Original Article

The Awareness of the Effects of Insomnia on the General and Oral Health Among Dental Students at Napata College in 2025

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Abstract

Background:

Insomnia is a common sleep disorder that can significantly affect both general and oral health. It is particularly prevalent among dental students, whose academic pressures may exacerbate sleep disturbances. This study aimed to assess the impact of insomnia on the general and oral health of dental students at Napata College. **Method:** A cross-sectional, faculty-based study was conducted among 90 dental students in their 4th and 5th years of the dental program at Napata College. Participants were surveyed regarding their general health, oral health, awareness of insomnia, and its effects on their academic performance. Data were analyzed to determine the prevalence of insomnia and its impact on various health aspects. **Results:** The study found that 7.9% of students suffered from insomnia. General health issues associated with insomnia included gastrointestinal symptoms (51.1%), fatigue (52.2%), anxiety (22.2%), and reduced stress-coping ability (35.6%). Oral health problems included bruxism (21.1%), temporomandibular joint disorders (7.8%), and dry mouth (8.9%). Additionally, 90% of students believed that insomnia negatively affected their oral health, primarily due to reduced motivation for oral care. Furthermore, 44.4% of students reported missing classes or clinical duties due to sleep deprivation. **Conclusion:**
This study indicates a moderate prevalence of insomnia among dental students, negatively affecting their general health, oral health, and academic performance. Addressing sleep disorders in this population may help improve both health outcomes and academic achievement.

Keywords: Insomnia, general health, oral health, dental students

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Introduction

Sleep is a fundamental biological process essential for maintaining overall health and well-being (1). Its effects extend beyond rest and rejuvenation, influencing multiple physiological systems, including cognitive, immune, and metabolic functions. Chronic sleep deprivation or poor-quality sleep, often referred to as insomnia, can have widespread consequences on both general health and specific domains like oral health (1). Among individuals experiencing the pressures of academic life, dental students are particularly vulnerable to sleep disturbances due to high academic demands, clinical rotations, and stress. Dental students' awareness of the effects of insomnia on their health might influence their health practices and overall well-being (2).

Insomnia is defined as difficulty falling asleep, staying asleep, or waking up too early and being unable to return to sleep, despite having the opportunity to sleep (3). This condition is often accompanied by daytime impairment or distress, such as fatigue, mood disturbances, and cognitive impairments. According to the American Academy of Sleep Medicine, insomnia is diagnosed when these sleep disturbances occur at least three times per week and persist for at least three months. Insomnia can be classified as acute (short-term) or chronic (long-term), with chronic insomnia representing the more severe and persistent form of the disorder (4).

Insomnia is a prevalent concern among university students, including dental students, due to the high levels of stress and academic pressures they experience. Studies have reported a significant prevalence of poor sleep quality and insomnia among dental students. In one study, the prevalence of poor sleep quality was found to be as high as 65.2% among dental students in Brazil (5). Another study in Jordan found that dental students had a low level of knowledge about sleep disorders and experienced poor sleep quality, with the majority scoring poorly on sleep knowledge assessments (6). These statistics suggest that sleep disturbances, including insomnia, are common among dental students, but their awareness of the potential health consequences remains unclear.

Insomnia can contribute to a range of general health issues, including cardiovascular diseases, metabolic disorders, and impaired immune function. The body's inability to undergo proper restorative sleep leads to imbalances in various physiological systems. Studies have shown that chronic insomnia is linked to an increased risk of hypertension, diabetes, obesity, and heart disease (2). Additionally, persistent sleep disturbances are associated with impaired cognitive function, including memory, attention, and learning ability, which can affect students' academic performance (7).

The cognitive and emotional impacts of insomnia extend beyond academic performance. Poor sleep can contribute to mood disorders such as anxiety, depression, and irritability. These mental health concerns can further exacerbate the stress and pressures experienced by dental students, creating a cyclical pattern of poor sleep, mental health challenges, and decreased academic performance.

The effects of insomnia are not limited to general health; they also have significant consequences for oral

health. Sleep disturbances, particularly chronic insomnia, can lead to a variety of oral health issues that dental professionals must recognize in their patients. One of the most prominent oral health conditions associated with insomnia is bruxism—the involuntary grinding or clenching of teeth during sleep. Bruxism is often exacerbated by stress and sleep disturbances, leading to tooth wear, jaw pain, and temporomandibular joint (TMJ) disorders. Studies have reported a higher prevalence of bruxism among individuals with insomnia and poor sleep quality (8).

Additionally, insomnia has been linked to dry mouth, a condition that occurs when there is insufficient saliva production. Dry mouth can increase the risk of dental caries, gum disease, and oral infections. A lack of sleep can also impair the body's ability to repair and regenerate tissues, potentially delaying healing after dental procedures and contributing to oral health problems. Furthermore, insomnia may affect oral hygiene practices. Dental students experiencing sleep disturbances may struggle to maintain regular oral hygiene habits due to fatigue and lack of energy, which can result in increased gingival bleeding, plaque buildup, and other oral health issues.

Several factors contribute to insomnia among dental students. Academic stress, long study hours, and clinical practice pressures are primary contributors to poor sleep quality (9). Dental students often work long hours, both in classrooms and clinics, which can disrupt circadian rhythms and reduce sleep duration. The stress of managing complex academic and clinical responsibilities, along with the pressure to perform well, can lead to difficulty relaxing and falling asleep (9).

Additionally, irregular schedules associated with clinical rotations and on-call duties exacerbate sleep disturbances. The increasing use of digital devices before bedtime has also been linked to poor sleep quality (10). Blue light emitted by screens interferes with melatonin production, making it harder for students to fall asleep after long days of study and clinical work. Caffeine consumption, common among students attempting to stay alert during extended study sessions, further contributes to sleep disturbances (10).

Aim of the study:

To assess dental students' awareness of the effects of insomnia on general and oral health.

Methods:

A descriptive cross-sectional, faculty-based study was conducted via an online platform among 4th and 5th-year dental students at the Faculty of Dental Medicine, Napata College. Napata College, located in Khartoum North (Bahri), Sudan, is situated in the Kafouri area, known for its accessibility and central location. Fourth- and fifth-year students were selected due to their completion of foundational courses and significant clinical exposure, making them suitable for understanding the implications of insomnia. Students with a known history of sleep disorders unrelated to insomnia and those unwilling or unable to provide informed consent were excluded.

With full coverage, the total number of 4th and 5th-year students was 90. Data were collected using a semi-structured questionnaire developed by the researchers. The questionnaire covered demographic information, knowledge of insomnia, effects of insomnia on general and oral health, an insomnia index score to determine prevalence, and contributing factors. Data were

analyzed using SPSS version 24, and results were presented as frequencies and proportions in tables and figures. Ethical approval was obtained from the ethical committee of Napata College, and written consent was secured from all participants before data collection.

Results:

A total of 90 students participated in the study. Of these, 68.9% were female. Approximately 78.9% were aged between 22 and 25 years. (Figure 1) Fourth-year students accounted for 56.7% of participants, while 43.3% were fifth-year students. Only 8.9% of participants reported being smokers or using tobacco.

Table 2 shows general health effects of insomnia. About half of the students reported gastrointestinal problems and fatigue. However, rated o verallg eneral h ealth in the previous six months as "good".

Table 1 shows the extent of knowledge about insomnia among dental students. The overall knowledge score was 68.5%, reflecting moderate understanding of insomnia, its definition and causes.

Table 3 shows effects of insomnia on oral health. about 20% of students had multiple oral symptoms. and 23.3% experienced oral pain or toothache that interfered with their sleep. Regarding oral diseases, nearly 50% of the students had one or another of the following oral diseases: bruxism, temporomandibular joint disorder, dry mouth, gum infections or periodontal disease.

Table 4 shows that the prevalence of insomnia among 4th and 5th-year dental students at Napata College was found to be 7.9%.

Table 5 shows contributing factors to insomnia. These included feeling stressed or anxious about academic responsibilities (88.9%), regularly using electronic devices before bedtime (70%) and consuming caffeine or energy drinks (95.6%).

Table 6 shows that insomnia negativity affected academic performance in a substantial proportion of students, ranging from 17.8% to 44.4%.

Figure 1: Distribution of Age Groups Among Dental Students of Napata College.

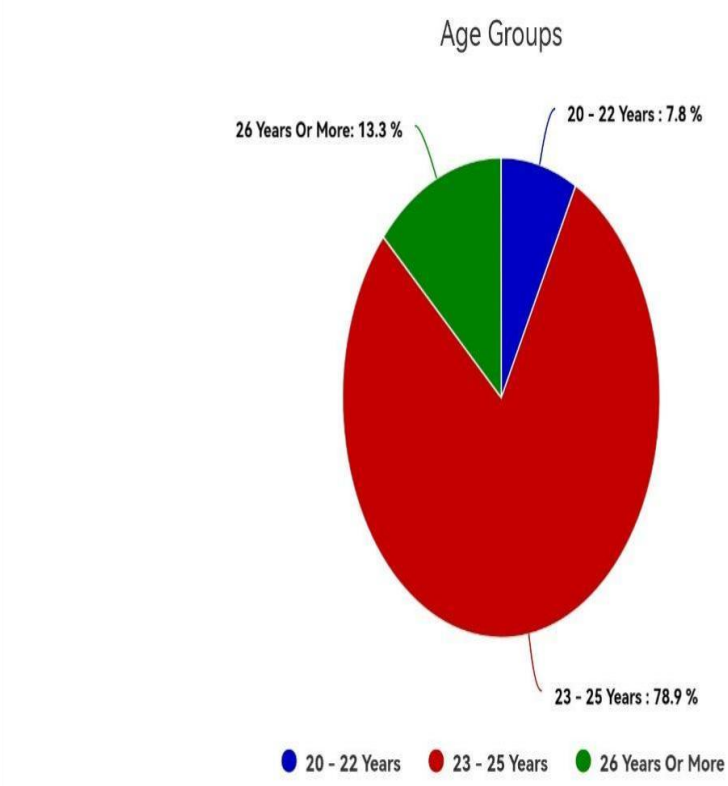

Table 1: Assessment of Dental Student's Knowledge Regarding the Insomnia:			
Variabal	**Category**	**N (%)**	**Knowledg % e Score**
Hearing About Insomnia	**Yes**	**67 (74.4%)**	**68.5%**
	No	**23 (25.6%)**	
Insomnia Definition	**Difficulty falling asleep**	**23 (25.6%)**	
	Waking up frequently during the night	**6 (6.7%)**	
	Waking up too early and not being able to fall back asleep	**14 (15.5%)**	
	All The Above Definitions	**47 (52.2%)**	
Main Cause of Insomnia	**Stress or anxiety**	**51 (56.7%)**	
	Poor sleep hygiene	**35 (38.9%)**	
	Medical conditions	**61 (67.8%)**	
	Excessive screen time	**44 (48.9%)**	
	Lifestyle habits	**71 (78.9%)**	

Table 2: Effects of Insomnia on General Health Among 4th and 5th Years Dental Students of Napata College, (n = 90)

Variable	Category	N (%)
Symptoms experience related to Insomnia	**Headaches or migraines**	**24 (26.7%)**
	Weight gain or loss	**11 (12.2%)**
	Heart palpitations	**9 (10%)**
	Gastrointestinal problems	**46 (51.1%)**
Experience of Fatigue or lack of Energy	**Yes**	**47 (52.2%)**
	No	**43 (47.8%)**
Experience of Mental Health Issues due to lack of Sleep	**Increased anxiety**	**20 (22.2%)**
	Depression or low mood	**14 (15.5%)**
	Reduced ability to cope with stress	**32 (35.6%)**
	Difficulty making decisions	**24 (26.7%)**
Rating Overall General Health in past 6 **Months**	**Very Poor**	**4 (4.4%)**
	Poor	**16 (17.8%)**
	Good	**55 (61.1%)**
	Very Good	**15 (16.7%)**
Rely on Medications to help you Sleep	**Yes**	**10 (11.1%)**
	No	**80 (88.9%)**

Table 3: Effects of Insomnia in Oral Health Among 4th and 5th Years Dental Students of Napata College, (n = 90)		
Variable	**Category**	**N (%)**
Notice any Oral Changes due to Sleep Issues	**Yes**	**18 (20%)**
	No	**72 (80%)**
Experience Oral Pain or Toothache interferes with your sleep	**Yes**	**21 (23.3%)**
	No	**69 (76.7%)**
Diagnosed with Oral Diseases linked to Insomnia	**Bruxism**	**19 (21.1%)**
	Temporomandibular joint disorder	**7 (7.8%)**
	Gum infections or periodontal disease	**10 (11.1%)**
	Dry Mouth	**8 (8.9%)**
	None	**46 (51.1%)**
Experience wake-up with such symptoms of toothache or jaw pain or sensitivity	**Yes**	**13 (14.4%)**
	No	**77 (85.6%)**
Insomnia make you less motivated to Maintain oral health	**Yes**	**81 (90%)**
	No	**9 (10%)**
Notice increased gum sensitivity or pain after nights when you have trouble sleeping	**Yes**	**27 (30%)**
	No	**63 (70%)**
Believe that poor sleep has contributed to changes in your oral health, such as worsening gum disease or increased plaque buildup	**Yes**	**85 (94.4%)**
	No	**5 (5.6%)**
Noticed changes in your diet (e.g., increased sugary or acidic food consumption) due to insomnia	**Yes**	**36 (40%)**
	No	**54 (60%)**

Table 4: Prevalence of Insomnia Among 4th and 5th Year Dental Students in Napata College, (n =90)						
Item	**None**	**Mild**	**Moderate**	**Severe**	**Very Severe**	**Prevale % nce**
Difficulty falling asleep	**56 (62.2%)**	**14 (15.6%)**	**11 (12.2%)**	**9 (10%)**	**0 (0%)**	**7.9%**
Difficulty staying asleep	**73 (81.1%)**	**5 (5.6%)**	**1 (1.1%)**	**7 (7.8%)**	**4 (4.4%)**	
Waking up too early	**68 (75.6%)**	**8 (8.9%)**	**12 (13.3%)**	**1 (1.1%)**	**1 (1.1%)**	
Satisfied form current sleep pattern	**50 (55.6%)**	**28 (31.1%)**	**11 (12.2%)**	**0 (0%)**	**1 (1.1%)**	
Sleep problem interfere with your daily functioning	**41 (45.5%)**	**29 (32.2%)**	**7 (7.8%)**	**8 (8.9%)**	**5 (5.6%)**	
Extent do you think others have noticed your sleep problems	**82 (91.1%)**	**6 (6.7%)**	**2 (2.2%)**	**0 (0%)**	**0 (0%)**	
Concerned about your sleep problem	**67 (74.4%)**	**8 (8.9%)**	**10 (11.1%)**	**3 (3.3%)**	**2 (2.2%)**	

Table 5: Assessment of Contributing Factors to Insomnia among 4th and 5th Years Dental Students in Napata College, (n = 90)		
Contributing Factors to Insomnia	**: Category**	**N (%)**
Feeling stressed or anxious about academic responsibilities	**Yes**	**80 (88.9%)**
	No	**10 (11.1%)**
Use electronic devices (e.g., phone, laptop) before bedtime	**Never**	**4 (4.4%)**
	Rarely	**6 (6.7%)**
	Sometimes	**17 (18.9%)**
	Often	**63 (70%)**
Consuming caffeine or energy drinks	**Yes**	**86 (95.6%)**
	No	**4 (4.4%)**
Engaging in physical activity or exercise	**Yes**	**78 (87.8%)**
	No	**12 (12.2%)**

Table 6: Impact of Insomnia on Academic Performance and Daily Functioning Among 4th and 5th Year Dental Students in Napata College, (n = 90)		
Impact of Insomnia on Academic Performance and Daily Functioning	**: Category**	**N (%)**
Missed classes or clinical duties due to lack of sleep	**Yes**	**40 (44.4%)**
	No	**50 (55.6%)**
Feel drowsy or unfocused during lectures or clinical sessions	**Yes**	**34 (37.8%)**
	No	**56 (62.2%)**
Lack of sleep affected your academic performance or GPA	**Yes**	**16 (17.8%)**
	No	**74 (82.2%)**
Feeling that insomnia interferes with your daily functioning or productivity	Yes	**24 (26.7%)**
	No	**66 (73.3%)**

Discussion

Insomnia is a common sleep disorder characterized by difficulty falling asleep or staying asleep, which can have significant effects on both general and oral health. Previous studies have shown that insomnia is associated with a range of health problems, including fatigue, mood disturbances, and an increased risk of oral health issues like bruxism and gum disease. Dental students, due to the demands of their academic program, may be particularly vulnerable to insomnia, which can negatively impact their physical, mental, and oral health.

Our results showed that among the 90 dental students in this study, about 70% were female. This aligns with the study by Muñoz et al. (5), which reported that female dental students had a higher prevalence of poor sleep quality and were more affected by insomnia-related consequences. In this study, we found that the overall knowledge score regarding insomnia was 68.5%, indicating a moderate level of knowledge about its definition and causes. This contrasts with the study by Mustafa Alkhader et al. (6), which found that dental interns in Northern Jordan had a significantly lower knowledge score of 40% regarding sleep disorders, suggesting a gap in sleep medicine education among dental students.

Our results showed that over half of the students experienced gastrointestinal (GI) symptoms related to insomnia, while 52.2% reported fatigue or low energy. Similar to the findings of Kailash Asawa et al. (11), disturbed sleep was significantly associated with fatigue, vitality loss, and reduced well-being among dental students. However, the study by Hassan et al. (12), showd that 46% of students had insomnia but the impact of poor sleep quality was reported as only 18%.

In this study, we found that 22% of students had increased anxiety, 15.5% had depression or low mood, and 36% reported a reduced ability to cope with stress. This is similar to the study by Dewan et al. (13), who found a high prevalence of stress-related sleep disorders among dental students, with 25% experiencing insomnia and 30% reporting narcolepsy. Unlike our study, which showed that 27% of students had difficulty making decisions due to insomnia, the study by Schroeder et al. (8) focused on cognitive impairments linked to sleep apnea rather than general insomnia-related cognitive decline.

Our results showed that 23% of students experienced oral pain or toothache that interfered with sleep, while 21.1% were diagnosed with bruxism. Similar to the study by Kurtović et al. (14), which demonstrated that sleep disturbances, particularly insomnia, were associated with disrupted saliva production and increased risk of dental caries. Unlike the study by Hanet al. (15), which reported that both short and long sleep durations were linked to poor oral health in a general population, our study focused on insomnia's specific impact on dental students.

In this study, we found that 94.4% of students believed poor sleep contributed to changes in their oral health, including worsening gum disease and plaque buildup. Similar to the study by Schroeder et al. (8), which highlighted the role of oral health professionals in identifying sleep-related oral issues, the findings suggest that dental students themselves recognize these connections.

The results showed that the prevalence of insomnia among 4th and 5th-year dental students at Napata College was about 8%. This contrasts with the study by Hassan et al. (12), who found a much higher insomnia prevalence of 46% among medical and dental students in Peshawar. On the other hand, Dewan et al. (13), reported that 25% of dental students had clinically significant insomnia.

In this study, we found that about 90% of students reported feeling stressed or anxious about academic responsibilities, 70% used electronic devices before bedtime, and 96% consumed caffeine or energy drinks. Similar to the study by Elagra et al. (16), who found that poor sleep quality was significantly associated with academic stress and lifestyle habits. These findings confirm the role of academic pressure and stimulant use in sleep disturbances.

Unlike the study by Alghamdi et al. (7), who found a significant relationship between smoking and sleep disturbances, our study found a low percentage of smokers (9%), making smoking a less prominent factor. The effect of insomnia on academic performance was substantial in our study. Thus, 44% of students missed classes or clinical duties due to lack of sleep, 38% felt drowsy during lectures, and 18% believed that lack of sleep affected their academic performance. This is similar to the study by Muñoz et al. (5), who reported a significant negative impact of poor sleep on academic performance among undergraduate dental students.In this study, we found that 27% of students reported that insomnia interfered with their daily functioning. This is like the study of Asawa et al. (11), who found that excellent academic performers had lower sleep disturbance scores. the results showed that a notable percentage of students experienced academic disruptions due to insomnia.

Conclusion:

This study highlights the significant effects of insomnia on both general and oral health among dental students at Napata College. The prevalence of insomnia was 8%, with most participants demonstrating moderate knowledge about its causes and impacts. Insomnia was found to contribute to gastrointestinal symptoms, fatigue, increased anxiety, and reduced ability to cope with stress. Oral health effects included bruxism, oral pain, and decreased motivation for oral hygiene. Key contributing factors to insomnia included academic stress, caffeine consumption, and electronic device usage before bedtime. The impact of insomnia on academic performance and daily functioning was notable, with students reporting absenteeism, reduced focus during lectures, and interference with productivity. These findings emphasize the need for educational programs and stress management strategies to improve sleep quality, enhance oral health, and support academic performance among dental students.

Recommendations

We recommend the following:

1. **Implement Stress Management Programs:** Napata College administration should organize workshops and counseling sessions to help students manage academic stress and improve their sleep habits.
2. **Promote Awareness of Insomnia and Oral Health:** Health education campaigns

targeting dental students should be conducted by the college health unit, focusing on the effects of insomnia on general and oral health.

3. **Encourage Healthy Sleep Practices:**
   Faculty members and student associations should advocate reducing caffeine consumption and limiting electronic device use before bedtime to promote better sleep hygiene.
4. **Provide Accessible Mental and Dental Health Services:**
   The Federal Ministry of Health and Napata College should offer accessible mental health and dental care services for students experiencing insomnia-related issues, including anxiety, fatigue, and oral health problems.

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