Clinical Journal for Medicine, Health and Pharmacy, Vol. 3, No, 2, June 2025
ISSN: 3049-1282

Sleep Quality and Mental Health Correlation in Institutionalized Older Adults

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Received: 17/March/2025; Revised: 14/April/2025; Accepted: 02/May/2025; Published: 30/June/2025

Abstract

Sleeping difficulties often occur in the senior population. A primary sleeping disorder arises from the physiological deterioration associated with age; conversely, subsequent sleeping issues stem from several factors related to physical and mental health. The current study seeks to elucidate the relationship between sleeping habits and mental wellness in aging, focusing on how various factors typically linked to sleep, such as cognitive and physiological elements, as well as medications for sleep, forecast low levels of sleep across multiple phases of life. The researchers performed many analyses (ANOVAs, Pearson correlations, and linear declines) to evaluate the study's hypotheses. Among a cohort of 180 respondents (comprising old, middle-aged, and young people), 143 people exhibiting poor sleeping habits were identified. Distinct prognostic patterns appeared among the three groups. The use of sleeping medicine linked to deteriorated sleeping circumstances is anticipated by inadequate sleeping quality in older people and by depression in young individuals. Conversely, worsening sleeping quality is forecasted by sadness in middle-aged individuals. This investigation is the first to analyze the characteristics of insufficient sleep in aging, contrasting with previous research that concentrated on changing from excellent to poor sleeping duration and varying sleeping habits over the lifetime. This data needs to be evaluated from a preventative standpoint.

Keywords: Sleep Quality, Mental Health, Older Adults, Aging.

1 INTRODUCTION

Emerging evidence indicates that inadequate sleep positively correlates with physical wellness, mental problems, and overall quality of life Mirzayev et al. (2021). Substantial cohort research revealed that insufficient sleeping quality is associated with increased chances of hypertension in a rural Chinese community. Considerable cohort research revealed that those who sleep briefly and have poor sleeping hygiene face a heightened risk of heart disease Gu et al. (2024). Moreover, several studies have shown that inadequate sleeping quality is a significant predictor of suicidal thoughts and symptoms of depression in the aged population. The processes linking poor quality of sleep to these detrimental outcomes remain unclear.

To mitigate emotional distress and negative consequences resulting from inadequate sleeping quality, it is crucial to comprehend its prevalent patterns and related causes Baglioni et al. (2022). Prior research has identified numerous factors associated with suboptimal sleeping quality in older people, encompassing four primary domains: (1) socio-demographic variables such as age, marital rank, and

schooling; (2) lifestyle variables, such as getting active and caffeine consumption; (3) mental variables, including anxiety and depressive disorders; and (4) persistent illnesses, such as osteoarthritis and lung disease. Little research has investigated the incidence and risk factors associated with inadequate sleeping quality in the nursing home demographic Shao et al. (2023). No study has investigated the interplay of risk factors contributing to inadequate sleep quality among nursing facility senior individuals. The objectives of this research were: (1) to determine the incidence of inadequate sleeping quality among older people residing in nursing facilities; (2) to investigate the risk factors associated with poor sleeping duration; and (3) to examine the relationships among these risk variables.

2 MATERIALS AND METHODS

2.1. Subjects

One hundred eighty volunteers (ages 19 to 89) were recruited via public announcements and freely participated in the research. The study was categorized into age groups: 60 older adults, 70 middle-aged people, and 50 young adults. About poor sleeping hygiene, 145 individuals were chosen based on a Pittsburgh Sleepiness Quality Score (PSQS) score exceeding five and were incorporated into the final sample Kazemi et al. (2024). Notably, 48 participants were old, 52 were middle-aged, and 43 were adolescents. A history of mental or behavioral disorders and chronic health problems (e.g., Alzheimer's disease, stroke, heart disease, and malignancy) was established as an exclusion criterion.

2.2. Metrics

- ***Socio-Demographic and Anamnestic Data***

Statistics on demographics (age, educational attainment, race, and marital position), lifestyle factors (coffee use, smoking habits, and alcohol intake), medical history, and psychiatric data were obtained for each patient via in-person interviews.

- ***Arterial Pressure***

Systolic blood pressures (SBPs), diastolic blood pressures (DBPs), and heartbeat were measured using a certified automated digital sphygmomanometer for self-assessment, according to European recommendations. The apparatus measures brachial blood flow by the oscillometric technique, with an accuracy range of 30-260 mmHg and a heart rate range of 40-200 beats per minute.

- ***PSQS***

The PSQS evaluated individuals' sleeping hygiene over the preceding 30 days using 19 questions addressing both quantitative and qualitative dimensions of sleeping behaviors. Information was supplied for seven distinct components of sleeping: sleeping quality, sleeping delay, sleeping length, habitual sleeping efficiency, insomnia, the utilization of sleeping medicine, and functioning during the day. A comprehensive sleeping quality score was computed for every participant. Elevated global

scores showed worse quality of sleep. Consistent with the Italian confirmation, a cut-off score of five was established to delineate excellent from poor sleeping quality. The cumulative PSQS score was derived by summing all the subscale values.

- ***Beck Depression Inventory (BDI) Hubley (2021)***

The BDI is an online survey comprising 21 items that assess depressive symptoms, including despair and irritation, cognitive aspects such as guilt and feelings of punishment, and physical signs like fatigue and weight loss associated with depression. Answers are provided via a Likert scale with five points. The worldwide score reflects overall depression symptomatology. Elevated BDI scores correlate with worse circumstances. A score of 0 and 13 signifies "no depression" (i.e., absence of substantial depressed signs), 14 to 19 denotes "mild melancholy", 20 to 29 reflects "moderate melancholy", and 30 to 63 shows "severe melancholy".

- ***Toronto Alexithymia Scale-20 (TAS-20) Preece et al. (2024)***

The TAS-20 is a self-administered questionnaire that evaluates alexithymia via 20 questions rated on a 5-point Likert scale. The examination evaluates three dimensions of alexithymia. The ratings range from 20 to 100, including categorical and continuous information. Elevated scores correlate with increased alexithymia. Values between 52 and 60 signify mild alexithymia, whereas values beyond 60 indicate extreme alexithymia.

- ***State-Trait Anxiety Inventory (STAI) Pretorius & Padmanabhanunni (2023)***

The STAI is a self-evaluation tool designed to measure state and trait anxiety with a 4-point Likert scale. Consistent with the study's objective, only anxiety traits (20 items) were examined. An increased STAI score indicates heightened levels of anxiety. The survey does not provide a definitive cut-off score for anxiety. Traditionally, scores beyond 51.5 for males and 54.2 for women show heightened trait anxiety.

2.3. Methodology

Upon completing the appropriate permission form, participants had three blood pressure audio recordings, followed by weight and height measurements. The individuals engaged in a socio-demographic and anamnestic discussion and answered the following surveys: Pittsburgh Sleepiness Ranking, Toronto Alexithymia Scale-20, State-Trait Anxiety Inventory, and Beck Depression Inventory. The whole treatment lasted around 30 minutes.

2.4. Analyzing data

Analyses of variance (ANOVAs) were performed to assess differences among the groups (older adults, middle-aged, and younger individuals) regarding the measures of PSQI and mental and physical characteristics. The Tukey after-the-fact test was used to investigate substantial group variations further. Relationships were performed to investigate the relationship between sleeping indices evaluated by PSQS and mental and physiological variables. Ultimately, consistent with the research's

primary objective, the multiple regression models assessed whether biological variables and self-reported psychological wellness within each group could independently estimate the amount of sleep.

Two models were evaluated for each age cohort to examine potential predictors of alterations in sleeping quality as indicated by the global sleeping quality index of the PSQS (model 1: physiological indicators, encompassing BMI and blood pressure indicators; model 2: mental predictors, comprising STAI score, BDI score, and worldwide TAS-20 rating). Due to the substantial disparities among categories regarding medication utilization for sleep, additional regression models were employed to evaluate the predictive influence of both physiological and mental factors on medication usage (model 1: neurological indicators, encompassing BMI and blood pressure indicators; model 2: psychological indicators, comprising STAI score, BDI score, worldwide TAS-20 score, and overall sleeping quality). Every statistical analysis was performed with a significance threshold of $p < 0.05$.

2.5. Ethical Declaration

The review board of the School of Psychiatry at Sapienza College authorized this research. A waiver for oral or written permission was approved; suitable respondents completed forms for informed consent before completing the survey battery.

3 RESULTS AND FINDINGS

Descriptive information for individual features, Pittsburgh Sleeping Quality Index sections, and medical and cognitive factors is presented.

Table 1: Sleep Quality Analysis

Category	Elderly	Middle Age	Adults
Age-average	71.01	54	27.15
Age-SD	6.03	6.22	4.62
Education-average	15.37	16.11	17.23
Education-SD	4.09	4.91	3.39
Female-count	31.4	2.7	23.67
Female-%	62.79	59.44	53.18
Single-count	12.53	14.53	42.57
Single-%	25.21	29.39	97.51
Married-count	29.9	36.1	0.72
Married-%	61.32	69.54	2.54
Widow-count	6.89	1.13	1.07
Widow-%	14.76	2.77	0.09
Coffee-count	43.11	47.56	36.91
Coffee-%	88.04	89.74	83.86
Smoker-count	10.64	12.2	17.36
Smoker-%	21.14	21.84	42.77
Alcohol-count	30.66	36.43	33.25
Alcohol-%	64.19	68.73	78.32

3.1. Relationships

Pearson correlations among PSQS ratings, mental factors, and physiological parameters are shown.

3.2. Regression Analysis

Linear regressions analyzed the correlation between the neurological (model 1) and mental (model 2) components with the PSQS global rating and the administration of sleeping medication within every single group.

- ***Senior Citizens***

In senior individuals, neither model anticipated an elevation in the PSQS world rating (i.e., decreased sleeping duration). Model 2 had marginal significance. The analysis of sleeping medicine indicated that Model 2 was meaningful. Specifically, greater scores in the global PSQS correlated with increased drug use.

- ***Adults in middle life***

For middle-aged people, the global PSQS rating was forecasted using the second model. Specifically, depression symptoms were strong predictors of elevated PSQS values. None of the regression approaches demonstrated significance for applying sleeping medicine.

- ***Emerging Adults***

In younger people, neither the first nor the second model forecasted the worldwide PSQS rating. As shown in modeling 2, psychological characteristics indicated sleeping medication consumption. Elevated depression symptom ratings forecasted increased use of sleeping medicine.

3.3 Constraints

A primary weakness of this research is its cross-sectional design, which precludes the determination of causal relationships between aging and neurological and psychological states, together with their interconnections. A further weakness of the research is the self-reported type of sleeping circumstances. Although this approach of determining sleeping quality is corroborated by existing research, our study cannot establish a diagnosis of sleeping problems in the individuals, limiting the generality of the findings, as they pertain to impaired sleeping duration rather than to clinically diagnosed sleeping conditions. More research should address these drawbacks using polysomnographic sleeping measurements.

An additional restriction is evident in the study's exclusive focus on psychological wellness. Future research should encompass other aspects, including emotional anguish, anger, behavioral traits (e.g., impulsive), and cognitive qualities (e.g., organizational performance), that are linked to disrupted equilibrium and sleeping metabolism.

4 CONCLUSION

Individuals diagnosed with mental disorders are more prone to have worse sleeping quality compared to the entire population. This research builds upon this concept, emphasizing that specific

physical and mental characteristics might influence sleeping quality in individuals with inadequate sleeping quality. These problems vary among children, middle-aged, and elderly individuals. To mitigate this trend, it is beneficial to devise targeted treatments to enhance sleep among youthful, middle-aged, and elderly populations; for instance, improving mood in the younger and middle-aged demographics and enhancing sleep quality in older people.

Low subjective sleeping quality is a prodrome for a recognized sleeping problem and might signify a person's psychological state deterioration. Most prior research concentrated on the first spectrum segment, namely the shift from excellent to average quality sleep. Conversely, to our knowledge, no study has examined the trends that define established bad sleeping habits.

A significant result of inadequate psychological wellness and sleeping quality is a heightened need for healthcare services and related socioeconomic expenses. It is necessary to examine this subject. Subsequent research should validate and expand upon the present study's findings, using polysomnographic recorders to evaluate the level of sleep, enabling tailored treatments to improve sleeping quality based on the person's age. Enhancing sleeping quality would improve overall mental, physical, and emotional wellness, with clear positive impacts on aging.

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