



IN MOTION, IN REST, IN MIND:

**UNDERSTANDING THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY,
SLEEP QUALITY AND MENTAL WELL-BEING**

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ABSTRACT

The current study explored the connection between mental well-being, sleep quality and physical activity. A sample of 162 young adults (83 males and 79 females) were selected through random sampling method. The study variables were measured using Warwick Edinburgh Mental Well-being Scale, Pittsburgh Sleep Quality Index and International Physical Activity Questionnaire-Short Form. The results found out that physical activity and sleep quality both were found to have a positive, significant correlation with mental well-being. The study has important implications for how these factors interact and influence each other. It

sheds light on interventions that improve mental health, sleep patterns, and physical activity levels.

Keywords : *Mental Well-being, Physical Activity, Sleep Quality, Young Adults*

Introduction

The World Health Organisation defines positive mental health as a feeling of emotional and psychological well-being. This includes recognizing your strengths, adapting to life's pressures, being productive in one's work and relationships, and managing the demands of daily life (World Health Organisation, 2022). Mental well-being isn't just about happiness; it's a combination of our emotional state, life satisfaction, and how we function in daily life. This includes our relationships, sense of control, purpose, and independence. It affects everyone, regardless of age, and can fluctuate between positive and negative (What Do We Mean by Mental Wellbeing? , Paul Hamlyn Foundation, 2014).

While hospitals tend to be filled with older adults due to an aging population (only 1 in 8 young adults has a long-term health issue), mental health concerns are still widespread among young people. Both anxiety and depression have significant mental health issues that can disrupt a person's life. Anxiety causes worry and physical symptoms, making it hard to focus on positive goals. Depression, a serious medical condition, negatively impacts mood, thoughts, and behaviour, reducing one's ability to function at work and home (Kessler et al., 2005). Since, mental health struggles are common and overall well-being is lower in young adults, getting enough sleep, exercising regularly, and eating healthy should be seen as a powerful combo for boosting mental health in this age group (Wickham et al., 2020).

Young adulthood, generally defined as the period between ages 18 and 25 (Arnett, 2000) is a crucial stage marked by significant physiological and mental development. Physically, the brain continues its maturation process, particularly in the prefrontal cortex responsible for decision-making and emotional regulation (Casey et al., 2005). However, mental health challenges are also prevalent during this time. Young adults face increased vulnerability to anxiety and depression due to factors like academic pressures, establishing independence, and navigating social relationships (Kessler et al., 2003). University students are increasingly facing mental health challenges, with anxiety and depression being the most frequent concerns (Benton et al., 2006). Research shows that depression harms students' academic performance. This creates a negative cycle of; poor grades, lower self-esteem, weakened coping skills, and make students more susceptible to further mental health issues (Eisenberg et al., 2007). Additionally, several studies suggests that female university students are more likely to experience depression and anxiety compared to males (Burris et al., 2009).

More people are suffering from health problems caused by a lack of exercise than from any other preventable issue in our time (Trost et al., 2014). Young adults are struggling most with mental health and weight concerns, according to a recent report (Jurewicz, 2015). Studies suggests that there's a clear link between physical activity and mental well-being in young adults (Zhang et al., 2015). Many studies show that physical activity helps improve mental health (Mammen et al., 2013). It can take your mind off negative thoughts, boost your mood by releasing brain chemicals, and even lessen symptoms of depression and anxiety in some cases (Carter et al., 2016) (Rebar et al., 2015). Regular physical activity is also linked to better sleep in several ways, including falling asleep faster (shorter sleep latency), sleeping longer (increased sleep duration), feeling less sleepy during the day (reduced daytime sleepiness), and experiencing fewer disruptions throughout the night (decreased sleep disturbances) (Ghrouz et al., 2021).

Young adults (18-25 years old) often face irregular sleep patterns due to academic pressures, social activities, and increased screen time). This lack of quality sleep can significantly impact their mental well-being (Maurya et al., 2022). Research has shown a bidirectional relationship between sleep and mental health (Yasugaki et al., 2023). Poor sleep quality, characterized by difficulty falling asleep, frequent awakenings, or unrefreshing sleep, is linked to an increased risk of developing mental health problems like anxiety and depression (Dinis et al., 2018). Conversely, symptoms of anxiety and depression can disrupt sleep patterns, creating a vicious cycle (Babson et al., 2010; Freeman et al., 2017). Researchers further highlights this association, demonstrating that interventions promoting healthy sleep habits can improve mental health outcomes in young adults.

Review of Literature

Sarhandi et al. (2019) conducted research to investigate whether sleep quality among medical students was associated with their mental health and academic performance. The results of the study concluded that the prevalence of poor sleep was higher among students who were physically inactive and had more screen time. The results of the study also showed that poor sleepers were significantly more likely to be physically inactive than good sleepers.

Tanwar et al., (2024), examined the connections between many variables, such as stress, anxiety, beliefs and attitudes about sleep, and postural control in young adults, and the quality of their sleep. The outcomes of the research showed a strong correlation between the other factors examined and the quality of sleep. It was discovered that lower sleep quality related to increased stress and anxiety levels as well as unfavourable attitudes and beliefs about sleep.

Furthermore, there was a correlation between postural control and sleep quality, with lower postural stability being linked to lower sleep quality.

Ehlers et al. (2019) conducted a study to investigate the changes in physical activity and sleep quality predicting physical, mental, and social well-being and quality of life across a 6-month exercise trial in a sample of healthy older adults. The results of the study found that physical activity and sleep quality were significantly correlated, and sleep quality indirectly influenced QOL via physical, mental, and social wellbeing. Neither sleep quality nor physical activity directly influenced QOL.

Brown et al., (2024), conducted research to comprehend how the elements (sleep and physical activity), both separately and together, affect mental health. The study's primary conclusions showed a strong correlation between sleep length, physical exercise, and mental health. Higher physical activity levels were associated with improved mental health outcomes, such as decreased rates of anxiety and depression. In a similar vein, people with greater sleep durations also displayed improved markers of mental health.

Zhang et al. (2015) in their study to test the independent and interactive associations of physical activity and screen time found that high levels of screen time were significantly positively correlated with anxiety, depression, psychopathological symptoms and poor sleep quality. Meanwhile, low physical activity and high stress are associated with a reduced prevalence of mental health problems and poor sleep quality. The study also found that the risks of anxiety, depression, psychopathological symptoms, and poor sleep quality were significantly lower in those with low physical activity and low screen time compared with those with low physical activity and high screen time.

Rationale for the Study

There's a limited understanding of how physical activity, sleep quality, and mental health connects in Indian young adults. The purpose of this study is to further our knowledge of the connections between young adults in India's mental health, physical activity, and sleep quality. The research aims to shed light on these connections and any potential interactions in order to contribute to this demographic's overall wellness. Additionally, this research aims to deepen our knowledge of the complex variables affecting mental health while providing useful guidance for personal lifestyle decisions.

Hypothesis

- H1: There will be significant relationship between physical activity and mental well-being.
- H2 :There will be significant relationship between sleep quality and mental well-being.

Sample

The research sample consisted of students enrolled in various departments at Amity University, located in Noida, Uttar Pradesh, India. Inclusion criteria encompassed individuals aged between 19 and 25 years, proficient in English, and capable of adhering to study instructions. Exclusion criteria involved individuals with physical or mental impairments affecting motor, sensory, or cognitive functions, contraindications for physical activity, diagnosed primary sleep disorders like sleep apnea or primary insomnia, or any confounding

medical conditions such as neurological, medical, or surgical disorders, or a history of sleep disorders.

Participants were briefed about the study's objectives, and their privacy rights were upheld. Each participant provided informed consent by signing a document, acknowledging their voluntary participation in the study.

Measures

The **WEMWBS** comprises 14 items, with responses rated on a 1 to 5 Likert scale, spanning from "none of the time" to "all the time." These items address various facets of eudemonic and hedonic well-being and are positively framed, such as "I've been feeling relaxed" and "I've been dealing with problems well." The total score is obtained by summing up individual item scores, ranging from a minimum of 14 to a maximum of 70. A higher total score signifies a greater level of subjective well-being (Tennant et al., 2007).

The **Pittsburgh Sleep Quality Index (PSQI)** was used to evaluate subjective sleep quality, consisting of 18 items organized into 7 dimensions: sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, use of sleep medication, and daytime dysfunction (Buysse et al., 1989). Participants' sleep quality was assessed based on both total scores and scores for each dimension, with higher scores indicating poorer sleep quality. While various studies have examined the scale's psychiatric properties, the original developers reported an internal reliability of $\alpha = .83$, a test-retest reliability of .85 for the global scale, a sensitivity of 89.6%, and a specificity of 86.5%. (Buysse et al., 1989)

The International Physical Activity Questionnaire-Short Form (IPAQ-SF) is a self-administered survey designed to assess typical physical activity levels in adults aged 15 to 69 years. Comprising 7 items, the IPAQ-SF categorizes physical activity into four intensity levels: (1) vigorous activities like aerobics, (2) moderate-intensity activities such as leisure cycling, (3) walking, and (4) sedentary behaviour. Participants are asked to recall activities engaged in for at least 10 minutes over the past week. They report the duration of physical activities undertaken during leisure time, work, household chores, and transportation, across three intensity levels: light, moderate, and vigorous. Physical activity over the preceding week is quantified by assessing activity duration and applying estimated Parabolic equivalents (PAs) for each activity, which are then converted into an energy expenditure score. Walking, for instance, is assigned a PA value of 3.3, while moderate and vigorous activities are rated at 4.0 and 8.0 PAs, respectively (Craig et al., 2003).

RESULTS

Table1

Correlation between Physical Activity, Mental Well-being, and Sleep Quality.

VARIABLES	Physical Activity	Mental Well-being	Sleep Quality
Physical Activity	1.000 (162)	0.177* (162)	.004 (162)
Mental Well-being	.177* (162)	1.000	-.422** (162)
Sleep Quality	.004 (162)	-.422** (162)	1.000

The sample for this study comprised of 162 participants (83 males and 79 females) from various departments of AMITY University, Noida, India, aged between 18-25 years (mean = 21.18 years, SD = 2.019). Using the Spearman's rank correlation technique, the relationships among physical activity (PA), mental well-being (MWB), and sleep quality (SQ) were examined.

Mental Well-being and Physical Activity

($\rho = 0.177$, $p = 0.024$) is the Spearman's rho correlation coefficient between mental well-being (MWB) and physical activity (PA). A statistically significant positive correlation was observed between mental well-being (MWB) and physical activity (PA; $p < 0.05$). This suggests that those who engaged in greater physical activity also had a tendency to report higher mental health. However, the strength of this relationship was not very high.

Mental Well-being and Sleep Quality

Between Mental Well-Being (MWB) and Sleep Quality, the Spearman's rho correlation coefficient is ($\rho = -0.422$, $p < 0.001$). A significant negative correlation was observed between sleep quality (SQ) and mental well-being (MWB; $p < 0.01$). This implies that persons who report better mental health also typically record higher-quality sleep, whereas those who report worse mental health are probably going to experience lower-quality sleep. There is a substantial correlation between sleep quality and mental health, as indicated by the amplitude of the moderate to strong correlation.

DISCUSSION

The relationships between physical activity, mental health, and sleep quality were highlighted by the Spearman's rank correlation analysis results, which offered significant insights into the factors affecting total well-being and health.

Research demonstrating the benefits of regular exercise for mental health is consistent with the significant beneficial association between physical activity and mental well-being (Rebar et al., 2015). Exercise has been demonstrated to enhance the production of neurotransmitters associated with good emotions and a feeling of well-being, such as endorphins (Craft & Perna, 2004). Furthermore, physical activity promotes social interaction and involvement, which improves mental health overall (Fox, 1999). Despite the relatively small correlation value, the significance of the association underscores the potential role of physical activity in enhancing mental well-being.

The significant inverse link between mental well-being and sleep quality suggests that there is evidence for a bidirectional relationship between mental health and sleep (Alvaro et al., 2013). Individuals with better mental health may be better able to manage their stress and emotions, which improves the quality of their sleep (Hertenstein et al., 2019).

However, according to Baglioni et al. (2011), there is often a connection between mental health conditions like anxiety and depression and insomnia and other sleep disorders. There is a significant correlation between sleep quality and mental health, as indicated by the correlation coefficient, which spans from mild to strong. This emphasizes how important it is to address mental health issues in sleep-related therapies.

Together, these findings highlight the complex interplay between physical exercise, mental well-being, and sleep hygiene. For the research participants, there was a positive correlation between mental health and physical activity. However, there was a notable inverse association found between the quality of sleep and mental health, suggesting that higher mental health is often associated with higher quality sleep. These findings have important ramifications for public health programs that promote the overall health and well-being of various groups. This will support the development of focused interventions meant to enhance overall health and wellness.

Conclusion

Physical activity and the quality of sleep were significantly correlated with mental health. Conclusively, though existing research have demonstrated noteworthy associations among physical activity, sleep quality, and mental well-being (Ghrouz et al., 2019); nonetheless, more investigation is imperative to elucidate the mechanistic pathways underneath these associations. Using objective assessments, randomized controlled trials, and longitudinal studies, researchers can further our understanding of the ways in which sleep and physical exercise affect mental health outcomes. In the end, this understanding can guide the creation of more potent interventions meant to advance mental health and avert psychiatric illnesses.

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