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Sleep Deprivation and Mental Well-Being Among Adults: A Cross-Sectional Study

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Abstract: The relationship between sleep and wellness is examined in this study, with a focus on how sleep loss affects people' overall wellbeing. It highlights how crucial sleep is to preserve mental, emotional, and physical well-being. The level of sleep deprivation is rising in today's culture due to social expectations, work, social life, work pressure, and technology use. The study was carried out to investigate the association between sleep and an individual's welfare using purposive sampling with a sample size of 300 persons of various ages, and therapeutic approaches were recommended. Two standardized instruments were used to gather data: the Pittsburgh Sleep Quality Index and the Warwick-Edinburgh Mental Well-being Scale. Non-parametric statistical methods, such as the Mann-Whitney U test and the Sperarman correlation, were used since the data had a non-normal distribution. The findings showed a slight but substantial negative association between psychological wellness and sleep deprivation, suggesting that higher levels of sleep deprivation are linked to lower mental well-being. Gender differences were also noted; male participants reported higher levels of sleep deprivation than female participants, which correlated with poorer mental wellbeing and suggested the need for awareness programs and strategies to address sleep-related issues in adults of different age ranges.

Keywords: *Sleep Deprivation, Well-Being, Mental Health, Adults*

1. Introduction

Maintaining good physical, cognitive, and emotional functioning requires sleep, which is a basic biological mechanism. By promoting emotional stability, metabolic control, and brain

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repair, it plays a vital restorative role. In adulthood, which is generally defined as those who are 18 years of age and above, getting enough sleep is very crucial since it promotes daily functioning and general quality of life. However, recent studies show that a significant percentage of adults do not get enough sleep as a result of environmental constraints and growing lifestyle demands (Cunningham et al., 2021). In modern societies marked by rapid technology innovation and high performance expectations, sleep deprivation has become a major public health concern. It can be broadly defined as poor sleep quality, chronic sleep restriction, and acute sleep deprivation. According to Shah et al. (2025), Sexton-Radek (2025), Irish et al. (2023), and other behavioral and environmental factors, such as excessive screen time, irregular sleep cycles, occupational stress, and shift work, these forms might manifest separately or concurrently. By delaying sleep onset and decreasing sleep efficiency, increased digital engagement, especially at night, has made sleep problems worse (Scott et al., 2023). Lack of sleep has numerous negative effects on one's physical well-being. According to recent studies, getting too little sleep interferes with important physiological functions like immune system performance, metabolic control, and cardiovascular stability. Increased inflammatory responses, poor glucose metabolism, and an increased risk of long-term illnesses like obesity, diabetes, and cardiovascular disease have all been connected to chronic sleep deprivation (Shah et al., 2025; St-Onge et al., 2023). Furthermore, even in cases where sleep length is sufficient, irregular sleep has been shown to be an independent predictor of negative cardiometabolic outcomes (Huang et al., 2024). Lack of sleep has significant effects on cognitive functioning in addition to its effects on physical health. Attention, executive functioning, learning, and memory consolidation all depend on getting enough sleep. According to recent research, sleep deprivation has a detrimental impact on working memory, decision-making, attentional control, and cognitive efficiency (Wang et al., 2024; Hudson et al., 2023). These deficiencies raise the danger of mistakes and mishaps in high-demand work contexts where sustained attention and quick decision-making are crucial. Lack of sleep is also detrimental to one's emotional and mental health.

According to new research, there is a clear correlation between increased feelings of anxiety, sadness, and emotional dysregulation and poor sleep quality (Li et al., 2025; Freeman et al., 2023). Lack of sleep has been demonstrated to increase emotional reactivity, decrease positive affect, and disrupt emotional regulation processes, all of which contribute to psychological distress in general (Sexton-Radek, 2025; Palmer & Alfano, 2024). Crucially, there is a reciprocal

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relationship between sleep and mental health, with sleep disorders both causing and contributing to mental health issues (Baglioni et al., 2024).

Furthermore, long-term sleep deprivation, no matter how slight, can have a cumulative impact on wellbeing. Persistent sleep deficiencies have been linked to decreased life satisfaction, increased impulsivity, and decreased psychological resilience (American Academy of Sleep Medicine, 2024; Scott et al., 2023). Interestingly, people frequently underestimate the effects of sleep loss, which causes a gap between perceived functionality and actual emotional and cognitive damage (Hale et al., 2023). In contemporary settings, social and behavioral factors can have an impact on sleep patterns and overall wellbeing. Increased use of digital gadgets and a preference for productivity and social interaction over relaxation lead to erratic sleep patterns and shorter sleep durations. Circadian rhythms are disturbed and sleep consistency is compromised by occupational pressures, such as lengthy work hours and shift work (Irish et al., 2023; Huang et al., 2024). These results emphasize how crucial it is to take lifestyle and contextual factors into account when analyzing sleep-related consequences. There are still a lot of unanswered questions about the complex relationship between sleep deprivation and general wellbeing, despite the increasing number of studies. Fewer studies have used standardized measures to assess the cumulative effects of sleep deprivation on psychological well-being, especially in varied adult populations, whereas earlier research has frequently looked at single outcomes. Furthermore, little is known about how individual differences—like gender—moderate these associations.

1.1 *Sleep*

According to Li et al. (2025), “sleep is a physiological condition of diminished consciousness that promotes psychological health, memory consolidation, and brain recuperation.” “For adults to preserve their general health, emotional control, and cognitive abilities, sleep is a biological and restorative process” (Griggs et al., 2022).

1.2 *Sleep Deprivation*

According to Wang et al. (2025), “it is characterized by either acute or chronic sleep restriction below prescribed levels, which is linked to negative health consequences such as diminished mental well-being and elevated illness risk”. According to Griggs et al. (2022), “sleep deprivation is a state of inadequate sleep length or quality that impairs cognitive, emotional, and physiological performance.”

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1.3 *Wellbeing*

It refers to "a person's total quality of life, which includes their capacity to manage everyday pressures, positive functioning, and life satisfaction"(Li et al., 2025). According to Ghose et al. (2022), "well-being is a multifaceted concept that includes social satisfaction, psychological functioning, and physical health."

1.4 *Mental Wellbeing*

"Positive psychological functioning, such as emotional stability, resilience, and efficient coping, is referred to as mental well-being" (Li et al., 2025). "It describes the existence of good affect, social functioning, and the lack of psychological discomfort, all of which are significantly impacted by the quantity and quality of sleep" (Ghose et al., 2022).

2. Methodology

2.1 *Aim*

To investigate the relationship between sleep patterns and well-being in adults, with a particular emphasis on comprehending the effects of insufficient sleep on mental wellbeing to provide treatment methods.

2.2 *Hypothesis*

Ho: There is no significant relationship between adults' well-being and sleep deprivation.

H_{o2}: There is no statistically significant difference in mental well-being between male and female adults.

H_{o3}: There is no statistically significant difference in sleep deprivation between male and female adults.

H1: there is a statistically significant negative relationship between sleep deprivation and mental well-being among adults, such that higher level of sleep deprivation is associated with lower mental well-being.

H_2: There is a statistically significant difference in mental well-being between male and female adults.

H_3: There is a statistically significant difference in sleep deprivation between male and female adults.

2.3 *Research Design*

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To describe the sleep quality and mental health of the population under study, a descriptive research design was used. Using surveys, interviews, observations, and pre-existing data sources, descriptive research aims to discover and characterize traits, behaviors, and events within a population.

2.4 *Participants and Sampling Design*

The sample consisted of 300 individuals between the ages of 18 and 65, 150 of whom were male and 150 of whom were female (M = 27.52, SD = 8.901). Participants were recruited using purposive sampling approaches. Students (30.3%, n = 91) and employed individuals (69.7%, n = 209) made up the sample; 69 (23.0%) had bachelor's degrees and 231 (78.0%) had graduate degrees. Each participant was from a city.

2.5 *Measures*

2.5.1 PSQI stands for Pittsburgh Sleep Quality Index:

Developed by Buysse et al. created the PSQI, a self-report tool that evaluates sleep quality and disturbances over a month. Subjective sleep quality, sleep latency, length, habitual sleep efficiency, sleep disruptions, usage of sleeping medicine, and daytime dysfunction are the seven components that are evaluated by this measure. Higher values imply poorer sleep quality. The global PSQI score ranges from 0 to 21, with each component score falling between 0 and 3.

2.5.2 Warwick-Edinburgh Mental Well-Being Scale (WEMWBS):

Tennant et al. (2007) created the WEMWBS, a self-reported questionnaire that uses 14 positively worded items spanning pleasant affect, rewarding interpersonal interactions, and excellent functioning to evaluate mental well-being. On a 5-point Likert scale from "none of the time" to "all of the time," participants report their experiences throughout the preceding two weeks; higher scores indicate greater mental health.

2.6 Procedure

Adults who are currently suffering from sleep deprivation and depleted mental health participated in this study. Data was collected using a hybrid approach (online and offline) after informed consent was obtained. Participants acknowledged to their voluntary participation and understanding of confidentiality protections by completing a consent form. Every method complied with ethical standards for informed consent, confidentiality, protection against harm, and disclosure of affiliations and possible conflicts of interest.

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3. Data Analysis

SPSS version 22 for Windows was used to analyse the data. For scale and demographic variables, descriptive statistics (means, standard deviations) were computed. Non-parametric tests were used because the variables' distribution was not normal (as shown by the Kolmogorov-Smirnov test, K-S(300) =.074, p =.000 for PSQI). PSQI and WEMWBS scores were compared between independent groups (by gender) using the Mann-Whitney U test. The relationships between sleep deprivation and mental health were investigated using Spearman's rank-order correlation coefficient. A two-tailed significance level of α =.05 was applied to all analyses.

3.1 *Results*

Table 1: *Socio Demographic Characteristics of the participants in regard to distribution of age.*

	N	Minimum	Maximum	Mean	Std. Deviation
Age	300	8	65	27.52	8.901
Valid N (list wise)	300				

Table 1 presents sociodemographic information, with a minimum age of 18 indicating that all participants are adults. The maximum age of 65 suggests that the participants may vary greatly in age. The participants' mean age of 27.5 suggests that there may be a bias towards younger people because it is below the middle of the specified age range. The range of ages surrounding the mean is represented by the standard deviation of 8.901. A higher standard deviation could be a sign of greater individual age dispersion. As seen by the mean being below the midpoint of the range, the participants appear to cover a wide age range generally, with a tendency towards younger ages.

Table 2: *Spearman's non-correlation test*

			PSQI	WEMWBS
Spearman's rho	PSQI	Correlation Coefficient	1.00	_.170
		Sig.(2-tailed)		.003
		N	300	300
	WEMWBS	Correlation Coefficient	-.170	1.0
		Sig. (2-tailed)	.003	
			300	300

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The nonparametric correlation between PSQI (Pittsburgh Sleep Quality Index) and WEMWBS (Warwick Edinburgh Mental Well-being Scale) is displayed in Table 2. The Spearman correlation test findings show a correlation of -1.70 for WEMWBS and a two-tailed significance of nonexistence ($p > 0.05$) for PSQI. According to the PSQI, there is no statistically significant correlation between sleep quality and mental health. Despite its smallness, the WEMWBS correlation coefficient of 0.03 is statistically significant ($p = 0.03$). Consequently, no significant correlation was found between PSQI and mental health, despite a tiny but significant relationship between sleep quality and mental well-being as measured by WEMWBS.

3.2 *Descriptive Statistics*

The sample had moderate sleep quality, as shown by the PSQI scores, which varied from 0 to 45 ($M = 15.68$, $SD = 7.345$). The WEMWBS scores indicated moderate mental well-being, ranging from 14 to 68 ($M = 44.66$, $SD = 9.472$). Subjective sleep quality ($M = .83$, $SD = 1.110$), sleep latency ($M = .84$, $SD = 1.114$), sleep duration and efficacy ($M = 1.82$, $SD = 1.550$), sleep disturbance ($M = 1.49$, $SD = 1.284$), sleep medication ($M = 1.52$, $SD = 1.086$), and daytime dysfunction ($M = 3.01$, $SD = 1.809$) were the mean scores for the PSQI domains.

3.3 *Group Comparisons*

Males and females had similar levels of sleep quality, according to the Mann-Whitney U test, which found no significant difference in PSQI ratings ($p = .76$) [14]. Nonetheless, WEMWBS scores revealed a substantial gender difference ($p < .05$), suggesting that males and females differ significantly in terms of mental health. According to a pie chart analysis, the distribution of sleep quality and mental well-being was 52% for men and 48% for women.

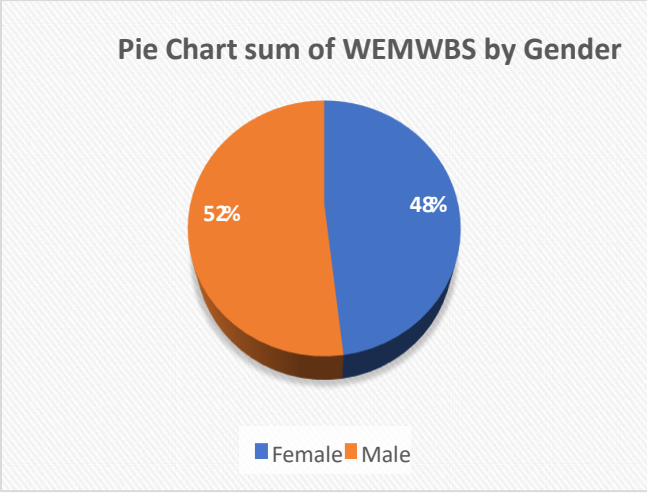

Figure 1: *Pie chart differentiation for WEMWBS by gender*

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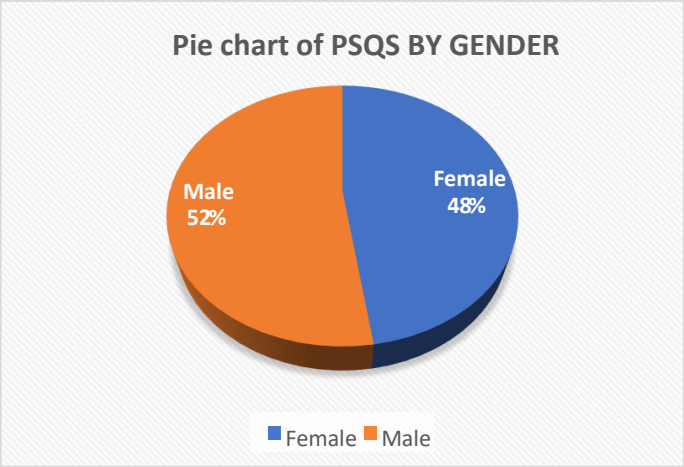

Figure 2: *Pie chart differentiation for PSQI by gender*

In figure 1. And 2: the percentage of men and women who get enough sleep is shown in table 4.8.1. In this case, men exhibit 48% of the appropriate sleep pattern, whereas women exhibit 52%. According to male statistics, men do not get enough sleep in comparison to women. In contrast, the percentile of experiencing disrupted mental wellness is shown in table 4.8.2. In this case, the table shows a male proportion of 52% and a female percentage of 48%, indicating that males have little impact on mental health because they get less sleep than females.

3.4 *Correlation Analysis*

A slight negative association between PSQI and WEMWBS (rs = -.170, p =.003) was found using Spearman's rho correlation analysis, suggesting that greater sleep deprivation is linked to worse mental health. While sleep length and efficacy showed virtually no correlation (rs = -.001, p =.988), sleep latency shown a strong positive correlation (rs = 1.989, p =.000) when looking at particular PSQI areas. Daytime dysfunction (rs =.080, p =.165), sleep disruption (rs =.060, p =.302), and sleep medication (rs =.095, p =.099) were not statistically significant.

4. Discussion

With a focus on gender disparities, the current study investigated the connection between adults' mental health and sleep deprivation. The results offer significant insights into the relationship between sleep quality and psychological well-being and partially corroborate the assumptions put forth.

The findings supported the main hypothesis by showing a statistically significant negative correlation (rs = −.170, p =.003) between sleep deprivation and mental well-being as assessed by

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the Warwick–Edinburgh Mental Well-being Scale (WEMWBS) and the Pittsburgh Sleep Quality Index (PSQI). This result suggests that poorer mental health is linked to higher degrees of sleep deprivation. As a result, the alternative hypothesis (H_1) was accepted, and the null hypothesis (H_{01}) was rejected. The poor amplitude of this association, despite its statistical significance, suggests that sleep deprivation has a minor impact on mental health. This is consistent with the body of research that views mental health as a multidimensional construct impacted by various biological, psychological, and social factors.

The results showed a statistically significant difference between male and female participants in terms of mental well-being ($p < .05$). As a result, the alternative hypothesis (H_2) was accepted, and the null hypothesis (H_{02}) was rejected. This finding implies that gender has a big impact on mental health. The observed discrepancies could be the result of gender disparities in coping mechanisms, emotional processing, and societal expectations. These results are in line with earlier studies showing that men and women experience and report psychological well-being differently but there was no statistically significant difference in sleep deprivation was found between male and female subjects ($p = .76$). As a result, the alternative hypothesis (H_3) was not supported, and the null hypothesis (H_{03}) was kept. This result implies that the current sample's genders experience sleep deprivation in a comparable way. The existence of gender disparities in mental health despite similar levels of sleep deprivation, however, suggests that the association between sleep and psychological outcomes may be influenced by additional moderating or mediating factors. Individual categories including sleep length, sleep disruptions, medication use, and daytime dysfunction did not substantially correlate with mental well-being, according to further analysis of PSQI subcomponents. These results imply that total sleep quality rather than specific sleep metrics may be a more useful measure of psychological functioning. It is noteworthy that there may have been a reporting or processing error because the reported correlation coefficient for sleep latency was higher than the permitted statistical range (−1 to +1). To guarantee the accuracy of the results, this problem needs to be fixed.

The study's conclusions have significant ramifications for both public health and therapeutic practice. Even if the effects are small, sleep hygiene interventions may help improve mental health. Public health campaigns should highlight the importance of sleep in preserving psychological well-being, and mental health professionals should include sleep exams in routine

evaluations. The necessity for gender-sensitive strategies in mental health promotion and intervention is further highlighted by the documented gender disparities in mental well-being.

4.1 *Limitation of the study*

First, using self-report measures could limit the findings' objectivity and add response biases. Second, judgments about causality cannot be drawn because of the cross-sectional design. Third, the results may not be as applicable to older populations due to the sample's relatively youthful age (M = 27.52). Furthermore, there was little control over potential confounding variables including stress, lifestyle choices, and job expectations.

4.2 *Future scope of the study*

Longitudinal designs should be used in future studies to better understand the causal connections between sleep deprivation and mental health. The reliability of sleep evaluation would be improved by the introduction of objective sleep measures like actigraphy.

To provide a more thorough understanding of the observed correlations, future research should also investigate potential moderating and mediating variables, such as stress, coping mechanisms, and personality traits.

5. Conclusion

The current study concludes that, despite the modest intensity of this association, sleep deprivation is substantially linked to lower mental well-being in adults. Significant disparities in mental well-being were found, highlighting the complexity of psychological health, even though there were no gender differences in sleep deprivation. These results emphasize how crucial it is to take sleep into account as a significant, albeit incomplete, factor in mental health.

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