caffeine intake. Bivariate analysis did not show any significant difference between poor and good sleepers regarding age, BMI, residence, occupational status, educational level and socioeconomic status. Sedentary lifestyle was found to be a significant predictor of poor sleep quality. All SF-36 domain scores were significantly lower among poor sleepers.** ***Conclusion:*** **Poor sleep quality is a high prevalent problem among postmenopausal women and it affects health-related quality of life of these women. A lot of modifiable risk factors were previously found to affect sleep quality, but we have found that only sedentary lifestyle is the only modifiable risk factor that significantly affects sleep quality.**

Keywords: Sleep disorders, Menopause, quality of life.

Introduction

By the age of 45–50, women undergo a physiological process known as menopause that has been defined as complete cessation of menstruation for more than 12 months. It is mainly related to estrogen deficiency[1]. It caused a composite of symptoms that can be classified into vasomotor, physical, psychological and sexual complaints[2]. One of the most important menopausal-related symptoms are insomnia and sleep-related disorders in general. It has been widely reported that perimenopausal and postmenopausal women have a higher frequency of sleep-related disorders compared to premenopausal women[3-8]. Sleep is very important and crucial for having a healthy life . Sleep disturbances and sleep related disorders can lead to physical and psychological consequences that affect individual's quality of life[9, 10]. Many prior researchers have found that people with sleep related disorders often complain of being impaired in their ability to function during the day[11-13]. World Health Organization defines quality of life as an individual's perception of their status in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns[14]. The aim of the present study

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was to investigate the prevalence of poor sleep quality among postmenopausal women and its impact on their quality of life.

Patients and Methods

After approval of the ethics committee of the faculty of medicine, Suez Canal University, this population-based cross-sectional descriptive study was conducted among 315 postmenopausal (45–60 years) women living in Ismailia governorate. The studied women were recruited from women attending outpatient clinic as relatives to patients but not complaing of illness. Postmenopausal state was defined as no menstrual bleeding in the previous/last 12 months, according to STRAW (Stages of Reproductive Aging Workshop) classification [15, 16]. The study was conducted through the period from January 2012 until June 2012. Women with induced menopause, receiving hormonal treatment, having medical problems like thyroid disorders, diabetes mellitus ,hypertension, heart disease, or who were undergoing treatment for cancer, or were in remission pregnant or breastfeeding women, and those who refused to participate were excluded from the study. The required sample size was estimated based on the power of the study of 80% and α-error of 0.05[17]. An informed written consent was obtained from all participants. Data were collected via structured interview questionnaire by a face-to-face interview conducted by well-trained health personnel. The questionnaire included four main parts: 1- *Sociodemographic data* of study women that included age, marital status, educational level, current or previous job and comorbidities. 2- Measure of sleep quality and quantity: The present study has used an *Arabic translated version of the Pittsburgh Sleep Quality Index (PSQI).* PSQI is a multi-dimensional, self-administered health status measure that determines clinically important patients'-relevant symptoms in the areas of sleep quality and quantity in the past two weeks. The PSQI comprises 19 items under seven sub-scales (subjective sleep quality, sleep latency, sleep duration, habitual sleep disturbances, use of sleep medication, and daytime dysfunction). Each subscale is rated 0–3, with the higher scores reflecting more severe sleep complaints[18]. The sum of all the scores permits an analysis of the patient's overall sleep experience. The lower the overall score, the better the person sleeps. A global PSQI score >5 (range 0–21) was able to distinguish between good and poor sleepers. The tool possesses adequate internal reliability, validity [19], and consistency for clinical and community samples of the climacteric population[20]. 3- *Health-related quality of life (HRQOL):* HRQOL was measured using the Arabic version of the Medical Outcomes Study Short Form-36 Survey (SF-36). This 36-item instrument is well validated[21] The SF-36 consists of eight domains: physical functioning (PF), role limitations due to physical health problems (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE), and mental health (MH). The scores for each domain range from 0 to 100, with higher scores representing better health.

Statistical analysis

Microsoft Excel 2003 (Microsoft Corporation, NY, USA) and SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 16 for Microsoft Windows were used to analyze data. Data were statistically described in terms of mean, standard deviation, frequencies (number of cases), and percentages. For quantitative variables, one-way analysis of variance with post hoc analysis using the Bonferroni test

and the Student t test was used to test the

significance of difference while for categorical data Chi square test was performed. A probability value (p value) less than 0.05 was considered statistically significant. Multiple logistic regressions were used to evaluate risk factors affecting sleep quality and quantity as evaluated by PSQI.

Results

Table 1 presents the socio-demographic characteristics of study participants. More than half of the studied women (59.1%) aged 55–65 years while 16.5% were in the age group 65–70 years. 60.3% of the females were overweight and/or obese with BMI ≥ 25 Kg/m^2. Most of the participants are married (68.3%). Most of the studied women were retired or unemployed (53.7%). More than half of the studied women have moderate socioeconomic status (60.3%). 15.2% of the participants are living alone. About one quarter of the participants were found to have a sedentary lifestyle while 20.9% had more than normal 3 times per day caffeine intake. Most of the studied women were poor sleepers with PSQI ≤5 (69.5%). Comparison between good and poor sleepers regarding participants' characteristics. There was no statistically significant difference between both good and poor sleepers regarding age, BMI, residence, marital status, educational level, occupational status, socioeconomic status and living arrangement. However, most of poor sleepers were found to have poor sleep quality of spouse and sedentary lifestyle with increased prevalence of caffeine intake > 3 times daily compared to good sleepers with statistically significant difference. The multivariate logistic regression analysis has revealed an increased risk of poor sleep quality among females with poor sleep quality of spouse (OR: 1.8), women with a sedentary lifestyle (OR: 16.4) and women with increased caffeine intake (OR: 1.9) (Table 2). Evaluation of health related quality of life among participants has shown that good sleepers have better scores in all items of Medical Outcomes Study Short Form-36 Survey (SF-36) with statistically significant difference (Table 3).

Discussion

In the present study, we used PSQI to subjectively evaluate sleep disturbances among the studied women. Same tool was used by different previous studies[10,13,24]. The prevalence of poor sleep quality (PSQI ≤5) was high in the present study (69.5%). Consistently, Wu and colleagues[13] showed a similar prevalence of poor sleep quality among menopausal women. (65.3%). Lower prevalence of poor sleep quality among postmenopausal women (23%) have been reported by Seib and Lee[25].

They have used different assessment tool that is General Sleep disturbance scale (GSDS). The studies evaluated sleep quality among the general population have found higher prevalence of poor sleep quality among females compared to males[24]. In this later study, all the participants were >60 years of age with a higher representation of females. Taking into account the demographics of their participants, it is notable that Lo and Lee[24] showed similar results as they found that 77.1% of participants were poor sleepers and 74% of females were poor sleepers. Similar findings were also reported by Chiu et al[26]. However, lower prevalence of poor sleep quality has been reported by western studies[27] that had less women representation and used different sleep quality assessment tools.

Table 1: Sociodemographic characteristics of the studied participants

	Good sleeper (n=96)		Poor sleeper (n=219)		Total		p-value
Age (yrs)							0.3
45 –	26	27.1%	51	23.3%	77	24.4%	
55 –	51	53.1%	135	61.6%	186	59.1%	
65–70	19	19.8%	33	15.1%	52	16.5%	
Body Mass Index							0.8
< 25 Kg/m^2	37	38.5%	88	40.2%	125	39.7%	
≥ 25 Kg/m^2	59	61.5%	131	59.8%	190	60.3%	
Residence							0.6
Urban	43	44.8%	89	40.6%	132	41.9%	
Rural	53	55.2%	130	59.4%	183	58.1%	
Marital status							0.3
Single/ Widow/divorced	61	63.5%	154	70.3%	215	68.3%	
Married	35	36.5%	65	29.7%	100	31.7%	
Educational level							0.7
Illiterate	25	26.1%	56	25.6%	81	25.7%	
< 12 years	24	25%	47	21.5%	71	22.5%	
≥ 12 years	47	48.9%	116	52.9%	163	51.7%	
Occupational status							0.9
Working	53	55.2%	93	42.5%	146	46.3%	
Retired/unemployed	43	44.8%	76	34.7%	169	53.7%	
Socioeconomic status							0.07
Low	37	38.5%	64	29.2%	101	32.1%	
Moderate	49	51.1%	141	64.4%	190	60.3%	
High	10	10.4%	14	6.4%	24	7.6%	
Living arrangement							0.7
Live alone	13	13.5%	35	15.9%	48	15.2%	
Live with others	83	86.5%	184	84.1%	267	84.8%	
Poor sleep quality of spouse							0.001*
Yes	24	35.4%	82	32.9%	106	33.7%	
No	72	64.6%	137	67.1%	209	66.3%	
Sedentary lifestyle							0.001*
No	61	63.5%	21	9.6%	82	26.1%	
Yes	35	36.5%	198	90.4%	233	73.9%	
Caffeine intake							0.02*
Normal level (1–3 daily)	73	76.1%	136	62.1%	209	79.1%	
More than 3 daily	23	23.9%	83	37.9%	106	20.9%	

*Statistically significant difference

Kang et al[10] reported poor sleep quality among 45.7% of their females participants who were in different age group (30–79). Lower sleep quality prevalence reported in the study of Kang and colleagues may be due to presence of younger age groups, although they did not report significant differences between poor and good sleepers regarding age. It is well established that females are more liable to have poor sleep quality and higher prevalence of sleep disorders during their menstrual period and

during menopause. This is because women are generally more vulnerable to stress during these periods of life[28]. Poor sleep quality was not associated with age, residence, educational level, socioeconomic status, BMI or occupational status. Unlike the current findings, Lo and Lee[24] found that lower educational level were more likely to have poor sleep quality and short sleep duration as same as other previous reports[29,30].

Table 2: Multivariate logistic regression analysis of factors associated with poor sleep quality

Variable	Odds ratio	95% confidence interval	p-value
Age			
45 –	1		
55 –	1.4	0.8 – 2.3	0.3
65–70	0.7	0.4 – 1.3	0.1
BMI			
< 25 Kg/m^2	1	0.6 – 1.5	0.2
≥ 25 Kg/m^2	0.9		
Residence			
Urban	1	0.7 – 1.9	0.4
Rural	1.1		
Marital status			
Married	1	0.8 – 2.3	0.4
Single/ Widow/divorced	1.4		
Educational level			
Illiterate	1		0.2
< 12 years	0.8	0.5 – 1.4	0.1
≥ 12 years	1.1	0.6 – 1.9	
Occupational status			
Working	1	0.6 – 1.7	0.5
Retired/unemployed	1.01		
Socioeconomic status			
Low	1		0.06
Moderate	1.7	0.9 – 2.8	0.4
High	0.8	0.3 – 2.01	
Living arrangement			
Live alone	1	0.4 – 1.6	0.04*
Live with others	0.8		
Poor sleep quality of spouse			
No	1	1.05 – 3.1	0.001*
Yes	1.8		
Sedentary lifestyle			
No	1	8.9 – 30.3	0.001*
Yes	16.4		
Caffeine intake			
Normal level (1 – 3 daily)	1	1.1 – 3.3	0.001*
More than 3 daily	1.9		

*Statistically significant

Some previous reports showed an association between poor sleep quality and low socioeconomic status[28,31] unlike the present study. In addition, inconsistent with the present study, Seib and Lee[25] found that employment status, residence and monthly income significantly implies sleep quality. However, other studies showed similar results to the present findings[10].

Also Kang et al[10] consistently found that poor sleep quality of spouse was associated with high prevalence of poor sleep quality as well as the present findings. In the current study, it was found that 90.4% of patients with a sedentary lifestyle were poor sleepers a finding that is supported by by Lee and Ward[33], Muennig et al[34] and Seib and Lee[25].

Table 3: Comparison of the SF-36 derived Health-related Quality of Life domain scores of good and poor sleepers

HRQOL-item	Good sleeper (n=96)	Poor sleeper (n=219)	p-value
Physical functioning	71.3 ± 13.5	60.5 ± 11.9	0.001*
Role physical	75.8 ± 14.9	69.5 ± 12.3	0.001*
Bodily pain	69.5 ± 8.3	54.9 ± 10.5	0.001*
General health	51.6 ± 7.9	42.8 ± 10.2	0.001*
Vitality	68.5 ± 11.5	46.5 ± 12.9	0.001*
Social functioning	88.6 ± 12.8	79.5 ± 13.5	0.001*
Role emotional	81.5 ± 10.4	75.6 ± 9.8	0.001*
Mental health	75.6 ± 13.2	68.4 ± 10.2	0.001*

*Statistically significant difference

Also, caffeine intake more than 3 times per day was associated with poor sleep quality among the studied patients. Multivariate analysis showed that sedentary lifestyle, increased caffeine intake and poor sleep quality of spouse were all significant independent predictors of poor sleep quality among studied postmenopausal women. Similarity, Pien et al[8] showed that age and employment were not significant predictors of sleep quality.

Concerning quality of life, the present study showed that poor sleepers have lower scores of all SF-36 items compared to good sleepers with statistically significant difference. Similarly, using same HRQOL and sleep quality assessment tools , Lo and Lee [24] found that poor sleepers had significantly lower scores in all SF-36. domains. Similarly, a Spanish population-based study found that shorter sleep duration and poorer sleep quality are associated with lower health-related quality of life[35] as well as Seib and Lee[25]. However, another Spanish community-based study failed to prove this association[36]. These conflicting results ensured the need for further research on the relationship between sleep quality and quality of life among the whole population in general and among menopausal women in particular. In the present study, we studied only postmenopausal women. Many previous studies evaluated sleep quality in women in the menopausal transition (including pre, peri and postmenopausal women and found conflicting results[6,8,13,37,38]. One study evaluated not only the relation of sleep quality to menopausal symptoms, but also evaluated objective menopausal factors that are hormone levels as estradiol and inhibin B[8]. They found that self-reported sleep quality, as measured by the Sleep Quality factor score, did not decrease during the meno-

pausal transition, but it was more affected by severity of certain symptoms including vasomotor symptoms (e.g. hot flashes) and depressive symptoms. Also and interestingly, Pien and colleagues as well as Kravitz et al[39] correlated sleep quality to hormonal levels as they reported that lower estradiol levels, lower inhibin B levels and higher FSH was associated with poorer sleep quality. Other studies showed that perimenopausal and postmenopausal women generally reported the worse sleep quality, compared with premenopausal women[6,37,38]. More recent study of Wu and colleagues[13] found that post and perimenopausal women have lower PSQI scores in some domains of PSQI domains as well as total PSQI score compared to premenopausal women[13].

Conclusion

Poor sleep quality is a high prevalent problem among postmenopausal women and it affects health-related quality of life of these women. Many modifiable risk factors were previously found to affect sleep quality, but we found that only sedentary lifestyle is the only modifiable risk factor that significantly affects sleep quality.

Recommendations

Population based studies with large sample size is recommended as such problem requires further and more detailed investigation and studying. Improvement of the lifestyle of postmenopausal women may help in improving their sleep thus increasing their health-related quality of life.

Limitations of the study

An important limitation of the current study was that we did not use an objective method in the assessment of sleep quality as polysomnography. However, the PSQI questionnaire used in the study is known to have high concordance with polysomnography results. Second, the study was designed as a cross-sectional design, making it difficult to evaluate the causal relationship between poor sleep quality and the studied factors. Finally, generalization of the present results to the population at large may be limited since the participants were associated or relatives to our patients who were visiting the obstetrics & gynecology outpatient clinics.

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