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ORIGINAL RESEARCH

Self-report Sleep Quality and its Risk Factors Among Community-dwelling Older Adults in China

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ABSTRACT

Context • Researchers have associated insomnia with many disorders, making insomnia a serious public health issue in China. Sleep quality in older adults isn't well characterized in China.

Objective • The study intended to explore the sleep quality and subjective duration of sleep in a community-dwelling older population in China and identify potential risk factors for poor sleep.

Design • The research team performed a cross-sectional survey using the convenience sampling method.

Setting • The study took place in a community in Wuhu, Anhui, China in 2015.

Participants • Participants were 1075 members of the community from Wuhu city.

Outcome Measures • The research team collected self-reported information on sleep quality.

Results • The overall prevalence of self-reported insomnia among older adults were 40.8%. The prevalence of insomnia in females, 259 (59.00%), was significantly higher than in males, 180 (41.00%), with $P=.00$. For income status, the prevalence of insomnia was significantly higher for participants with less than 10 000 RMB per year income for a family, 191 participants (43.51%), than for participants with higher family incomes, with $P=.00$. For marital status, the prevalence of insomnia was significantly higher for the widowed participants, 121 participants (24.56%), with $P=.01$.

Conclusions • Sleep quality for females, low-income families, and widowed people were significantly worse than for people in other categories among older adults in China. Older adults in China need proper interventions for the factors causing poor sleep hygiene. (*Altern Ther Health Med.* 2023;29(4):184-187).

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Insomnia, the subjective disruption of the quantity or quality of sleep, affects 24% of older adults in China.[1] Wang et al's study with older individuals in four cities of Hebei Province in China found that the prevalence of insomnia was 37.75%.[2]

Researchers have associated insomnia with psychiatric disorders,[3] strokes,[4] type 2 diabetes,[5] cervical cancer,[6] creativity,[7,8] lung cancer,[9] hepatic steatosis,[10] chronic kidney disease,[11] thyroid cancer,[12] gastric cancer,[13] spinal cord injury,[14] depression,[15] and dietary patterns[16] (Figure 1).

Bahrami et al found that a high dose of vitamin D was linked to an improvement in insomnia and daytime sleepiness in adolescent girls.[17] Several studies have found Vitamin-D deficiency to be associated with cardiovascular risk factors such as hypertension,[18] obesity,[19] type 1 diabetes,[20] and chronic inflammation.[21,22]

All of the above associations make insomnia a serious public health issue in China, and studies on sleep quality and sleep duration of the general population have increased in China.[23] The older population in China has also been increasing in recent years, and therefore, it's urgent to

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Figure 1. Insomnia: A Risk Factor for Several Diseases

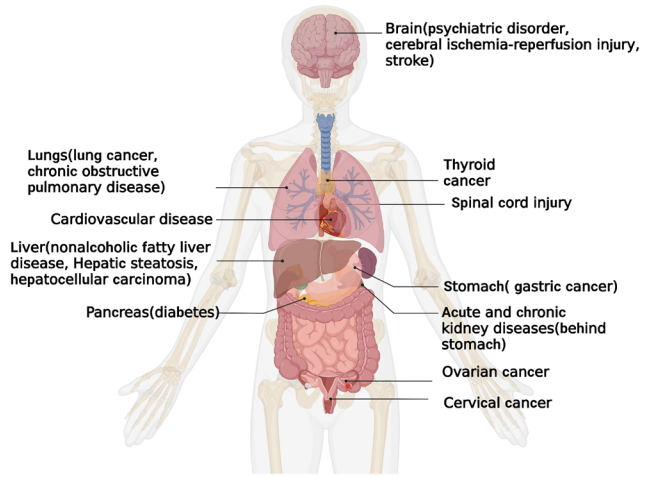

Table 1. Participants' Demographic and Clinical Characteristics (N = 1075)

Variables		n (%)
Educational Level	High school or lower	1016 (94.51)
	College	39 (3.63)
	University or above	20 (1.86)
Gender	Male	553 (51.44)
	Female	522 (48.56)
Family Year Income (RMB)	<10000	391 (36.37)
	10 000-30 000	514 (47.81)
	30 001-60 000	148 (13.77)
	>60 000	22 (2.05)
Marital Status	Married	785 (73.03)
	Single	28 (2.60)
	Divorced	16 (1.49)
	Widowed	246 (22.88)
Sleep Quality	Good	636 (59.2)
	Insomnia	439 (40.8)

Abbreviations: RMB, Chinese currency renminbi.

evaluate the prevalence of insomnia in that older population, especially the subjective self-reporting of insomnia.

Assessment of sleep quality has occurred using various methods. Collection of data on self-reported insomnia among older adults is simple, and although some bias in collecting data may occur with self-reporting, it's still useful for measuring subjective sleep quality over a longer duration than other scales designed to measure that variable.

The current study intended to explore the sleep quality and subjective duration of sleep in a community-dwelling older population in China and to identify potential risk factors for poor sleep.

METHODS

Participants

The research team conducted a cross-sectional survey in a community in Wuhu, Anhui, China in 2015. We went into the community and conducted household surveys. Whether someone is in the house or not is a random event.

The study included potential participants if they: (1) aged over 60 years to minimize the influence of data from younger people on the results, (2) be able to speak fluently.

The study excluded potential participants if they: (1) Inability to communicate effectively with investigators. Participants signed written informed consent forms prior to participation. The study was approved by the ethics committee of Wannan medical college.

Procedures

Sampling. The study used the convenience sampling method.

Survey process. First, we selected the study area by convenient random sampling. We then interviewed older adults through a household survey. When we meet older people, we use face-to-face interviews. According to the information provided by the elderly, the investigator completed the questionnaire.

Outcome Measures. The research team collected self-reported information on sociodemographic variables and on sleep quality.

Outcome Measures

The sociodemographic variables included age, gender, educational level, economic status, and marital status. The survey measured subjective sleep quality in the month prior to the survey, using following question, "How is your sleep quality?" with the possible answers being: (1) good sleep, (2) occasional insomnia, (3) frequent insomnia. The team defined occasional insomnia and frequent insomnia as insomnia.

Statistical Analysis

The research team analyzed all data were using SPSS version 20 software (IBM, Chicago, IL, USA). The team expressed the counting data as numbers (N) and percentages (%) and used the Chi-square test, to analyze the relationships between sleep quality and gender, income, and marital status. $P < .05$ was defined as statistical significance.

RESULTS

Participants

The research team included and analyzed the data of 1075 participants, and all completed the survey. Table 1 shows participants demographic and clinical characteristics. The study included 553 males (51.44%) and 522 females (36.37%). Of the 1075 participants, 1016 had an education at the level of high school or below (94.51%), 39 at the college level (3.63%), and 20 at the level of the university or above (1.86%).

For the family's yearly income, in Chinese currency renminbi (RMB): (1) 391 participants earned <10 000 RMB (36.37%), (2) 514 participants earned 10 000-30 000 RMB (47.81%), (3) 148 participants earned 30 001-60 000 RMB (13.77%), and (4) 148 participants earned >60 000 RMB (2.05%). For marital status: (1) 785 participants were married

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(73.03%), (2) 28 participants were single (2.60%), (3) 16 participants were divorced (1.49%), and (4) 246 participants were widowed (22.88%).

For the prevalence of self-reported insomnia, 636 participants had good sleep (59.2%), and 439 had insomnia (40.8%).

Sleep Quality and Participants' Characteristics

Sleep quality was associated with gender, yearly family income, and marital status (Table 2). Of the 439 participants with insomnia, the number of female, 259 (59.00%), was significantly higher than the number of males, 180 (32.5%), with $P = .00$. The number of participants with insomnia whose family's yearly income was less than 10 000 RMB was significantly higher than the number whose family's incomes fell in the other three categories, with $P = .00$. The number of participants with insomnia who were widowed was significantly higher than the number who were married, single, or divorces, with $P = .01$.

Table 2. Relationship Between Sleep Quality and Characteristics (N = 1075)

Variables		Good Sleep n = 636 n (%)	Insomnia n = 439 n (%)	χ^2	*P* value
Educational Level	High school or lower	600 (94.34)	416 (94.76)	0.06[a]	.95
	College	24 (3.77)	15 (3.42)		
	University or above	12 (1.89)	8 (1.82)		
Gender	Male	373 (58.65)	180 (41.00)	32.38	.00[b]
	Female	263 (41.35)	259 (59.00)		
Family Year Income (RMB)	<10 000	200 (31.45)	191 (43.51)	8.45[a]	.00[b]
	10 000-30 000	331 (52.04)	183 (41.69)		
	30 001-60 000	93 (14.62)	55 (12.53)		
	>60 000	12 (1.89)	10 (2.27)		
Marital Status	Married	480 (75.48)	305 (69.48)	11.36	.01[b]
	Single	21 (3.30)	7 (1.60)		
	Divorced	10 (1.57)	6 (1.36)		
	Widowed	125 (19.65)	121 (27.56)		

[a]Represents linear-by-linear association

[b]$P < .05$, indicating the number of participants who were female, whose family's yearly incomes were less than 10 000 RMB, and who were widowed was significantly higher than the number in the other related categories

Abbreviations: RMB, Chinese currency renminbi.

DISCUSSION

The current study found that the prevalence of self-reported insomnia among older adults was 40.8%, which was higher than the 37.75% of Wang et al's previous study.[2] The possible reason may be that the method of measuring insomnia was different. Self-reported sleep quality is more practical for evaluating subjective insomnia for older adults than other scales.

The current study also found that the prevalence of insomnia in females was significantly higher than that in males. Based on the study linking an improvement in insomnia and daytime sleepiness in adolescent girls to intake of vitamin D,[17] future research should focus on the relationship between vitamin D supplementation and insomnia in older adults.

The current study also found that income level and marital status were associated with the prevalence of insomnia. The prevalence of insomnia was highest in population with less than 10 000 RMB in the family's yearly income, which suggests the government should pay more attention to the quality of life in low-income families. Additionally, the current study found insomnia to be highest in the widowed population, which is in line with Kawata et al's study that found marital status was associated with insomnia-related symptoms.[24]

The present study had some limitations. The sample was small, with a failure to incorporate more stratification. Future studies should include more characteristics, such as regional location. Moreover, the convenient sampling method used that the study used may have introduced selection bias. However, the merit of the work is that this study was based on door-to-door survey.

CONCLUSIONS

Sleep quality for females, low-income families, and widowed people were significantly worse than for people in other categories among older adults in China. Older adults in China need proper interventions for the factors causing poor sleep hygiene.

AUTHORS' DISCLOSURE STATEMENT

The authors declare that they have no conflicts of interest related to the study.

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