BMC Geriatrics

RESEARCH Open Access

Happiness, sleep quality, and self-care ability among community-dwelling older adults in Tehran, 2023

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Abstract

Background Population aging presents a significant challenge that requires comprehensive planning. Limited research has been done on the interconnections between happiness, sleep, and self-care in older adults. This study aimed to determine the Happiness, Sleep quality, and Self-care ability among community-dwelling older adults in Tehran, 2023.

Methods This is a cross-sectional study. We selected 306 eligible, community-dwelling older adults through multistage sampling. Participants were recruited from comprehensive health service centers. We employed three assessments: the Oxford Happiness Inventory (OHI), the Pittsburgh Sleep Quality Index (PSQI), and the Self-Care Ability Scale for the Elderly (SASE). Data analysis was conducted using SPSS version 27, the Spearman correlation test, and univariate and multivariate linear regression analyses.

Results The results indicated that 58% of older adults were male, 67.6% were married, and 44% were retired. A multivariate linear regression analysis revealed a significant association with happiness. Self-care ability had a negative impact ($\beta = -1.50$, $p < 0.001$), while sleep quality had a positive effect ($\beta = 0.50$, $p < 0.001$).

Conclusion Self-care and sleep quality are associated with overall happiness. Policymakers and planners should prioritize happiness enhancement by addressing its relationship with sleep and self-care practices.

Keywords Happiness, Sleep quality, Self-care, Aged

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Introduction

The global population is aging at an accelerated rate, and the health of older adults has become a significant concern in many countries. It is estimated that more than 33% of countries have transitioned into an aged society, a figure projected to rise to 42.5% by 2050 [1]. In Iran, approximately 9.3% of the population consists of older individuals, and this trend continues to grow [2]. The increase in the older population in Iran is outpacing the global average. Until the 2010s, the proportion of older individuals in Iran was lower than the global average, aligning more closely with that of countries in

West Asia and North Africa. However, since the 2010s, the percentage of older people in Iran has surpassed that of its regional counterparts, and it is anticipated that it will exceed the global average by the 2040s. In other words, Iran's population is expected to enter a significant aging phase starting in 2040 [3]. Older adults encounter numerous challenges, including the rise of chronic diseases, feelings of loneliness, increased dependence on others, retirement, and unemployment, all of which can adversely affect their physical and mental health [4, 5]. Happiness is a crucial psychological factor that affects healthy aging [6].

Happiness is a personal evaluation of one's life. This concept encompasses life satisfaction, a positive mood, and the absence of depression and anxiety, as well as an enhanced sense of meaning, capabilities, and the breadth of our thinking [7]. Several researchers have concluded that there is a significant relationship between happiness levels and the quality of sleep among individuals [8, 9]. Happiness directly influences mental health by improving emotional states and moods, thereby increasing life satisfaction. Furthermore, given the established connection between mental health and sleep quality, it is likely that happiness is also related to sleep quality [10].

Age-related changes in sleep lead to a decline in both sleep quality and duration [11, 12]. Research indicates that approximately 60% of older adults experience sleep disorders [13]. Many older adults do not receive adequate sleep, which can increase the risk of accidents and contribute to various physical and mental health issues [14]. The quality and quantity of sleep significantly impact human health, social relationships, and overall well-being [11, 12]. One effective approach to preventing and managing physical and mental health problems is through self-care practices [15].

The World Health Organization has provided a comprehensive definition of self-care, stating that it extends beyond an individual's practical capabilities. Self-care encompasses the ability of individuals, families, and communities to maintain and promote health, prevent diseases, and manage illnesses and disabilities, with or without the support of healthcare providers and professionals; Engaging in self-care enhances health and well-being, reduces healthcare costs, and increases life satisfaction [16]. Self-care includes a broad range of areas, such as disease prevention, improving unhealthy lifestyles, fostering better acceptance and adherence to treatment, preventing secondary effects of physical and mental health issues, and generally lowering medical service costs [17–19]. Surveys conducted in various countries indicate that, on average, 40 to 60% of older adults with low self-care levels require assistance from others to perform daily activities [20–22]. Additionally, several studies have shown a significant correlation between self-care and well-being [23, 24].

If the relationship between self-care, sleep quality, and happiness is established, healthcare professionals can implement programs aimed at enhancing self-care and sleep quality to positively influence happiness. Numerous studies present various solutions to increase happiness levels among the older adults, highlighting the changes in sleep quality that accompany aging and the growing need for this population to enhance their self-care capabilities due to societal industrialization and the increasing demands on informal caregivers. All of these factors underscore the necessity of conducting this research. We could not find any studies that assessed the relationship among the three variables discussed in the older population. Therefore, given the significant importance of these issues, this research aims to provide insights that could reduce both the material and non-material costs incurred by older adults and their caregivers, as well as alleviate the burden on the country's healthcare system. Ultimately, this study aimed to determine the Happiness, Sleep quality, and Self-care ability among community-dwelling older adults in Tehran, 2023.

Methods

This study is a cross-sectional study focused on community-dwelling older adults aged 60 and above. We compiled a comprehensive list of all health centers affiliated with Tehran University of Medical Sciences.

Participants

The sampling method employed was a multistage cluster design. Initially, we randomly selected three healthcare centers from the list provided. Subsequently, we recruited 306 older adults from each center, which was 20% more than the sample size allocated to each center. We explained the study's objectives to the participants and invited them to cooperate via phone, ensuring that we obtained informed consent. Finally, we asked them to complete the informed consent forms and self-report questionnaires.

We calculated a sample size of 306 older adults ($\alpha=0.05$, $\beta=0.20$, $R^2 = 0.1$). Initially, we estimated a sample of 150 older individuals, accounting for a 20% incompleteness in the data. Consequently, the final sample size was adjusted to 188 participants. However, to enhance the validity of the study, we ultimately determined a sample size of 306

$$n = \frac{\left(Z_{1-\alpha/2} + Z_{1-\beta/2}\right)^2}{w^2} + 3^{w=\frac{1}{2}\ln\frac{1+r}{1-r}}$$

The inclusion criteria for this study encompass vision and hearing health (assessed through health records and self-reports), cognitive and psychological health (based on health records), and the absence of known cancer, severe heart failure, or a history of stroke. Consequently, individuals with blindness, deafness, cognitive impairments, or psychiatric disorders were excluded from participation. The exclusion criteria also included a lack of willingness to cooperate and incomplete questionnaires (note that no incomplete questionnaires were received).

Measurements

After obtaining informed consent, data were collected from 306 older individuals across three health centers using four questionnaires from May to October 2023. It is important to note that the sampler assisted illiterate participants in reading the questionnaire questions. The demographic profiles included age, gender, marital status, education, and employment status.

Oxford Happiness Inventory (OHI)

The Oxford Happiness Questionnaire (OHI) was utilized to assess the level of happiness. This questionnaire consists of 29 questions and is grounded in Argyle's definition of happiness. It encompasses five components: life satisfaction, self-esteem, active well-being, self-satisfaction, and positive mood. The questions are scored on a four-point scale (zero to 3) to measure individual happiness levels. The maximum score a respondent can achieve on this questionnaire is 87, indicating the highest level of happiness, while the minimum score is zero, signifying that the individual is unhappy and potentially depressed. Argyle et al. reported a Cronbach's alpha coefficient of 0.90, while Farnham and Bruin obtained a coefficient of 0.87 based on a sample of 101 participants [25]. The reliability of the Persian version of the inventory was found to be between 0.92 and 0.93 [26, 27]. Previous studies have confirmed the face and content validity of the Oral Health Impact (OHI) in older adults. The reliability coefficients for the subscales were calculated using Cronbach's alpha, yielding values ranging from 73 to 78% [28].

Pittsburgh Sleep Quality Questionnaire (PSQI)

The Pittsburgh Sleep Quality Questionnaire (PSQI) was utilized to assess sleep status. This questionnaire was developed by Buysse et al. at the Pittsburgh Institute of Psychiatry. Their research demonstrated that a score greater than five has a diagnostic sensitivity of 89.6% and a specificity of 86.5%. The PSQI consists of nine questions divided into seven components, which include subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. This questionnaire evaluates sleep quality over the past four weeks. Each component is scored on a scale from zero to 3, and the total score is the sum of the component scores. The overall score ranges from 0 to 21, with a score above 6 indicating poor sleep quality. The reliability coefficient (Cronbach's alpha) for the seven components of the Pittsburgh index is 0.83; Each component effectively measures a specific aspect of overall sleep quality [29, 30]. The Persian version of the questionnaire was prepared by Farahi Moghadam et al. and validated by Gholi Mazerji et al., with a Cronbach's alpha of 0.65 [31, 32].

The Self-care Ability Scale for the Elderly (SASE)

The Self-Care Ability Scale for the Elderly (SASE) is a questionnaire designed to assess the self-care abilities of older adults [33]. Developed by Soderham and his colleagues, the SASE consists of 17 questions that address various aspects of daily life, including activities, well-being, mastery, determination, loneliness, and dressing. Responses to each question are measured on a Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree). The total possible scores range from a minimum of 17 to a maximum of 85, with a cutoff point of 69; scores below 69 indicate low self-care ability, while scores above 69 indicate high self-care ability. The dimensions assessed by the SASE include the ability to manage personal responsibilities, pursue goals, and maintain health. The Cronbach's alpha coefficient for the scale ranges from 0.68 to 0.88 [34]. Specifically, Cronbach's alpha for the Chinese version is 0.89, for the Italian version it ranges from 0.72 to 0.90, for the Norwegian version it is 0.85, for the Turkish version it ranges from 0.90 to 0.91, and for the Persian version, it is 0.73 [35–38]. Additionally, Tamizkar et al. (2019) reported a Cronbach's alpha coefficient of 0.80 among older adults [39].

Statistical analysis

We examined the collected data to identify and remove unusual and outlier values. Statistical indices were used to describe quantitative data, including frequency, frequency percentage, mean, standard deviation, median, and interquartile range. Additionally, demographic variables were presented in the form of numbers and percentages. We use Spearman's correlation test to investigate the relationships between quantitative variables, given the non-normal distribution of the tested variables. Furthermore, we used the Kruskal-Wallis test to assess differences in median sleep scores, self-care ability, and happiness scores across categorical variables.

We analyzed data to evaluate the relationship between the independent variables self-care and sleep quality and the dependent variable (see Fig. 1). A regression model was used to assess individuals' happiness. First, a univariable linear regression model was implemented to

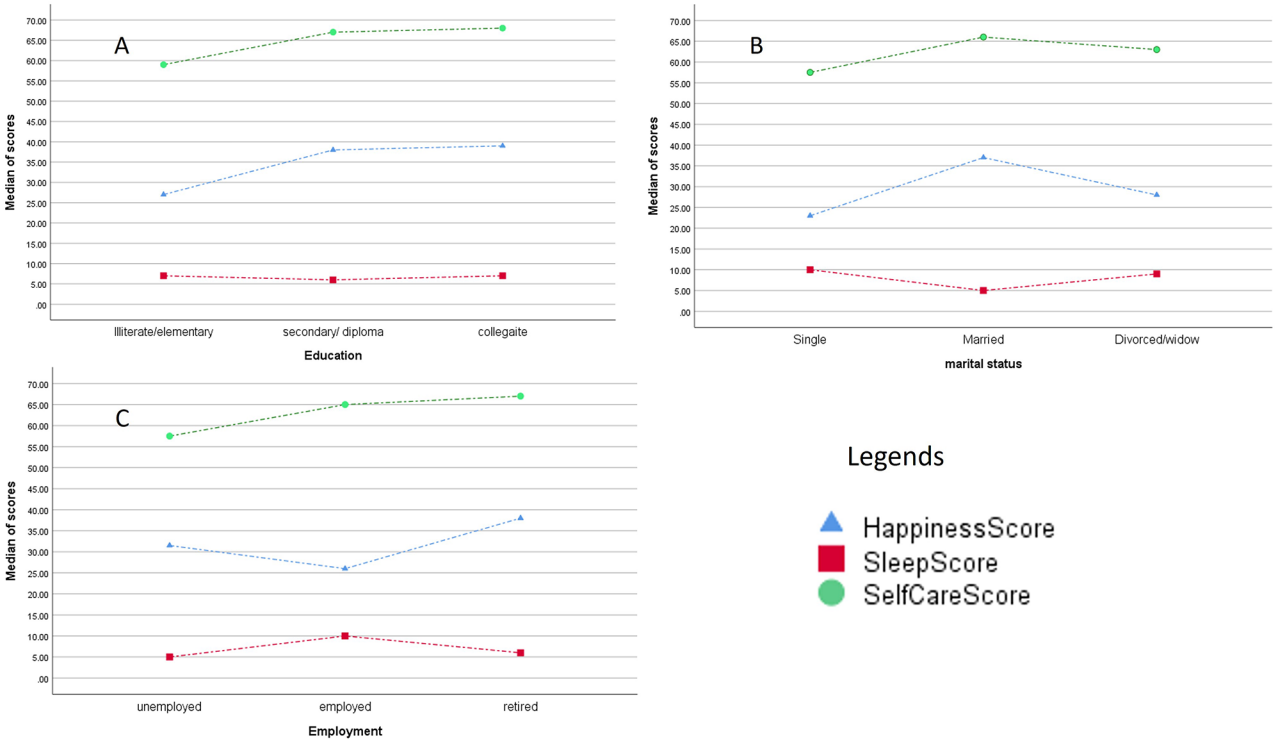

Fig. 1 Median Differences in Sleep Score, Self-Care, and Happiness Across Categorical Variables. (**A**) Education: Significant differences were observed in sleep score, self-care, and happiness (p-value for the Kruskal-Wallis test < 0.001). (**B**) Marital Status: Significant differences were found in sleep score and happiness (p-value for the Kruskal-Wallis test < 0.001). (**C**) Employment Status: Significant differences were noted in sleep score and happiness (p-value for the Kruskal-Wallis test < 0.001)

Table 1 Demographic characteristics of participants

Variables		*n* (%)
Marriage status	Single	32 (10.5)
	Married	207 (67.6)
	Divorced	12 (3.9)
	Widow	55 (18)
Occupation status	Unemployed	94 (30.7)
	Employed	77 (25.2)
	Retired	135 (44.1)
Education	Illiterate	15 (4.9)
	Primary	126 (41.2)
	High school	90 (29.4)
	Diploma	44 (14.4)
	University	31 (10.1)

investigate the relationship between the independent variables and the dependent variable. Next, a multivariable linear regression model was utilized to account for the effects of confounding variables, including age, sex, education, and marital status, on the impact of each independent variable. The results are presented as effect coefficient values along with 95% confidence intervals ($\alpha = 0.05$). Data analysis was performed using Armonk, NY: IBM Corp SPSS v.27.

Table 2 Descriptive statistics of the variables

Variables	Median (Interquartile range)	Min	Max
Happiness	33 (20.25)	4	84
Sleep Quality	7 (6)	0	19
self-care ability	65 (17)	36	83

Results

The mean age of participants was 68±7.2 years (range: 60 and 86 years). 58% of older people were male. The employment status of 44% of the participants was retired. Regarding education level, Most of the people present in this research had primary education (41.2%), and the level of schooling of 4.9% of the total participants was reported to be illiterate. Table 1 shows full details of each of the demographic variables.

Table 2 shows the median and interquartile range of happiness, sleep quality, and self-care ability.

Association between main variables and demographical characteristics

The happiness value has a significant upward trend and is associated with a higher level of education. Married people had a higher happiness value compared to single people and divorcees/widows. The median happiness score among retired people was higher than others (Fig. 1). In terms of sleep score, married people, retired people, and

people with secondary/diploma education have a better status (lower median) than other subgroups. The self-care ability score showed a significant increasing trend only for the different education levels ($p<0.001$). Table 3 shows the results of Spearman's correlation between age, happiness, sleep quality, and self-care ability. Based on these results, sleep quality had a significant correlation with the happiness score of people (r=-0.359; $p<0.001$). A score higher than 6 indicates poor sleep quality. Also, the self-care score showed a positive and significant relationship with the happiness score (r=0.289; $p<0.001$). The older people's age has no significant correlation with other variables. Although the sleep quality variable showed a negative and weak relationship with the self-care score, this relationship was not statistically significant (r=-0.103; p=0.07).

Table 3 Correlation between the happiness, sleep quality, self-care, and the age

Variables	Happiness	Sleep Quality	Self-care ability	Age
Happiness	1	-	-	-
Sleep Quality	-0.359**	1	-	-
Self-care ability	0.289**	-0.103	1	-
Age	0.110	0.067	0.017	1

** $P<0.001$

Table 4 The relationship between happiness with sleep quality and self-care ability

Variables	Reg. Linear Model	β	T	*p*	95% Confidence Interval
Sleep Quality	Univariate	-1.50	-6.7	< 0.001	-1.06 to -1.95
	Multivariable *	-1.52	-6.68	< 0.001	-1.06 to -1.95
Self-care ability	Univariate	0.47	5.21	< 0.001	0.29 to 0.65
	Multivariable *	0.50	5.33	< 0.001	0.31 to 0.68

* Regression linear model by controlling the effect of age, gender, education, and marriage on happiness

The relationship between happiness with sleep quality and self-care ability

Table 4 reports the results of univariate and multivariate linear regression models to investigate the relationship between sleep quality, self-care variables, and happiness. Based on the results of this table, the increase of each unit of the sleep quality score on average decreases the happiness score by 1.5 units, which effect can be seen even after controlling the confounding variables in the multivariate regression. On the other hand, the increase of each unit of the self-care score causes an average increase of 0.47 units in the happiness score. These effects reach 0.5 units with controls for the confounding variables.

Discussion

The results showed that better sleep quality and self-care ability had a direct and positive relationship with the more favorable state of happiness of older people. The increase of each unit of the sleep quality score decreases the value of the happiness score by 1.5 units. This relationship can be seen even after controlling confounding variables in multivariate regression. This result is in line with the results of the study of Zhang et al. [40]. The studies of Badri et al. and Gyasi et al. also concluded that improving the state of sleep is related to improving the state of happiness of people [41, 42].

In addition, the results of the present study showed that the self-care score had a positive and significant relationship with the happiness score; so the increase of each unit of the self-care score on average caused an increase of 0.47 units in the happiness score, and this effect value reached 0.5 units after controlling the confounding variables. In this regard, Turk et al. assessed the relationship between self-care ability and happiness of 400 older people living in eastern Turkey and stated that there is a positive and significant relationship between happiness and self-care ability in older adults; therefore with the increase of each unit of the self-care score, an average of 0.67 units added to the happiness score [43]. In explaining these results, we could say that older people can do their daily activities independently and care for themselves alone, which can bring them satisfaction and happiness. Also, Oraki et al. concluded that with self-care training, older adults can live their lives with more hope and happiness in their study on 40 older people hospitalized in aged care centers [23]. Molazem et al. found that self-care education for patients undergoing coronary artery surgery had a positive effect on their well-being and resilience. Therefore it is necessary to pay attention to such educational interventions for patients [44]. Thus, according to the available evidence, it can be said that performing self-care can lead to more happiness; And by nature, happy people also have a better quality of life [45].

Self-care is a set of behaviors that lead to maintaining a healthy balance and quality of life (e.g. personal hygiene and, a healthy and nutritious diet); Also, self-care can lead to health and well-being through emotional and cognitive growth, calming the mind, and maintaining self-awareness [46]. Self-care can lead to improved sleep [47]. It has been stated that good sleep can improve life satisfaction, positively affecting a person's evaluation of life [48]. On the contrary, sleep problems are related to depression disorders [42]. Depression is at the other end of the happiness spectrum, so the relationship between good sleep and happiness can be justified. In general, this research showed the relationship between sleep quality variables and self-care ability and happiness simultaneously. According to the nature of this study, two points

of view derived from the findings can be expressed in two ways. The first case is that by providing satisfactory conditions for older adults (by him or the society), he increases their level of happiness and then improves their sleep quality, motivation, and ability to take care of themselves. The second state can be considered to raise the level of happiness among older adults by creating good habits and conditions for sleep, as well as increasing the awareness and abilities necessary for self-care.

Limitations

The current study has several limitations. First, a cross-sectional study does not allow for causal inferences to be drawn from the findings. Additionally, the coronavirus pandemic hindered the quality and speed of sample collection. The limited number of participants also resulted in the exclusion of nursing homes and older individuals with severe physical and psychological issues. Furthermore, the evaluation of urban and rural older populations separately, as well as factors such as housing conditions, income, and the prevalence of chronic diseases, are other limitations of this research that warrant investigation in future studies.

Conclusion

The findings indicate a significant positive relationship between happiness, self-care ability, and sleep quality among older adults. Therefore, we recommend that policymakers and health system planners implement necessary educational interventions that emphasize the importance of happiness, sleep hygiene, and self-care for older populations. Older adults should also engage in training related to proper sleep practices and enhance their self-care abilities through repetition and practice, which can contribute to their happiness and vitality. Additionally, informal caregivers can support their older adults loved ones in leading happy and healthy lives by improving sleeping conditions and preventing dependency.

Abbreviations

TUMS	Tehran University of Medical Sciences
OHI	Oxford Happiness Inventory
PSQI	Pittsburgh Sleep Quality Questionnaire
SASE	The Self-care Ability Scale for the Elderly

Acknowledgements

Dear EditorialThis study is not a Clinical Trial, So it does not need a Clinical Trial Number.

Author contributions

M.B., P.F.A., and F.Sh. were involved in the original conception and design of the study. K.K and M.S. data collection and statistical analysis. F.S. and P.F.A. prepared the initial. All authors read and approved the final manuscript.

Funding

A specific project grant does not fund this study.

Data availability

The datasets generated and analyzed during the current study are not publicly available due to privacy and ethical concerns but are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

This study was confirmed by the Ethics Committee of Tehran University of Medical Sciences (Ref. code: IR.TUMS.SPH.REC.1401.300). We explained the objectives to the participants and obtained informed consent.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 29 May 2024 / Accepted: 9 December 2024
Published online: 23 December 2024

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