



## EXAMINING THE INFLUENCE OF NAP AND NAP DURATION ON ACADEMIC PERFORMANCE AMONG UNDERGRADUATE MEDICAL STUDENTS AT KMC, PESHAWAR: A GENDER- BASED ANALYSIS

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### ABSTRACT

This study examined the effects of nap and nap duration on academic performance of medical students at Khyber Medical College, Peshawar, focusing on gender differences. The study period is between March 20, 2024, and April 20, 2024. Participants completed a three-part survey. This survey helps collect students' demographics, nap profiles, and academic profiles. The results indicate that male students who do not nap tend to perceive themselves as more proficient, while female students who nap tend to rate themselves higher. Nap duration also influences proficiency levels differently for each gender. This study found that daytime napping habits and nap lengths affect academic performance differently for male and female medical students. Non-napping males perceive higher proficiency, while napping females rate themselves higher. These findings suggest gender-specific support and intervention strategies to enhance academic success.

**Keywords:** Nap, Nap duration, Medical Students, Academic Performance

### INTRODUCTION

Napping in the workplace is being considered for its potential benefits on work efficiency and employee well-being, with notable impacts on productivity[1]. In Japan, napping, known as "inemuri," is widely accepted and even encouraged by some companies[2]. Many scientists advocate for an afternoon nap, particularly after lunch, to increase alertness, stimulate creativity, and enhance memory and complex task performance[3][5][6]. Research indicates that a short nap can significantly improve cognitive performance, with the effectiveness of napping depending on the time of day[7][8][9]. Renowned companies like Google, NASA, HuffPost, and Samsung provide rest areas and dedicated nap furniture for their employees[1]

A nap, often termed as a 'short sleep,' is shorter than an individual's regular sleep episode, typically

ranging from a few minutes to several hours[11].

The impact of napping on academic performance is evident from studies on Rapid Eye Movement (REM) sleep, emphasizing its role in memory consolidation and dream occurrences[12]. Research suggests that advanced age often leads to changes in sleep patterns, including increased daytime napping, with potential benefits for cognitive function among older adults[13].

Naps are generally associated with improved cognitive performance, including logical reasoning, vigilance, memory, and processing speed, making them beneficial for increasing productivity, particularly during long working shifts. Medical students can also benefit from naps to prevent burnout[14][15][16][17].

While afternoon naps have been shown to enhance memory consolidation in younger adults, the impact on older adults remains debated due to age-related declines in sleep patterns[18]. Daytime napping has emerged as a strategy to enhance athletes' sleep quality and quantity, contributing to improvements in performance and mood states[19][20].

Research emphasizes the role of sleep in cognitive functions, particularly memory consolidation, with daytime napping shown to enhance memory and cognitive performance[21][22]. Integrating naps into daily routines can significantly enhance overall well-being and performance across various domains[23][24].

A comparative analysis between young and older adults indicates that afternoon napping has a more significant impact on episodic memory retention in younger individuals, with its effectiveness decreasing with age. Despite differences, napping is culturally recognized as a healthy lifestyle practice[25]

Daytime napping consistently improves memory, with studies showing enhanced consolidation of information learned before and after a nap. Split sleep, incorporating both nighttime sleep and naps, has been shown to improve performance compared to continuous sleep[26].

In conclusion, the potential benefits of napping in the workplace for enhancing productivity and employee well-being are evident. Despite variations in its effectiveness across age groups, afternoon napping remains a culturally accepted and potentially valuable practice for improving cognitive function and memory consolidation, with further research needed to explore its optimal duration and timing for maximizing academic and professional performance.

Internationally and nationally, significant research efforts have focused on investigating the impact of napping and nap duration on the academic performance of undergraduate medical students. However, there is a dearth of research specifically addressing the influence of napping and its duration on academic performance among undergraduate medical students. Our main aim was to examine the effects of napping and nap duration on academic performance among undergraduate medical students enrolled at Khyber Medical College, Peshawar.

## **METHODOLOGY**

### **Study Setting and duration**

The research was carried out at KMC Peshawar from March 20th to April 20th, 2024, utilizing a systematic convenience sampling approach to collect data from undergraduate students. Inclusion criteria stipulated that participants must be aged 18 or older.

### **Instrument**

The questionnaire listed in the appendix was developed using background information collected from the studies presented in the literature review. Participants completed an online personal survey that included demographic information such as gender, age, and year of study. The survey consists of 15 questions divided into two parts: napping profile and academic profile. Nap Profile measures many factors, including nap duration, time and location preferences. Meanwhile, academic data dives into performance and categorizes performance as excellent (more than 80%), good (70%-80%), average (60%-70%), and below average (below 60%).

### Procedures

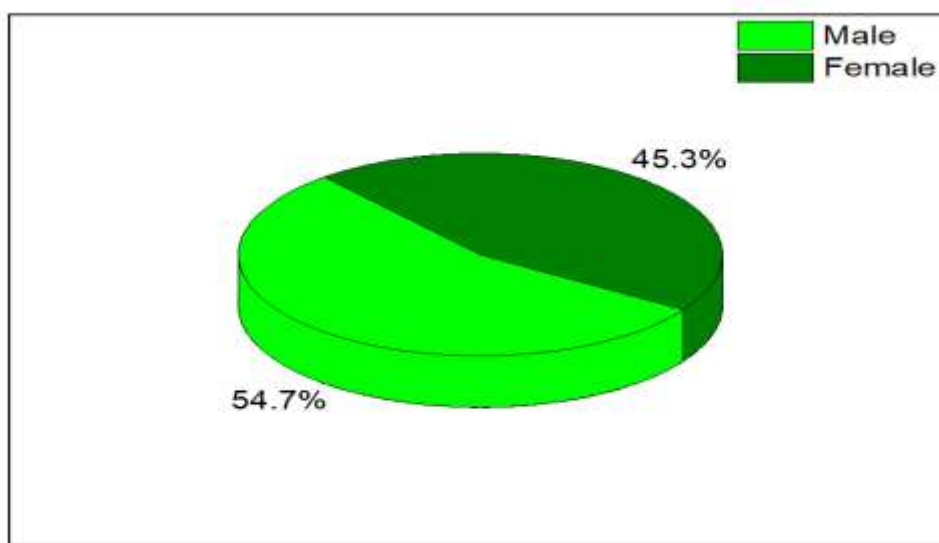
Class representatives received instructions via email to distribute the online survey to their peers. In order to ensure broad participation the data collection process was carried out electronically. Students were requested to complete the survey before the deadline of April 20, 2024.

### Statistical Analysis

Data entry and analysis was done using Origin Pro 2018 and MS Excel.

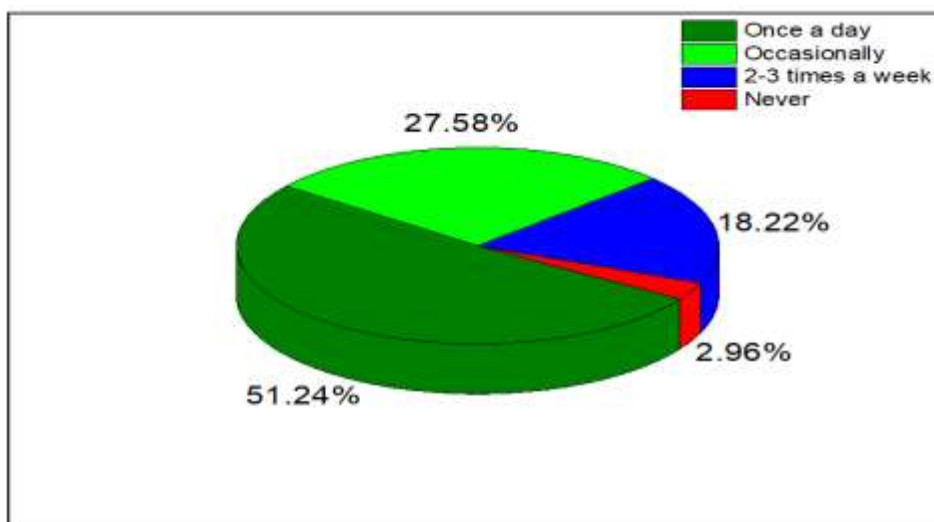
### Results and Discussions

A total of 203 participants completed the online survey, and none of the cases were excluded from the final data report due to incomplete responses. Additionally, due to participants being over 18 years of age, no responses were removed from the final data report. As seen in Figure 1, while male are in the majority among the participants (n=111, 54.7%), female are less prominent (n=92, 45.3%).



**Figure 1** Participants participation in the study

Responses to the frequency of how frequently students takes nap included: "once a day" (n=104, 51.24%), "occasionally" (n=56, 27.58%), "2-3 times a week" (n=37, 18.22%), and "never" (n=6,2.96%). This information is visually presented in Figure 2.



**Figure 2** Frequency of nap of participants

### Male Students Nap Profile Vs Academic Performance

Figure 3 illustrates the distribution of self-reported proficiency levels among male students based on their daytime napping habits. Divided into two groups those who do and do not take naps during the day the data reveals that among non-nappers, 36.36% consider themselves Average, 9.0909% Below Average, 13.636% Excellent, and 40.909% Good. In contrast, nappers consist of 24.719% Average, 2.247% Below Average, 14.607% Excellent, and 58.426% Good proficiency ratings. Notably, there's a disparity in the distribution of proficiency levels between the two groups, with a higher percentage of non-nappers rating themselves as Excellent compared to nappers.

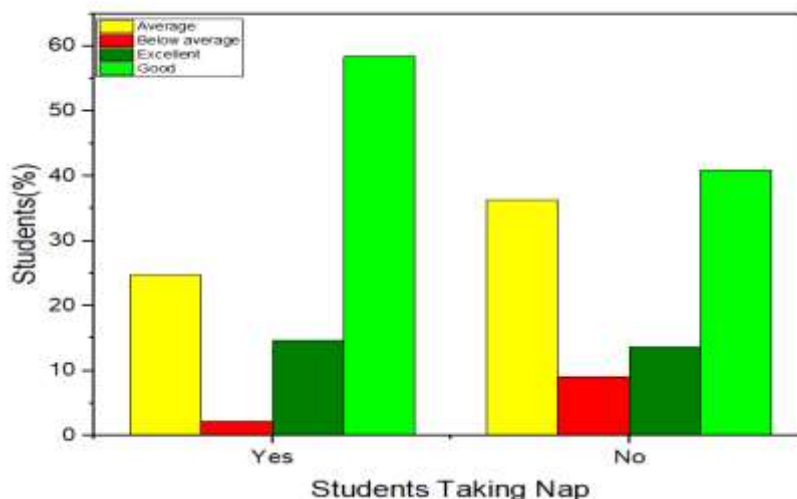


Figure 3 Male Students Nap Profile Vs Academic Performance

### Female Students Nap Profile Vs Academic Performance

Figure 4 illustrates the self-reported proficiency levels of female students categorized by their daytime napping habits. Among those who do not take naps during the day, 56.25% rate themselves as Average; while 43.75% rate themselves as Good, with no reported ratings for Below Average or Excellent. Conversely, among female students who do take daytime naps, 38.16% rate themselves as Average, 7.89% as Below Average, 5.26% as Excellent, and the majority, 48.68%, as Good. This distribution suggests a difference in proficiency level self-assessment between female students who take naps during the day and those who do not, with a higher percentage of Good ratings among nap takers.

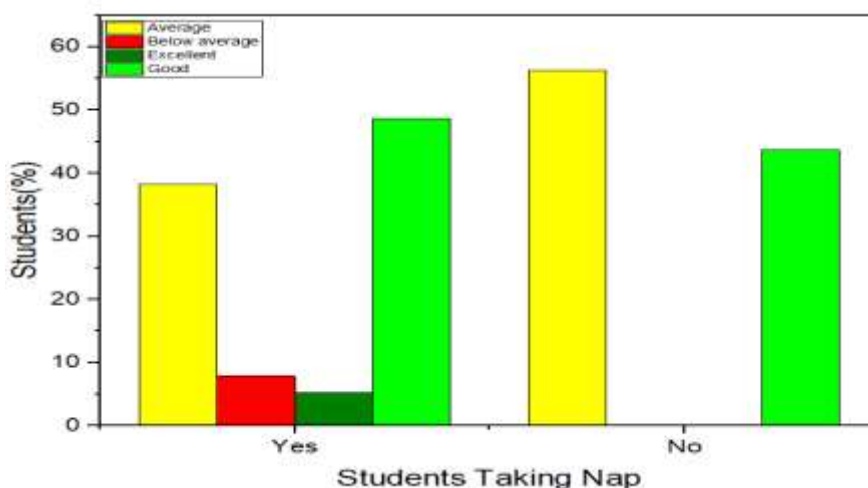
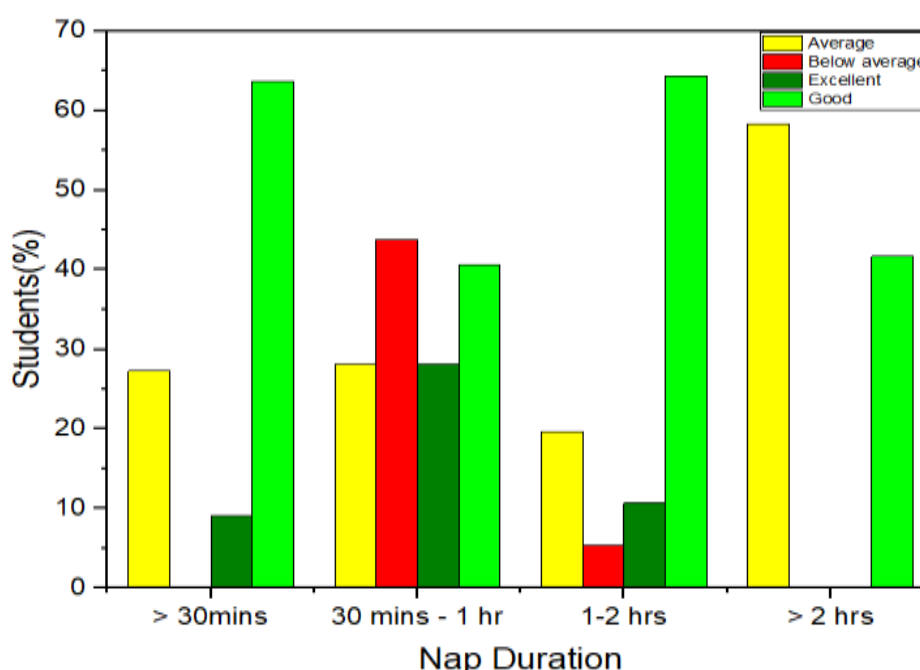


Figure 4 Female Students Nap Profile Vs Academic Performance

### Male Students Nap Duration Profile Vs Academic Performance

Figure 5 depicts the reported nap durations of male students, categorized by their self-assessed proficiency levels. Among male students who nap for more than 30 minutes, 27.27% rate themselves as Average, 9.09% as Excellent, and the majority, 63.64%, as Good, with no reported ratings for Below Average. For those napping between 30 minutes and 1 hour, 28.12% rate themselves as Average, 43.76% as Below Average, 28.12% as Excellent, and 40.62% as Good. In the 1-2 hours nap duration category, 19.64% rate themselves as Average, 5.35% as Below Average, 10.71% as Excellent, and the majority, 64.3%, as Good. Lastly, for naps exceeding 2 hours, 58.33% rate themselves as Average, with no reported ratings for Below Average or Excellent, and 41.67% rate themselves as Good. This breakdown highlights variations in self-assessed proficiency levels among male students based on their reported nap durations, with different trends observed across the duration categories.



**Figure 5 Male Students Nap Duration Profile Vs Academic Performance**

### Female Students Nap Duration Profile Vs Academic Performance

Figure 6 represented the nap durations reported by female students, categorized by their self-assessed proficiency levels. Among those napping for less than 30 minutes, 66.66% rate themselves as Average, with no reported ratings for Below Average, Excellent, and 33.34% rating themselves as Good. For the 30 minutes to 1-hour nap duration, 42.1% rate themselves as Average, 5.26% as Excellent, and the majority, 52.63%, as Good, with no reported ratings for Below Average. In the 1-2 hour nap duration category, 44.23% rate themselves as Average, 5.88% as Below Average, 3.92% as Excellent, and 44.23% as Good. For naps exceeding 2 hours, 18.75% rate themselves as Average, 18.75% as Below Average, 6.25% as Excellent, and the majority, 56.25%, as Good. This breakdown reveals variations in self-assessed proficiency levels among female students based on their reported nap durations, with different trends observed across the duration categories.

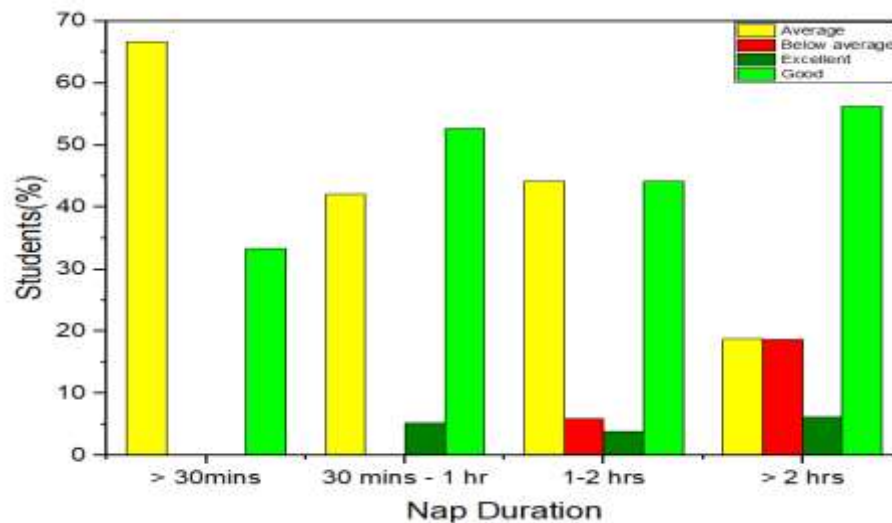


Figure 6 Female Students Nap Duration Profile Vs Academic Performance

### Conclusions and Recommendations

In conclusion, our examination of how daytime napping habits and nap lengths affect academic performance among undergraduate medical students, focusing on gender differences, reveals compelling findings. Male students who don't nap tend to perceive themselves as more proficient compared to those who do, whereas among female students, those who nap tend to rate themselves higher. Additionally, nap duration influences proficiency levels differently for each gender. These results highlight a nuanced connection between daytime napping behaviors, nap duration, and self-perceived proficiency, suggesting avenues for further research into how sleep habits impact academic success among undergraduate medical students, with potential implications for gender-specific support and intervention strategies.

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## Appendix

### Examining the influence of Nap and Nap Duration on Academic Performance among Undergraduate Medical Students at KMC: A Gender-Based Analysis

1 Name

2 Gender

Male Female

3 Age

18-20 20-22 22-24 Above 24

4 Year of study

1 2 3 4 5

5 How many hours do you

typically sleep at night?

6 Do you take naps during the day?

Yes No

- 7 How frequently do you take naps during the week?      Once a day    2-3 times a week    Occasionally    Never
- 8 On average, how long are your naps?      Less than 30 minutes    30 minutes to 1 hour    1-2 hours    More than 2 hours
- 9 Where do you usually take naps?      Home      In a designated Nap area    Library
- 10 What time of the day do you typically take your naps?      Morning    Afternoon    Evening
- 11 How would you rate your overall academic performance?  
 Excellent (>80%)      Good (70-80%)      Average (60-70%)      Below average (<60%)
- 12 Do you feel that napping affects your concentration during lectures or study sessions?      Yes      No
- 13 How do you perceive the impact of napping on your productivity?      Positively    Negatively    No impact
- 14 Have you ever experienced improved cognitive function or alertness after taking a nap?      Yes      No
- 15 Do you believe that napping helps you retain information better?      Yes      No