

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

Akagrata Passi<sup>1\*</sup>, Dr. Rajat Kanti Mitra<sup>2</sup>

### ABSTRACT

Sleep Deprivation has become a more common concern nowadays for Working Professionals in various occupational industries, as they fail to meet the requirement of an average of 7-8 hours of sleep, frequently overlooking their Cognitive, physical, and mental health. The purpose of the research is to understand how Working professionals in the age group 22-60 are affected emotionally and mentally by a lack of sufficient sleep. 138 participants took part in research using standard scales to assess each component. Descriptive statistics and linear regression were used to examine the relationship between sleep deprivation, mental health, and psychological well-being. These findings also highlight the need for awareness of good quality sleep and hygiene, and suggest that implementing lifestyle and organizational changes into practice and keeping a work-life balance between professional and personal life can be beneficial for individuals and lead to improved productivity and well-being.

**Keywords:** *Sleep deprivation, Cognitive performance, Working Professionals, Sleep*

Within contemporary society, there is an obsession with being on top of productivity, efficiency, and competition. This obsession has automated sleep to an almost inhuman requirement. With overlapping time zones and the night shifts accompanied by corporate culture, professionals from every sector, especially corporate, technology, finance, healthcare, and law enforcement, routinely lose sleep in an attempt to keep up with workload demands and looming deadlines. The lack of sleep has become a public health concern as it disrupts the natural biological rhythms humans have.

The advances in technology have led to the rise of hybrid and remote work, which has blurred professional and personal life. People are now expected to be constantly connected to work, being available and attentive even after designated work hours and during weekends, as emails and virtual meetings have become multi-time-zone activities. All of this culminates in sleep deprivation like never before. The impact of such chronic deprivation goes beyond sleepless nights, translating to physical exhaustion, emotional imbalance, difficulties with cognitive tasks, and increasing burnout.

<sup>1</sup>Master's in Clinical Psychology, Amity University Noida

<sup>2</sup>Assistant Professor, Amity University Noida

\*Corresponding Author

Received: May 31, 2025; Revision Received: July 26, 2025; Accepted: August 01, 2025

## **Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals**

This research examines the impact of sleep deprivation on cognitive skills like attention, memory, problem-solving, and decision-making. Moreover, it seeks to highlight the relationship between emotional control and psychological well-being within the context of sleep deprivation. The findings from this research hope to encourage positive sleep and work routines that center around well-being and productivity.

### ***The Biological Process of Sleep***

Sleeping is a biological process whereby the body and brain lower their activity and heal or recuperate from exhaustion. In order to enable the use of body energy, repair tissues, organize hormones, and synthesize information collected over the day, sleeping is absolutely necessary. Sleeping both deeply and lightly has been associated with optimal functioning of emotion and cognition. Ramar et al. (2021) state that healthy sleep requires an adequate duration, good quality, regular timing of sleep, and absence of sleep disorders.

Sleep has key functionalities in learning, balancing emotions, decision making, and, most importantly, memory consolidation. While in deep sleep, the brain processes information and stores it, sharpens neural pathways, and deletes unused information. In addition sleep facilitates the functions of the immune system, tissue construction, and stress management through the moderation of cortisol and other hormones. National Sleep Foundation says that most adults are recommended to get anywhere between 7-8 hours of sleep per night, for most people, but this depends on one's age. Infants usually require around 16 hours, teenagers about 9 hours, and older adults, slightly lower but still close to 7 hours. Consistency of sleep is central to maintaining productivity on a daily.

### ***Sleep Deprivation: Causes and Consequences***

In simple words, the lack of sleep syndrome occurs when a person sleeps less than the standard requisite for optimal functioning. Taking sleep as an example, repeatedly skipped deadlines in the modern working culture have increased the number of times at work (burned the midnight oil) instead of resting. Working overtime, rotatory shifts, staring at screens for prolonged periods, late-night doses of caffeine, and relentless monitoring of digital instruments remove the body's circadian biological rhythms (an internal body clock). It is akin to a clock that controls sleep, hormonal secretion, the process of digestion, and even the body's thermostat.

Not getting enough shuteye results in a multitude of adverse outcomes: reduced concentration levels, poor recall, mediocre decision making, to sudden mood shifts in parallel with increased rage. Elements of Undetected Insomnia: Symptoms Features: Basic Manifestations: Secondary Progressive and Peripheral Symptoms - Outcomes of Modern Sleepless Syndrome include deep emotional responses, issues with social circles, coupled with poor performance when placed under pressure. Lessens of the Start and Setting Caution Sign To shield Blunting Soft Require Brains pruned my adequatement: muscle soreness, severe headaches, vision, pain, put on the, and essentially results, to the did hormonal shifts of balanced hormones appetite drives balanced requisite set sodhe.

Moreover, a person devoid of the shuteye purportedly offered on the golden plate falls into depression, succumbs to anxiety, and burns out spores under them. Without sleep, he hopes to gain, menstruals of his total combat dallied to gain, nullifying the falsely perceived benefit one surfaces after purporting them, flies when productivity plummets. Resist with ease when turned off. With every added pressure that blocks lack of sleep, though the

## **Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals**

system. The inability of his blood vessels estargo to an unknown put always greatly enhances loss of sharp focus it his yield siveness. Blocking bullets to aid focus muscle called results pruned must confirm loses critical tasks.

### ***Cognitive Functioning and Sleep***

Sleep has a major effect on cognitive functions like memory, attention, decision making, and problem-solving. Acquiring new knowledge is done during deep sleep when the brain purges superfluous information, strengthens the neural pathways, and fortifies the synapses. Sleep bolsters learning, imagination, and the ability to evaluate situations critically.

After a good night's sleep, the brain has a sharper focus and can deal with complex mental tasks more proficiently. On the contrary, lack of sleep results in poor information retention, reduced speed in reactions, lack of focus, and weakened analytical thinking. Poor sleepers also deal poorly with multitasking, planning as well as acquiring new information.

Chronic sleep problems such as insomnia and sleep apnea can lead to cognitive deterioration, and in extreme cases, symptoms similar to dementia. These observations stress the importance of sleep in preserving and sustaining overall cognitive functioning.

### ***Sleep and Psychological Well-being***

Psychological well-being encompasses the emotional, mental, and social health of an individual. Emotional regulation, stress, and sleep have a direct correlation with each other. Having enough to sleep promotes emotional control, reduces emotional reactivity, and increases overall motivation and resilience. Sleep deprivation has the opposite effect by magnifying the brain's amygdala and prefrontal cortex, impairing mood and decision making.

Inadequate sleep is usually connected with poor mental health, including depression, anxiety, and borderline personality disorder. Studies suggest that sleep aids in processing emotional memories, allowing people to wake up feeling ready to tackle problems.

Furthermore, individuals who are well-rested have better control over the stress hormone 'cortisol,' which is involved in the 'fight or flight' response. Good sleeping habits and patterns improve coping strategies and help a person maintain a stable emotional balance throughout the day.

### ***Importance of the Study***

This study looks into the effect of a lack of sleep on the cognitive functions and mental health of employed individuals. It will look into the effects of the different levels of sleep such as quantity, quality, and patterns on attention, problem-solving, memory, emotional control, stress control, and life satisfaction.

The importance of sleep deprivation is focal to the contemporary workplace owing to the increasing incidence of professionals overlooking their health to meet deadlines. The need to deliver, especially in high-pressure sectors, drives many people to embrace the concept of survival sleep, which is sleep below the baseline required, despite the evident long-term consequences for physical and mental well-being.

## **Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals**

This study seeks to create more sleep hygiene awareness by demonstrating how insufficient sleep affects professional productivity and well-being. This can guide workplace policies as well as mental health programs focused on improving balance, health habits, and productivity.

The findings may assist organizations in developing other supportive measures like flex-time scheduling, awareness campaigns, and wellness programs aimed at improving employees' sleep health, thereby increasing job satisfaction, efficiency, and productivity. In general, this study advocates for a strong cultural shift where rest and well-being are equally valued alongside hard work and disciplined achievement.

### **REVIEW OF LITERATURE**

The phenomenon of sleep deprivation is becoming increasingly important in relation to occupational settings, especially for employees with long working hours and irregular shifts. Its effects on cognitive functioning and psychological aspects have been deeply investigated in numerous studies with a focus on performance deterioration.

#### ***Cognitive Decrement of Deprivation of Sleep***

The systematic review of RCTs focused on neurobehavioral consequences of sleep deprivation in young adults conducted by Griggs, Harper and Hickman (2022) exhibited severe decline in psychomotor vigilance. Peng et al. (2020) also noted that total sleep deprivation (TSD) for 36 hours significantly impairs working memory as indicated by reduced ERP amplitude and delayed latency. Such findings strengthen the assumption that even brief periods of sleep deprivation can severely disrupt fundamental cognitive functions.

Harrison and Horne (2000) made a partition between sleep deprivation effects on repetitive tasks and simpler to complex decision making. It was shown that sleep deprivation has a significant negative occurrence on high-level cognitive activities like innovation, adaptable strategy development, multitasking in ever-changing environments. This is especially worrying for those employed in critical and crisis-sensitive positions.

Alhola and Polo-Kantola (2007) noted that both total and partial sleep deprivation have significant consequences on attention, memory, and decision-making skill, reinforcing the earlier findings. They further underlined that factors like age and gender, among others, affect the magnitude of cognitive impairment within a person.

In a meta-analysis, Julian and Dinges (2010) stated that there were consistent decreases in the level of performance and accuracy in attention, memory, and reasoning skills due to a lack of sleep. Along with that, Fortier-Brochu et al. (2012) reported that patients suffering from insomnia showed some moderate level of impairment in working memory and executive functioning relative to lower level sleepers.

#### ***Impact on Psychological Well-being***

Zhai et al. (2018) underscored the value of sleep with regard to psychological distress, emphasizing that lack of sleep results in heightened emotional distress, which serves as an indicator of vulnerability. Sleep, however, is significant in maintaining emotional balance along with psychological stability. The quality of one's sleep is linked to overall well-being where instability is linked with mood disorders such as anxiety or depression.

## **Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals**

Almondes et al. (2021) reported the effects of sleep deprivation on the whole body, reporting emotional regulation difficulties and a weakened immune system among healthcare workers. The findings highlight how chronic insomnia increases risk and vulnerability to stress disorders such as PTSD by disrupting circadian rhythms and emotional control mechanisms.

Lifestyle and social stressors, especially in non-shift workers, were also identified by Mehreen and Aamir (2022) as contributors to the sleep deprivation and the chronic stress and depression triad. Their analysis highlighted the risks of inadequate sleep for the mental health of even-considered-reserved-hassle professionals.

Comparable to those outcomes, Beattie et al. (2015), while analyzing the role of sleep in socio-emotional functioning of an individual, found that sleep deprivation weakens an individual's emotional response and recognition. There is neuroimaging evidence of increased activity in the amygdala and decreased activity of the frontal part of the brain which explains volatility of emotions and difficulties with social engagement.

### **Work and Occupational Healthcare Sleep Studies**

The workplace comes with its own unique problems which worsen the ramifications of sleep deprivation. Brett et al. (2017) undertook a meta-analysis which related the low quality and poor quantity of sleep to negative workplace outcomes including high workload, low job satisfaction and affective disorders among employees. These observations were echoed by Batat et al (2024), who reported that nightshift healthcare workers had much worse sleep quality, greater anxiety, and lesser satisfaction with their job.

Shift-working nurses were studied by Kaliyaperumal et al. (2017) and 69% of them were found to be poor sleepers with a decline in cognitive functioning, especially in tasks requiring memory and attention. They reported marked decline during the night shift which supports the pseudoscientific conjecture that irregular work hours deeply affect thinking.

Papp et al. (2004) reported that resident physicians who were sleep-deprived showed impaired cognitive functioning as well as reduced professional demeanor and strained relationships. It is of concern that 84% of the sample had scores indicative of excessive daytime sleepiness, which is suggestive of a serious problem.

### **Connection In Between Sleep, Cognition and Emotion**

The theories have proposed that sleep plays an important role in the regulation of emotion and cognition by the amygdala and prefrontal cortex. Gruber and Cassoff (2014) suggested that this connection is weakened by sleep deprivation which leads to increased emotional outbursts and poor control of impulses. This perspective from neurobiology helps illuminate the reasons behind the simultaneous effects on mood and decision-making due to lack of sleep.

Groeger et al. (2012) analyzed the individual differences related to the assumption of cognitive sleep deprivation. Their findings indicated that acute total sleep and even partial sleep showed great decline in attention and working memory with greater loss noted during circadian low times, such as in early morning. The findings indicate that the effects of lack of sleep are not consistent across individuals or times of day.

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

### Intervention and Mitigation

Some researchers propose sleep deprivation coping mechanisms and workplace strategies. For example, Parker and Parker (2017) recommended proactive sleep banking, organizational schedule naps, and circumvention of circadian rhythm disruption for professionals such as surgeons.

Alzahrani (2021) reviewed the emotional impacts of hospitalization and prolonged treatment, stating that recovery outcomes would be improved with the provision of emotional support and guided care structures. While these suggestions are not specifically geared towards the workplace, they could be integrated into occupational health frameworks.

Watling et al. (2016) noted the bidirectional nature of sleep and emotion regulation, proposing a model where sleep deprivation contributes to greater emotional dysregulation which in turn further disrupts sleep—a self-perpetuating cycle that leads to chronic stress or mental illness.

### Academic and Performance Contexts

In academic contexts, Jalali et al. (2020) examined sleep's impact on learners' academic performance and sleep quality, noting no significant difference. In contrast, Almarzouki et al. (2022) noted that despite poorer sleep and poorer mental health during academic terms, working memory and academic performance markedly improved, which may have been a result of cognitive adaptation mechanisms.

Sandeep (2025) once again affirms the negative consequences of inadequate sleep on attention and decision-making processes. The analysis also noted the emotional costs, such as increased stress and greater volatility of mood, especially in high-demand settings.

## METHODOLOGY

### *Aim*

To evaluate the effects of insufficient sleep on psychological well-being and mental Performance of working professionals (22 – 60 years of age).

### *Objectives*

- To evaluate the magnitude of sleep deprivation amongst professionals from different sectors.
- To analyze the effects of sleep deprivation on memory, attention, and decision-making.
- To assess the relationship between sleep deprivation and psychological well-being with a special focus on mood and emotional regulation.

### *Hypotheses*

- Sleep deprivation has a negative impact on cognitive performance amongst working professionals.
- Deprivation of sleep has a significant negative relationship with well-being.

# Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

## Research Design

We used a quantitative cross-sectional design and gathered data through the validated self-report questionnaires. The outcome of sleep deprivation on the cognitive and psychological outcomes was evaluated using statistical methods.

## Sample

The sample consisted of 138 working professionals aged between 22 and 60 years which were selected through stratified random sampling to ensure coverage of all occupational groups.

## Variables

- Independent Variable: Sleep Deprivation
- Dependent Variables: Cognitive Performance, Psychological Well-being

## Instruments Used

- **Pittsburgh Sleep Quality Index (PSQI)** – Measurements of the quality of sleep in the last month.
- **Cognitive Assessment Questionnaire (CAQ)** – Assessment of cognitive lapses in memory, attention, and perception. **Psychological Well-being Scale (Ryff, 1989)** - Measurement of well-being through six dimensions: autonomy, self-acceptance, environmental mastery, personal growth, purpose in life, and positive relations.

## Procedure

Participants filled out an online form through Google Forms that had a consent section and instructions. The collection of the provided data was done in a confidential and anonymous manner. Responses were scored according to standard procedures and analyzed with statistical tools. Relationships between the variables were tested using linear regression.

## RESULT & DATA ANALYSIS

The data collected was put into an Excel sheet and the raw data was converted into a standard form for analysis. scores were assigned to each question using the manual of the questionnaires. The sum total of the all the scores was calculated and analyzed using statistical software. The results are as follows:

### Descriptive Statistics

*Table 1: Mean, Median, Standard deviation, and normality scores of all 3 variables.*

Descriptive	Sleep Deprivation	Cognitive performance	Psychological well-being
N	138	138	138
Missing	0	0	0
Mean	20.9	36	89.1
Std. Error Mean	0.669	1.52	1.188
Median	20.0	35.5	87.0
Standard deviation	7.86	17.9	13.9
Minimum	8.00	1	63
Maximum	48.0	100	120
Shapiro- Wilk W	0.971	0.983	0.969
Shapiro- Wilk p	0.004	0.079	0.003

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

Descriptive statistics revealed that participants had varying levels of sleep deprivation ( $M=20.9$ ,  $S.D.=7.86$ ), Cognitive Performance ( $M=36.0$ ,  $S.D.=17.9$ ) and Psychological Well-being ( $M=89.1$ ,  $S.D.=13.9$ ), indicating sufficient variability across all three measures.

### Inferential Statistics

#### Impact of Sleep Deprivation on Cognitive Performance

**Table 2: Regression Model Summary**

##### Model fit measures

Overall Model Test							
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	df1	df2	p
1	0.388	0.150	0.144	24.1	1	136	<0.01

*Note. Models estimated using sample size of  $N=138$*

The regression analysis showed a statistically significant model  $F(1, 136) = 24.1$ ,  $p < 0.01$ , with  $R^2 = 0.150$  indicating that sleep deprivation explained 15% of the variance in cognitive performance. The strength of this relationship was moderate ( $R = 0.388$ )

##### ANOVA scores

	Sum of squares	df	Mean Square	F	p
Sleep deprivation	20.6	1	20.591	24.1	<0.01
Residuals	116.4	136	0.856		

*Note: Independent variable- Sleep deprivation. Dependent variable- Cognitive performance*

**Table 3 Linear Regression Coefficients Predicting Cognitive Performance from Sleep Deprivation**

Predictor	Estimate	SE	95% CI Lower	95% CI Upper	t	p	Standardized Estimate
Intercept	2.10e-17	0.0788	-0.156	0.156	2.67e-16	1.000	—
Sleep Deprivation	0.388	0.0790	0.231	0.544	4.90	<.001	0.388

*Note. SE = Standard Error; CI = Confidence Interval. The regression model was significant at  $p < .001$ .*

The regression coefficient for sleep deprivation was significant,  $\beta = 0.388$ ,  $t(136) = 4.90$ ,  $p < .001$ , indicating that an increase in sleep deprivation is associated with a moderate increase in cognitive performance scores (standardized). The 95% confidence interval [0.231, 0.544] suggests that the true effect size is likely to fall within this range. The intercept was not significant.

**Table 4 Regression Summary for the Impact of Sleep Deprivation on Psychological Well-being**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	df1	df2	p
1	0.301	0.091	0.084	13.60	1	136	<.01

*Note. The regression model was statistically significant, indicating that sleep deprivation explains approximately 9.1% of the variance in psychological well-being.*

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

The regression model examining the effect of Sleep deprivation on psychological well-being was statistically significant  $F(1, 136) = 13.6, p < 0.01$ , with an  $R^2 = 0.0907$ , indicating that sleep deprivation explained approximately 9.1% variance in psychological well-being. The strength of this relationship was found out to be moderate ( $R = 0.301$ ).

### ANOVA scores

	Sum of squares	df	Mean Square	F	p
Sleep deprivation	12.4	1	12.427	13.6	<0.01
Residuals	124.6	136	0.916		

*Note: Independent variable- Sleep deprivation Dependent variable- Psychological well-being*

**Table 5 Linear Regression Coefficients Predicting Psychological Well-being from Sleep Deprivation**

Predictor	Estimate	SE	95% CI Lower	95% CI Upper	t	p	Standardized Estimate
Intercept	4.03e-16	0.0815	-0.161	0.161	4.94e-15	1.000	—
Sleep Deprivation	-0.301	0.0818	-0.463	-0.139	-3.68	<.001	-0.301

*Note. SE = Standard Error; CI = Confidence Interval. The negative standardized beta indicates that higher sleep deprivation predicts lower psychological well-being. Model significant at  $p < .001$ .*

The regression coefficient for sleep deprivation was statistically significant  $\beta = -0.301$   $t(136) = -3.68, p < .001$  indicating that higher levels of sleep deprivation were associated with lower psychological well-being. The 95% confidence interval (-0.463, -0.139) suggests a negative relation.

## DISCUSSION

The research study aimed to examine the effects of Sleep deprivation on Cognitive Performance and Psychological Well-being among Working Professionals across various occupational fields. As in today's fast paced world every industry requires maximum output from their employees with extended working hours, late night shifts, heavy workloads, deadlines and meetings. Where the basic necessity of individual i.e. sleep is hampered, people get insufficient sleep due to work stress, staying up too late, excessive screen time before bed and consuming high amount of caffeine that can disrupt the circadian rhythm of our body and can lead to impaired cognitive performance and well being. The findings of the study indicate that there was a significant positive relationship between Sleep deprivation and Cognitive performance of individuals ( $R = 0.388, P < 0.01$ ) indicating that individuals who responded better sleep quality also tend to perform better on cognitive tasks like attention, problem solving and memory. While, a significant negative relationship was found between sleep and psychological well-being, this suggest that people who responded better sleeping patterns tend to experience less psychological distress such as anxiety or emotional breakdown.

### Descriptive Analysis

Descriptive analysis provided an overview of individuals sleep patterns, cognitive function and psychological well-being. Cognitive function mean score was 36.0 (S.D.= 17.9) with

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

scores ranging from 1 to 100 suggesting a broad variation in cognitive performance within the sample. The median score of 35.5 was close to mean indicating a similar distribution. The Shapiro Wilk test for normality came out to be  $W = 0.983$ ,  $p = 0.079$  suggesting that data did not significantly deviate from normality. Thus, justifying use of parametric statistical analyses for this variable.

Sleep had a mean score of 20.9 (S.D.= 7.86) with a range from 8 to 48. The median was slightly lower at 20. Psychological well-being showed a mean of 89.1 (S.D.= 13.9), with a range from 63 to 120. The median scores were slightly lower at 87.0, similar to sleep.

These findings reveal some variability in cognitive functioning and psychological well-being. The significant skewness in sleep and well-being scores may indicate diverse sleep hygiene patterns and mental health status among working professionals, largely influenced by lifestyle or occupational stress.

### ***Regression Analysis: Impact of Sleep on Cognitive performance***

A linear regression analysis was conducted to examine the impact of sleep deprivation on cognitive functions of individuals like (attention, learning, problem solving). The findings indicated significant fit with an  $R^2$  of 0.150 indicating that 15 % of the variance in cognitive performance could be attributed by sleep. The overall model was significant as indicated by ANOVA test,  $F(1,136) = 24.1$ ,  $P < 0.01$  suggesting that it provides a better explanation than one with no predictors.

The standardized  $\beta$  coefficient for sleep was 0.388,  $t(136) = 4.90$ ,  $p < 0.01$  with a 95% confidence interval of 0.231, 0.544 indicating a moderate and positive association between sleep and cognitive performance which means better sleep quality is associated with improved cognitive functioning.

These results are consistent with earlier research study conducted by Killgore, Lim and Dinges (2010) that also aimed to study how important sleep is for individuals cognitive functioning (attention, memory and decision making abilities) are all linked to sleep deprivation. The findings also highlight the significance of getting enough amount of sleep for preserving peak cognitive function in demanding professional environment where these cognitive abilities are essential. Findings on executive function have been conflicting despite the fact that standard tests gauge attention, alertness and response time consistently demonstrate deficits when sleep deprivation is present. According to the findings effects of sleep deprivation differ on the basis of type of cognitive task, the degree of emotional processing and brain's ability to use compensating mechanisms.

Findings indicate overall importance of sleep in day to day functioning particularly for students or working professionals whose cognitive performance abilities are crucial. It also implies that interventions for sleep hygiene may have positive outlook on learning, productivity and overall mental well-being of individuals.

### ***Regression Analysis: Impact of Sleep on Psychological well-being***

Findings of the other variable i.e. psychological well-being indicated a significant negative relationship with sleep deprivation. The model showed an  $R^2$  value of 0.0907, indicating approximately 9% of variance in psychological well-being which is attributed to sleep

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

scores. Though this is a relatively small effect size, it is of significance in psychological research where multiple factors influence well-being.

The standardized  $\beta$  coefficient ( $\beta = -0.301$ ,  $p < 0.01$ ) suggests that poor sleep is associated with lower levels of psychological well-being or conversely, better sleep is associated with enhanced well-being. The negative direction of coefficient aligns with existing literature indicating that insufficient or poor quality sleep leads to increased level of stress, irritability, anxiety and emotional dysregulation.

These findings suggest growing body of evidence that sleep is a critical indicator of mental health outcomes. It supports the fact that interventions targeting sleep hygiene could serve as protective or beneficial to improve the psychological well-being, especially among populations that are prone to stress and emotional distress. This also indicated the need for holistic approach in mental health care that integrate sleep assessment and management as a routine part of psychological evaluation.

According to the hypothesis of the research study which stated that lack of sleep can limit individual's cognitive capacity of memory, focus, problem solving and judgement can be explained through the findings of research where linear regression analysis indicates a strong positive correlation between sleep and cognitive function ( $\beta = 0.388$ ,  $p < 0.001$ ). This shows better sleep quality is linked to higher level of cognitive efficiency, as the model explained 15% variance in cognitive performance ( $R^2 = 0.150$ ). These results suggest that people who report having better sleep patterns typically tend to do better on activities involving working memory, attention and decision making.

Second hypothesis stated that sleep deprivation has a detrimental impact on mental health, was also validated in terms of psychological well-being. Sleep accounted for 9% variance in emotional well-being, according to regression analysis which revealed a significant negative connection  $\beta = -0.301$ ,  $p < 0.01$  suggests that mood swings, emotional instability and overall psychological distress are more likely to occur in people who get less or poor quality sleep and leads to negative consequences in their mental and emotional well-being.

All of these results show that sleep has two functions: it helps with cognitive processing and maintains emotional equilibrium. Sleep deprivation may temporarily preserve certain cognitive abilities, but it seems to particularly impair creative and emotionally charged brain processes. Furthermore, the fact that psychological effects continue even after a brief period of sleep deprivation suggests that sleep is an essential component of everyday mental processes.

### *Limitations of the study*

- **Limited Sample Size and Demographic Scope-** The study was conducted within a specific geographic location and focused on a particular group (e.g., teachers in a specific region or school type). This restricts generalizability of the findings to broader populations.
- **Use of Self-Reported Data-** Data collected through self-reported surveys or interviews may be subject to biases such as social desirability or inaccurate self-assessment.
- **Cross-Sectional Research Design-** Since the study captures data at a single point in time, it cannot establish causality or track changes over time.

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

### Recommendations

- **Expand the Sample Scope-** Future studies should include participants from diverse geographical areas and institutions to enhance generalizability.
- **Longitudinal Research Design-** Conduct longitudinal studies to observe patterns and causality over time rather than relying solely on cross-sectional snapshots.
- **Incorporate Mixed Methods-** Use a combination of quantitative and qualitative methods to enrich the data and gain deeper insights into participants' experiences and attitudes.
- **Explore Additional Influencing Variables-** Include factors such as institutional support, socio-economic status, training level, and curriculum changes to provide a more comprehensive analysis.

### CONCLUSION

The study examined the effects of insufficient sleep on cognitive performance and psychological well-being among Working Professionals of age group 22-60. The study followed a quantitative and cross-sectional research design approach with a sample size of 138 participants, employed three standardized and reliable scales for collecting data i.e. Pittsburgh sleep quality index, Cognitive assessment questionnaire and psychological well-being scale. The findings provide insightful knowledge about sleep affects and long-term health outcomes of working professionals. The study affirms that inadequate sleep is a significant risk factor for both cognitive inefficiency and emotional distress by addressing three main objectives of research i.e. determining the degree of sleep deprivation, analyzing its consequences on attention, memory, decision making and judgement. And investigating its impact on psychological health.

Given the positive relationship between sleep and cognitive function, getting enough sleep is thought to improve critical brain processes like memory, focus and decision making.

This suggests that sleep actively contributes to preserving mental acuity, which is particularly important for working professionals rely on these cognitive abilities. The negative relationship between sleep and psychological distress indicates that emotional disturbances such as stress, anxiety and low mood are consequences of sleep. This suggests that sleep not only help brain recover, but also guards against mental health well-being and emotional exhaustion.

The results validated both theories, demonstrating that low psychological well-being and impaired cognitive functioning abilities are linked to poor sleep quality. The findings not only support previous studies but also draws attention to the particular sensitivity of working professionals, who frequently deal with long-term stress and sleep deprivation.

Thus, findings suggest that promoting better sleep hygiene is essential, not just for physical health but also for improving mental clarity, emotional resilience and overall life satisfaction, especially in high stress work settings.

### REFERENCES

- Aamir, Mehreen (2022) Effects of Sleep Deprivation on Mental Health and Stress Perception Among Non-Shift Workers; A Systematic Review.
- Alhola, P., & Polo-Kantola, P. (2007). Sleep deprivation: Impact on cognitive performance. *Neuropsychiatric Disease and Treatment*, 3(5), 553–567.

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

- Almarzouki, A.F.; Mandili, R.L.; Salloom, J.; Kamal, L.K.; Alharthi, O.; Alharthi, S.; Khayyat, N.; Baglagel, A.M. The Impact of Sleep and Mental Health on Working Memory and Academic Performance: A Longitudinal Study. *Brain Sci.* 2022, *12*, 1525
- Almondes Katie Moraes de, Marín Agudelo Hernán Andrés, Jiménez-Correa Ulises (2021) Impact of Sleep Deprivation on Emotional Regulation and the Immune System of Healthcare Workers as a Risk Factor for COVID 19: Practical Recommendations from a Task Force of the Latin American Association of Sleep Psychology, *Frontiers in Psychology*, 12 -2021.
- Batat, H., Baniamer, A. Z., Hamasha, A. M., Abu Sahyoun, A. M., AlSamhori, J. F., Alsharqwi, M. Z., ... Khalifeh, A. H. (2024). The relationship between night shift work, sleep patterns, psychological well-being, and mental health among Jordanian healthcare workers. *Archives of Environmental & Occupational Health*, *79*(3–4), 131–141.
- Dr. Sandeep (2025) The Influence of Sleep Deprivation on Cognitive Function and Emotional Well- Being. *Journal of Siddhanta's International Publication*, *1*(1), 123-132.
- Émilie Fortier-Brochu, Simon Beaulieu-Bonneau, Hans Ivers, Charles M. Morin (2012) Insomnia and daytime cognitive performance: A meta-analysis, *Sleep Medicine Reviews*, Volume 16, Issue 1, 83-94, 1087-0792
- Gruber, R., Cassoff, J. The Interplay Between Sleep and Emotion Regulation: Conceptual Framework Empirical Evidence and Future Directions. *Curr Psychiatry Rep* *16*, 500 (2014).
- Harrison Y, Horne JA. (2000) The impact of sleep deprivation on decision making: a review. *J Exp Psychol Appl.* Sep;6(3):236-49.
- Jalali, Rostam & Khazaei, Habibollah & Khaledi, Behnam & Hayrani, Zinab & Menati, Lida. (2020). The Effect of Sleep Quality on Students' Academic Achievement. *Advances in Medical Education and Practice.* 11. 497-502. 10.2147
- Jonathon P.R. Scott, Lars R. McNaughton, Remco C.J. Polman, (2006) Effects of sleep deprivation and exercise on cognitive, motor performance and mood, *Physiology & Behavior*, *87*, Issue 2, 396-408, 0031-9384
- Kaliyaperumal D, Elango Y, Alagesan M, Santhanakrishanan I. Effects of Sleep Deprivation on the Cognitive Performance of Nurses Working in Shift. *J Clin Diagn Res.* 2017 Aug;11(8):CC01-CC03
- Kang H, Kim H. Ageism and Psychological Well-Being Among Older Adults: A Systematic Review. *Gerontology and Geriatric Medicine.* 2022;8.
- Kong, J., Zhou, L., Li, X. *et al.* sleep disorders affect cognitive function in adults: an overview of systematic reviews and meta-analyses. *Sleep Biol. Rhythms* *21*, 133–142 (2023)
- Lankrew Ayalew, T., Wale, B.G. & Haile, K.E. (2022) Prevalence and associated factors of sleep deprivation among Haramaya University students, Ethiopia, 2021: cross-sectional study. *Sleep Science Practice* *6*, 11.
- Leila Tarokh, Jared M. Saletin, Mary A. Carskadon (2016) Sleep in adolescence: Physiology, cognition and mental health, *Neuroscience & Biobehavioral Reviews*, Volume 70,182-188, ISSN 0149-7634,
- Lim Julian, Dinges, David F. (2010) *A meta-analysis of the impact of short-term sleep deprivation on cognitive variables.* *Psychological Bulletin*, Vol 136(3), 375-389
- Litwiller, B., Snyder, L. A., Taylor, W. D., & Steele, L. M. (2017). The relationship between sleep and work: A meta-analysis. *Journal of Applied Psychology*, *102*(4), 682–699

## Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals

- Lo JC, Groeger JA, Santhi N, Arbon EL, Lazar AS, Hasan S, et al. (2012) Effects of Partial and Acute Total Sleep Deprivation on Performance across Cognitive Domains, Individuals and Circadian Phase. *PLoS ONE* 7(9): e45987.
- Louise Beattie, Simon D. Kyle, Colin A. Espie, Stephany M. Biello (2015) Social interactions, emotion and sleep: A systematic review and research agenda, *Sleep Medicine Reviews*, 24, 83-100, 1087-0792,
- Papp, Klara K. PhD; Stoller, Eleanor P. PhD; Sage, Paulette MA; Aikens, James E. PhD; Owens, Judith MD, MPH; Avidan, Alon MD, MPH; Phillips, Barbara MD, MSPH; Rosen, Raymond PhD; Strohl, Kingman P. MD. The Effects of Sleep Loss and Fatigue
- Parker RS, Parker P The impact of sleep deprivation in military surgical teams: a systematic review *BMJ Military Health* 2017;163:158-163.
- Peng Ziyi, Dai Cimin, Ba Yi, Zhang Liwei, Shao Yongcong, Tian Jianquan (2020) Effect of Sleep Deprivation on the Working Memory-Related N2-P3 Components of the Event-Related Potential Waveform *Frontiers in Neuroscience*, 14
- Resident-Physicians: A Multi-Institutional, Mixed-Method Study. *Academic Medicine* 79(5): p 394-406, May 2004.
- Stephanie Griggs, Alison Harper, Ronald L. Hickman (2022) A systematic review of sleep deprivation and neuro-behavioral function in young adults, *Applied Nursing Research*, 63, 151552, 0897-1897
- Watling, J., Pawlik, B., Scott, K., Booth, S., & Short, M. A. (2016). Sleep Loss and Affective Functioning: More Than Just Mood. *Behavioral Sleep Medicine*, 15(5), 394–409.
- William D.S. Killgore (2010) Effects of sleep deprivation on cognition, Gerard A. Kerkhof, Hans P.A. van Dongen, *Progress in Brain Research, Elsevier*, 185, 105-129, ISSN 0079- 6123,
- Zhai, L., Zhang, H., & Zhang, D. (2018). Sleep duration and depression among adults: A meta-analysis of prospective studies. *Depression and Anxiety*, 32(9), 664–670

### **Acknowledgment**

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

### **Conflict of Interest**

The author(s) declared no conflict of interest.

**How to cite this article:** Passi, A. & Mitra, R.K. (2025). Impact of Sleep Deprivation on Cognitive Performance and Psychological Well-Being among Working Professionals. *International Journal of Indian Psychology*, 13(3), 1241-1254. DIP:18.01.114.20251303, DOI:10.25215/1303.114