CrossMark

Correlates of sleep quality and sleep duration in a sample of urban-dwelling elderly Nigerian women

Michael B. Fawale, MBBS, FMCP [a,*], Isiaka Alani Ismaila, MBBS, FWACP [b],
Adekunle F. Mustapha, MBBS, MSc, FMCP [c], Morenikeji A. Komolafe, MBBS, FWACP [a],
Olanrewaju Ibigbami, MBChB, MClinPsychol, FWAP [b,d]

[a] Neurology Unit, Department of Medicine, College of Health Sciences, Obafemi Awolowo University, Ile-Ife, Nigeria
[b] Department of Family Medicine, State Hospital, Ilesa, Nigeria
[c] Neurology Unit, Department of Medicine, College of Health Sciences, Ladoke Akintola University of Technology, Ogbomoso, Nigeria
[d] Department of Mental Health, State Specialist Hospital, Osogbo, Nigeria

ARTICLE INFO

ABSTRACT

Objectives: Aging, female sex, and urbanization increase the risk of sleep impairment. Sleep in urban-dwelling elderly African women has been sparsely studied. We studied the characteristics and correlates of sleep quality and habitual sleep duration in a primary care population of urban-living Nigerian women.
Methods: Sleep quality and sleep duration over the previous 1 month were estimated using the Pittsburgh Sleep Quality Index (PSQI). Excessive daytime sleepiness, risk of obstructive sleep apnea (OSA), and depressive symptoms were also assessed.
Results: Of the 428 subjects included, 117 (27.3%) were poor sleepers endorsing PSQI scores >5, whereas 126 (29.4%) slept <7 hours. The poor sleepers were more likely to be obese ($P = .022$), to have a high risk for OSA ($P = .013$), and to have clinically significant depressive symptoms ($P = .001$) compared with the good sleepers. Habitual sleep duration of <7 hours was associated with past oral contraceptive use ($P = .025$) and a trend toward a higher likelihood of high risk for OSA ($P = .05$) and coffee consumption ($P = .05$). On regression, the odds of high risk for OSA were higher with poor sleep quality and sleep duration <7 hours, respectively, whereas the odds of coffee consumption were higher with sleep duration <7 hours.
Conclusions: Poor sleep quality and inadequate sleep are common in our population of elderly women. High risk for OSA independently predicts poor sleep quality and, along with report of coffee consumption, independently predicts habitual sleep duration of <7 hours.

Introduction

Sleep disturbances increase with age[1] such that up to 50% of community-dwelling elderly individuals[2] and up to 63% of women aged 73 to 85 years[3] report at least 1 form of sleep disturbance. Existing sleep quality data suggest that poor sleep may be more prevalent among elderly women compared with their male counterparts[4,5] and younger women,[6] respectively. Poor sleep quality and short sleep duration in the elderly are associated with impaired physical and mental health[7] and poor health-related quality of life[1] in the long term. They are also associated with increased risk of falls and poor cognitive outcomes.[8] Cardiometabolic disorders such as hypertension, diabetes, obesity, and coronary artery disease

are associated with chronic sleep curtailment in what seems to be a bidirectional relationship.[9–11] Although sleep disturbance is common and its implications are profound, fewer than 15% of people with sleep disturbance come to medical attention.[12]

Life expectancy is increasing globally and is longer in women compared with men. However, the number of years lost to disability from chronic conditions has also increased.[13] There is, therefore, a need to identify potential targets for preventive interventions to reduce morbidity, particularly among women, who are likely to live longer. Furthermore, the developing world is currently experiencing increasing urbanization and aging with incentives for poor sleep.[14] The burden of sleep disturbance in the elderly, particularly elderly women, and their potential public health implications are yet to be adequately explored in sub-Saharan Africa. Investigating sleep disturbance in elderly women to determine the most important factors associated with poor sleep in them is imperative because they offer

* Corresponding author. Tel.: +234 7065093947.
E-mail addresses: bimbofawale@yahoo.com, bimbofawale@live.com (M.B. Fawale).

potential targets for interventions that promote healthy aging. This study aimed at characterizing and determining the correlates of sleep quality and quantity in a primary care population of urban-living elderly women in Nigeria.

Participants and methods

Participants and setting

Consecutive elderly women presenting for routine medical check-up between June 2014 and April 2015 at the general outpatient department, a primary care clinic, of the State Hospital, Ilesa, were recruited into the study. Consenting women, who were 65 years or older, ambulant, community-living Nigerians, were recruited into the study.

Assessment of sociodemographic and clinical characteristics

Sociodemographic and clinical data were obtained from the participants. Data obtained include history of smoking, alcohol, coffee, and kola nut consumption. Use of these substances was defined as current or past use. History of hypertension, diabetes, stroke, chronic kidney disease, and dyslipidemia was also obtained. Sitting blood pressure and anthropometric measures including weight and height were measured. Body mass index (BMI), a measure of body adiposity, was calculated as weight (kg) divided by the square of height (m^2).[15]

Assessment of sleep quality

The Pittsburgh Sleep Quality Index (PSQI),[16] an 18-item questionnaire, was used to measure habitual sleep quality over the previous month. It comprises 7 subscales assessing habitual duration of sleep, nocturnal sleep disturbances, sleep latency, sleep quality, daytime dysfunction, sleep medication use, and sleep efficiency. Each subscale has a possible score of 0 to 3, with an overall global score of 0 to 21. Higher scores reflect poorer sleep quality; a score greater than 5 is indicative of impaired sleep quality. The PSQI has been validated in various populations.[17,18]

Assessment of excessive daytime sleepiness and risk of obstructive sleep apnea

The Epworth Sleepiness Scale (ESS) was used to measure average daytime sleepiness. The individual self-rates his/her likelihood of dozing in 8 different situations. Scoring of the answers is 0 to 3, with 0 being "would never doze" and 3 being "high chance of dozing." A sum of 11 or more from the 8 individual scores reflects above-normal daytime sleepiness and need for further evaluation.[19] The validity and reliability of ESS have been tested in different groups of individuals. It has also been used in different populations in Nigeria.[4,11,20]

The risk of obstructive sleep apnea (OSA) was determined using the Berlin Questionnaire. The Berlin Questionnaire has 3 categories. Category 1 has 5 questions about snoring, Category 2 has 3 questions about daytime somnolence, and Category 3 has 1 question about hypertension. In addition, the questionnaire also collects information about age, sex, height, and weight (to calculate the BMI). The overall score is based on the patient's response to each of the 3 categories. The patients are stratified as high risk for OSA if 2 or more categories are positive and low risk if less than 2 categories are positive. This tool has reasonable accuracy[21] and has been used in populations in Nigeria.[22,23]

Assessment of depressive symptoms

Depressive symptoms were assessed using the 10-item version of the Center for Epidemiologic Studies Depression Scale (CESD-10). The CESD-10 is a short-form scale with 10 items that is designed to identify depressive symptoms in the general population and has been used extensively in older adult populations.[24,25] The CESD-10 has shown good predictive accuracy ($k = 0.97$) when compared with the full-length 20-item version of the CESD.[26] A 4-point Likert scale ranging from "rarely" (scored 0) to "all of the time" (scored 3) is used to score the responses, giving a summed total of 0 to 30. Responses to at least 9 of the items were included in the analyses. Clinically relevant depressive symptoms were defined as CESD-10 score ≥10.

Statistical analysis

Data analyses were done using the Statistical Package for the Social Sciences, version 16 (SPSS Inc, Chicago, IL) and presented as means ± SD and frequencies and percentages. For variables with normal distribution, comparison between groups was performed using independent t test. Relationship between categorical variables was assessed using χ^2 test. Pearson correlation statistics were used to determine the strengths and directions of bivariate relationships. Logistic regression analysis was performed to test the independence of the effects of significant correlates on sleep quality and sleep duration. A 5% significance level ($P < .05$) was considered significant.

Ethical clearance

Ethical clearance was obtained from the Ethics and Research Committee of the Hospitals Management Board of the State of Osun, Nigeria.

Results

Overall, 528 subjects participated in the study, but of these, 428 had complete sleep quality data, so they were included in the final data analysis. There was no difference in age ($P = .921$) or level of education ($P = .117$) between the subjects who were included in the analysis and those excluded.

The demographic and clinical characteristics of the study sample

The demographic and clinical characteristics of the participants are summarized in Table 1.

Profile of sleep quality and sleep duration in the study sample

Mean global PSQI score was 4.4 ± 3.1, whereas sleep latency, sleep efficiency, and sleep disturbance scores were 1.3 ± 1.1, 0.4 ± 0.9, and 1.3 ± 0.7, respectively. Day dysfunction, need for sleep medicine, and overall sleep quality were 0.1 ± 0.5, 0.1 ± 0.5, and 0.6 ± 0.8, respectively. The mean sleep duration of the sample was 7.0 ± 1.4 hours; 2.8% slept for an average of less than 5 hours per night, 12.1% for ≥5-<6 hours, and 14.5% for ≥6-<7 hours. Most of the subjects slept for 7-<9 hours, with 36% sleeping for ≥7-<8 hours, 24.3% for ≥8-<9 hours, 10.3% for at least 9 hours. One hundred and seventeen (27.3%) of the subjects were poor sleepers (endorsed PSQI scores >5), whereas 126 (29.4%) of the subjects slept for less than 7 hours.

Correlates of sleep quality and sleep duration in the study sample

The poor sleepers were more likely to be obese (BMI ≥ 30 kg/m^2) ($P = .022$), to have a high risk for OSA ($P = .013$), and to have clinically significant depressive symptoms ($P = .001$) compared with the good sleepers (Table 2). The good sleepers had significantly longer