



Assessment of the Relationship between Sleep Hygiene Practices, Quality of Life and Academic Performance among Medical Students at the University of Lusaka, Zambia

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ABSTRACT: Influencing daily functioning, mental well-being, and overall quality of life, sleep quality is crucial to human physiology. Medical students, facing intense academic demands, often grapple with sleep disturbances, impairing their performance. This study at the University of Lusaka delves into the relationship between sleep hygiene, quality of life, and academic performance, drawing insights from esteemed organizations like the Institute of Medicine Committee on Sleep Medicine and Research (2006) and the World Health Organization (1999). Alarming results show 44.23% of students had poor sleep, averaging 6.7±1.6 hours. These challenges affected attention and cognitive functions adversely. Urgent interventions focusing on sleep quality and overall well-being are imperative, promising improved attendance, attention, and academic accomplishments, nurturing a healthier learning atmosphere and holistic student growth. The main objective of the study will be to investigate the relationship between sleep hygiene practices, quality of life and academic performance of medical students at the University of Lusaka in Zambia. The study had a sample of 497 participants that included diverse young adults (32.2% aged 18-25, 59.4% aged 26-35) with balanced gender representation (40.8% male, 59.2% female). Highest participation was noted in the lower academic year, Year 111 (17.9%). Prevalent issues in sleep hygiene (irregular schedules - 49.3%, excessive daytime napping - 58.4%) and stress-related factors (60.2%) affected participants. Positive social satisfaction (43.3% rated as 4) and effective stress management (36.4% rated as 5) were observed. Burnout was common (75.9% sometimes, 16.7% frequently), highlighting the need for mental health support. Participants showed dedicated study habits (55.5% studied 4-6 hours daily) and achieved notable academic results (39.6% received B+ in previous exams). Interventions addressing sleep hygiene, stress, and mental health are crucial for enhancing well-being and academic success. In conclusion, this study sheds light on the critical issue of poor sleep hygiene among medical students at the University of Lusaka, revealing its detrimental impact on their academic performance. The findings underscore the urgent need for comprehensive interventions tailored to enhance students' sleep hygiene and overall well-being.

KEYWORDS: Academic performance, Medical Students, Mental Well-being, Quality of Life(QoL), Sleep Hygiene.

I. INTRODUCTION

According to the Institute of Medicine Committee on Sleep Medicine and Research, (2006), The human physiology depends on sleep. It is necessary for day-to-day operations, psychological health, and overall well-being. It plays an important role in memory consolidation and learning (Fenn and Hambrick, 2012). For the effects of sleep to be enjoyed, sleep has to be of good quality. The American Academy of Sleep Medicine and Sleep Research Society recommends sleeping for seven or more hours per day, and this is one of the most important factors affecting the quality of sleep. Apart from sleep duration, many other factors such as irregularity of sleep and environment affect sleep quality (Almojali et al,2017a). According to the World Health Organization, leading a healthy lifestyle reduces the likelihood of developing serious illnesses or dying too early. A healthy lifestyle includes practices such as proper nutrition, regular exercise, having adequate hours of sleep and avoiding substance abuse. Lifestyle behaviors have a positive relationship with poor academic achievement (Heidari et al, 2017). Medical students are a distinct demographic of young adults whose lifestyle choices and academic obligations can negatively affect their sleep patterns and cause sleep deprivation (BaHamman et al. 2012). A meta-analysis of seventy articles by Lim and Dinges. (2010), Lack of sleep impairs most cognitive abilities, such as working memory, short-term memory, simple attention, and complex attention, which has a negative impact on academic performance.

Poor sleep quality has been reported to be significantly high among medical students, with rates being as high as 51% in the united states (Brick, Seely and Palermo, 2010), 59% in Lithuania (Preišegolavičiūtė, Leskauskas and Adomaitienė, 2010) and 37% in Saudi



Arabia. (Abdulghani et al., 2012). This study aims to assess the relationship between sleep hygiene practices, quality of life and student academic performance, hypothesizing that the quality of life and the quality of sleep is indirectly proportional to the academic performance of medical students at the university of Lusaka in Zambia.

The World Health Organization (2004) declared sleep to be a basic human need that is essential for good health, good quality of life and well performance of day-to-day tasks. Medical students experience a great deal of stress during their training, which is exacerbated by a demanding curriculum and frequent exams, among other things (Safh et al., 2020). According to a study by Sundas et al. (2020), of the 217 medical students who were chosen for the study, 96 (44.23%) had poor sleep quality, with the prevalence among male and female students being 41 (39.8%) and 55 (48.2%), respectively. The average amount of time students slept was 6.7 ± 1.6 hours. Durmer and Dinges (2005) postulated that sleep loss has been associated with performance deficits, including reduced attention, vigilance, and decreased cognitive functions such as memory information and complex decision making. Multiple studies including those conducted by Alsaggaf et al. (2016) and Almojali et al. (2017), have also shown that sleep loss and poor quality sleep negatively affect academic performance. Poor lifestyle negatively affect the physiological well-being of adolescents, which can sequentially affect student attendance, attention span and academic performance (Bandura, 1997, as cited in Rajendran et al., 2019).

The main objective of the study was to investigate the relationship between sleep hygiene practices, quality of life and academic performance of medical students at the University of Lusaka in Zambia. The specific objectives of the study were to:

- To assess sleep hygiene practices among the medical students at the University of Lusaka.
- To evaluate the quality of life of the medical students at the University if Lusaka.
- To determine the academic performance if the medical students at the University if Lusaka.
- To assess the relationship between sleep hygiene practices, quality of life and academic performance of medical students at the University of Lusaka in Zambia.

Poor sleep quality has a prevalence of up to 59% among medical students. (Preišegolavičiūtė, Leskauskas and Adomaitienė, 2010). The repercussions of poor sleep quality are insignificant and well documented. Many studies have been done on the impact of sleep quality among medical students, however, very few have explored and evaluated its effect on quality of life, and how the two variables affect academic performance. Furthermore, no studies have been done on the effect of lifestyle on sleep quality in our setting. It is well known that medical students are under academic pressure thus, conducting a research in this area could unveil the severity of the problem and help medical students at the University of Lusaka and the nation at large to be aware of the effects of sleep hygiene and quality of life on their academic performance, and isolations can be put in place to help them cope with the burdens off the medical field

This will also help accentuate the importance of offering counselling services to the medical the student populace not only at the University of Lusaka, but in all higher learning institutions in Zambia. This research will help the academic fraternity at large to recognize the problem and help students in every way possible such is organizing educational campaigns, which will focus on helping students to lead a healthy lifestyle, as well as avoid the buildup of chronic sleep debt in order to enhance their academic performance.

A. Literature Review

As postulated by Shepard et al. (2005), sleep is a basic biological process occurring in most living things and it plays an important role in the functioning of many of the body's organ systems. It is characterized by a state of altered consciousness, a decreased perception of sensory activity and reduced muscle activity (FERRI et al., 2008). As reported by Bode and Kuula, (2021), the exact function of sleep is not clear. However, a considerable number of theories including, brain maturation, energy restoration, metabolic regulation, boosting the immune system, detoxification, circuit reorganization, synaptic optimization and avoiding danger, have been put forward to explain the necessity of sleep. It is one of the primary factors that determines quality of life and is essential for maintaining excellent mental, emotional, and physical health. Sleep is essential for learning, decision-making, memory consolidation, and critical thinking (Mednick et al, 2003). Therefore, sleep is essential for the proper functioning of critical cognitive processes linked to academic success in postsecondary education. Students in higher education are forced to adapt to an irregular sleep-wake cycle as a result of their work and study schedules.

Sleep is organized in cycles composed of two fundamentally different states of being, namely, Rapid Eye Movement (REM) and non-Rapid Eye Movement (NREM). There are four stages of NREM sleep: 1, 2, 3, and 4. The depth of sleep rises with each



successive stage. Sleep starts at NREM stage 1, moves through stages 2, 3, and 4, ends in REM sleep, and then returns to NREM stage 1 to start the cycle over. Each of these stages has a different biological manifestation, neurologically and physically. An individual's experience of sleep and wakefulness varies widely based on their age, physiological and psychological characteristics, physical and mental health conditions, and the demands of their occupation. Additionally, the social demands of contemporary life have also affected these patterns in recent decades (Lemma et al, 2012). A healthy individual needs seven hours of sleep on average per day, according to sleep experts. The average amount of sleep, however, is far shorter than this, according to recent studies from several countries (Smolensky et al, 2011). Previous research conducted globally has demonstrated that various sleep disorders are linked to mental health issues, physical health issues, and social life disorders.

Lack of sleep has been linked to a number of performance issues, such as diminished attentiveness, vigilance, and cognitive abilities like memory formation and complex decision-making. Delays in learning, slowed cognition, and a decline in short-term memory recall are among the other deficiencies. Short tasks are typically unaffected, however, performance declines with task duration (Durmer and Dinges, 2005). Although results vary amongst studies, it is generally accepted that sex and age affect the quantity and quality of sleep (Lund et al, 2010). Among university students, sleep disturbances have been observed to be prevalent (Adeosun et al, 2008). In a UK study, 24% of college students said they had trouble falling asleep and slept for fewer than seven hours every night, and 45% said they had trouble waking up on time (Webb et al, 1996). The magnitude of the problem can be assessed on the basis of studies that demonstrate that both sleep deprivation and poor sleep quality are prevalent in university student populations. Limiting naps during the day to no more than thirty minutes, exercising frequently, avoiding heavy meals late in the evening, keeping a consistent sleep pattern, minimizing phone use, and other related practices and habits are all considered forms of sleep hygiene (Shriane et al. 2020). Studies done by Azad et al (2015), Lund et al (2010) and Haseli et al (2009) concluded that, factors such as coffee or tea consumption, excessive social media use, drug use, gender, health issues, experiencing symptoms of depression, anxiety, and stress, and academic performance are associated with poor sleep hygiene practice.

One of the most important variables that affect sleep quality is sleep hygiene. Inappropriate sleep behaviors are harmful for sleep. These behaviors, which were first coined by Peter Hauri are based on physiology of sleep (Suen et al., 2010). Many activities are considered as proper sleep hygiene that promotes good sleep. Some of them include the followings: 1) keeping the bedroom serene and comfortable, 2) keeping a consistent sleep and waking time, 3) avoiding occasional naps as a norm, 4) Avoiding alcohol, coffee, and nicotine prior to bedtime and 5) refraining from extremely demanding activities in the bedroom (Brick et al, 2010). Unfortunately, medical students have insufficient knowledge about sleep hygiene practices. Furthermore, they frequently don't realize how poorly sleep deteriorates their cognitive function and academic performance (Brown et al, 2002). Academic performance issues and a rise in medical errors among medical students might be caused by poor sleep hygiene and poor quality of sleep.

According to The WHOQOL Group (1998), Quality of life is a subjective state of well-being, which can be influenced by culture, value systems, and stressful environments. It is a broad concept that is intricately influenced by an individual's physical and mental well-being, beliefs, social interactions, and relationship to prominent environmental features (Meeberg, 1993). In other words, an individual's perceptions determine their quality of life. Despite the advantages it offers students, a university can be one of these stressful places. Students at medical universities might have a worse quality of life than other youths in the general population as a whole. (Dyrbye et al. 2006a; Henning et al. 2012). As they transition from being insecure students to young, knowledgeable physicians, medical students experience a range of emotions. (Ahmed et al. 2009). In dealing with patients and their illnesses, medical students experience helplessness, loss of control, and stress during their five years in medical college. This can sometimes exacerbate depression and anxiety. This is especially true after they are introduced to clinical settings in their senior year. According to Dyrbye et al. (2009), medical students encounter a demanding educational setting that includes managing an excessive number of classes, patient conditions, and tense staff relationships. In addition, several turning points in medical education like the start of the clinical phase (Zhang et al. 2012), graduation (Willcock et al. 2004), internship, and resident training (West et al. 2011), are typically seen as difficult transitions. Some research (Dyrbye et al. 2006a; Mazurkiewicz et al. 2012; Santen et al. 2010) reported early beginnings of burnout and sleep difficulties in the preclinical phase of medical school, despite these later stressful transitions in the students' education.

Exploring the quality of life of medical students has become more crucial since they face a wide range of stressors in college, such as long study sessions and demanding exams (Backovic et al. 2013). As medical students face these impediments throughout their study in the college mainly during the preclinical years, acquiring higher academic and personal achievements becomes more



challenging (piko 2014). Previous studies like that of Zhang et al (2012) and Goldin et al (2007), have elucidated noticing a dramatic reduction of medical students' quality of life when they start encountering different patients at the start of their clinical years. A longitudinal study reported that the academic performance of medical students predicts their professional competence in their medical career (Tartas et al. 2011). Thus, the high academic performance of medical students can result in an uplift of their professional competence in the clinical phase, where encountering patients in a professional manner becomes very important. Although research on medical students' quality of life has been done (Henning et al. 2012) studies regarding the correlation of academic achievement of medical students with their quality of life are still lacking.

According to Ghaffar et al. (2020), lifestyle is a way of life for people who display it daily in their physical, psychological, social, and economic environment. It also reflects people's self-image or self-concept, the way they see themselves and believe others see them. A healthy lifestyle includes practicing proper nutrition, regular exercise, adequate hours of sleep and avoiding substance abuse. An unhealthy lifestyle include physical inactivity, skipping breakfast, ideating junk food, sleep deprivation, smoking cigarettes, alcohol abuse (Heidari et al, 2017). Unhealthy habits like vaping or smoking, abusing drugs or alcohol, consuming fast food, and putting in long hours at work have been found to be detrimental indicators of academic achievement (Arria et al, 2015). Studies have shown a correlation between unhealthy lifestyle behaviors and poor academic achievement (McIsaac et al, 2015)

In a cross-sectional study aimed at exploring the Magnitude of poor sleep hygiene practice and associated factors among medical students in Ethiopia, Molla and Wondie (2021), concluded that being female and having stress, depressive, and anxiety symptoms were found to be significant predictors of poor sleep hygiene. As opposed to these findings, Yazdi et al. (2016), reported that complaint from this problem was more prevalent in male students than females. BaHammam et al. (2012), postulated that decreased nocturnal sleep time, late bedtimes during weekdays and weekends and increased daytime sleepiness are negatively associated with academic performance in medical students. According to a Hong Kong study, students had little knowledge of good sleep hygiene. In this study, undesirable sleep hygiene practices were significantly associated with poor quality of sleep (Suen et al, 2010). According to research by Brown et al. (2002), students' good understanding of sleep hygiene practices is insufficient to improve the quality of their sleep.

In a study conducted by Alotaibi et al. (2020), it was found that daytime naps showed a significant association with, and were predictive of, poor sleep quality. This implies that the study participants' naps were more likely to be unintentional compensatory daytime naps meant to make up for inadequate sleep at night, and these naps are commonly taken as a coping mechanism for disrupted circadian rhythms. However, academic performance showed no statistically significant association with sleep quality or stress levels. Mirghani et al. (2015), assessed the association between sleep quality and academic performance in Sudanese medical students and a significant difference between excellent and average students regarding overall sleep quality was found, confirming the hypothesis that poor academic performance is linked to poor sleep quality.

Several surveys like that conducted by Caestine et al. (2013), concludes that in university students, there is an overall decline in physical activity levels and a change in dietary habits attributed to a variety of factors. Rampersaud et al. (2005), postulated that a healthy diet is effective in improving cognitive functioning and academic performance. However, the habits that specifically improve academic performance are not universally agreed upon by different studies.

A study conducted in Rwanda by Nsengimana et al (2023), concluded that poor sleep equality was highly prevalent among medical students in Rwanda, with final and first-year students reporting the poorest sleep quality. Another study conducted at Kathmandu medical college in Nepal concluded that Every two out of five medical students was found to have poor sleep quality which not only affects their academic performance but also affect their physical health (sundas et al., 2020). A study by Siddiqui et al. (2016), revealed exceptional information on the sleep quality of medical students. The study revealed that, majority of medical students have poor quality of sleep, which may be connected to their sleeping patterns. However Poor sleep quality did not show any significant relation to sociodemographic factors

B. Theoretical Framework

Sleep Hygiene Theory: It is theory expounding on the set of psychological and environmental recommendations aimed at promoting healthy sleep (Hauri, 1997). It entails establishing a sleep-friendly environment, sticking to a regular sleep schedule, regularly exercising, avoiding caffeine and forming routines that encourage sound sleep. The idea of the sleep hygiene theory places a strong emphasis on these elements' contribution to raising overall sleep quality (Zarcone, 2000). Mind-Body Integrative Health (MBIH),



integrates medical (physical) and psychological techniques to enhance general well-being. In line with sleep hygiene intervention, it incorporates techniques that benefit the body and mind to improve the quality of sleep (Garbers et al, 2021).

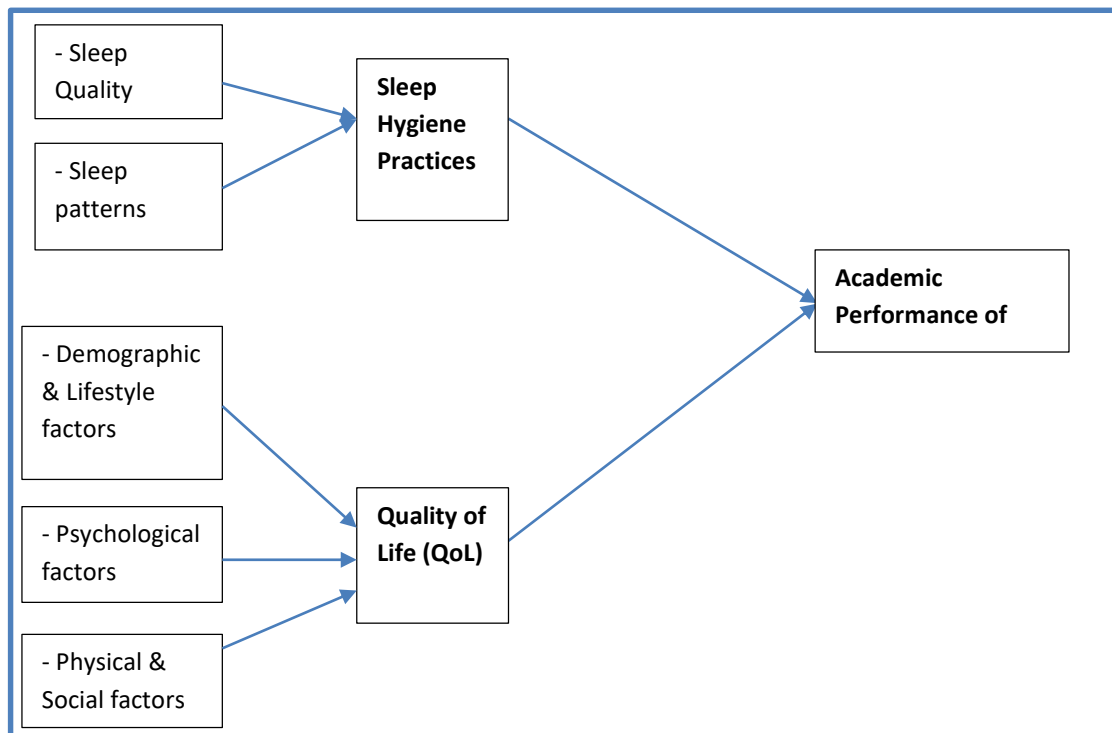
Quality of Life Theory: The concept of quality of life, or QoL, attempts to describe an individual's or population's overall well-being with respect to all aspects of their life at a given moment in time, including both positive and negative aspects (Teoli and Bhardwaj, 2023). The phrase "health related quality of life"(HRQOL) refers to the aspects of quality of life that are related to health. It is generally understood to reflect how illness and treatment affect a person's capacity for daily functioning and their level of disability. It has also been thought to reflect how a person's perception of their health affects their ability to lead a fulfilling life (Haraldstad et al, 2019).

Wilson and Cleary. (1995), put forth the health related quality of life (HRQOL) conceptual model that explores different or multidimensional aspects of a person's well-being. The model consists of five components:

- Biological and physiological factors: emphasize how organs, cells, and organ systems operate.
- Symptom Status: Indicates the existence and intensity of a person's symptoms, providing insight into how health problems impact their quality of life
- Functional Status: Evaluates a person's capacity to carry out routine tasks and activities, indicating how their health affects their general independence and functioning.
- General Health Perceptions: This refers to a person's overall subjective assessment of their health, taking into account things like vitality and perceived state of health.
- Individual and Environmental Characteristics: Examines how an individual's quality of life is influenced by psychological, social, and cultural elements, among other environmental and personal factors.

Quality of life is multidimensional, as the model emphasizes by showing the dynamic interplay between these elements (Ojelabi et al, 2017).

C. Conceptual Framework





Sleep pattern is known as a circadian or biological rhythm that instructs the body on when to wake up and when to go to sleep (Mograss et al, 2023). Maintaining healthy sleep habits is essential for medical students to perform at their best academically. Nelson et al. (2022), defines sleep quality as a person's level of satisfaction with every aspect of their sleep experience. Memory consolidation, cognitive performance, and general wellbeing all depend on getting enough good sleep. Academic performance can be adversely affected by insufficient sleep due to inability to focus, reduced learning, and elevated stress levels. The influence of demographics on medical students' academic performance can take different forms. There may be an impact from elements including cultural influences, socioeconomic background, and resource accessibility (Nawa et al, 2020). Psychological factors include aspects like mental health, motivation, stress, and anxiety. These elements have a big impact on medical students' academic achievement (Morales-Rodríguez et al, 2020).

II. RESEARCH METHODOLOGY

This study employed a qualitative research approach. According to Teherani et al. (2015), qualitative research is the methodical investigation of social phenomena in their natural environments. These phenomena can include, but are not restricted to, how people perceive different aspects of their lives, how people act individually or in groups, how organizations operate, and how relationships are shaped by interactions. Thus, making it the best approach for this particular study.

This study also employed descriptive research design. McCombes. (2022), postulated that, using a descriptive research design allows researcher to describe or record the traits, customs, beliefs, attitudes, and perceptions of a population or group they are studying. Kothari. (2004), states that in a descriptive design, as in this study, the researcher simply analyses and reports what is occurring or has occurred without having any control over the variables.

A. Study Context and Population

The research was conducted at the University of Lusaka in Zambia. The pre-clinical students were assessed at the Silverest medical campus which situated on Plot No. 37413, along Great East Road, Silverest P.O. Box 36711, Chongwe, and Zambia. The clinical students were assessed at Levy Mwanawasa Teaching Hospital which is located along Great East Road in Chainama Hills area of Lusaka. The hospital address is at Plot L/Lusaka/3170151 P.O Box 33991, 10km east of Lusaka City Centre. The population of the study included the entire unit of the university, comprising of the administration unit, management, lecturing staff and students. The target population of the study included all medical students enrolled at the University of Lusaka Zambia for the 5 year MBChB degree program. There are approximately 11500 registered students at the University of Lusaka, 2750 registered under the school of medicine and health sciences, and about 900 registered students under the MBChB program.

B. Sample and Sampling Techniques

The target population of the study was 900 and the sample size of the study was calculated using Slovin's formula. The sample size of the study was 497. To select the participants, a combination of stratified random sampling and convenience sampling was used. Stratified random sampling involves dividing the target population into subgroups known as strata, the division is based on relevant characteristics and based on the overall proportions of the populations, and the number of who should be sampled from each population was calculated. Random sampling was then used to select a sample from each subgroup. This allowed the drawing of more precise conclusions by ensuring that each subgroup is properly represented in the sample. Convenience sampling on the other hand involved selecting participants based on their accessibility and availability to the researcher and this is an easy and inexpensive way to gather initial data (McCombes, 2023).

C. Research Instruments

A self-administered structured questionnaire was developed. The questionnaire was made up of multiple sections, including demographic information, the sleep practices section which captured data on sleep hygiene. The quality of life section comprised of questions related to mental and physical well-being, exercise habits and stress management practices. The academic performance section included the assessment of grades, test scores and overall academic achievements. All collected data was analyzed accordingly.



D. Data Analysis

Statistical Package for Social Sciences (SPSS) Software was employed for data entry and statistical data analysis. The software was used to generate to generate statistics such as mean, mode, median, standard deviation, frequencies and percentages. Both Microsoft word and Excel were utilized for creating graphs, tables, pie charts and histograms. This made it easier to input data with sophisticated entries, such as variables with multiple entries.to analyze the qualitative data collected regarding the observed relationship between sleep hygiene, quality of life and academic performance, thematic analysis was used. According to Caulfield. (2023), Analysis of qualitative data can be done through thematic analysis. A collection of texts, like transcripts or interviews, are typically subjected to it. When a topic, idea, or pattern of meaning appears frequently, the researcher closely examines the data to find common themes. Descriptive analysis was then employed to determine the relationship between the variables, including the demographics, and year of study. Descriptive analysis is a type of data analysis that aids in the constructive description, display, or summarization of data points so that patterns that satisfy all of the data's requirements may show up (Rawat, 2021). All paragraphs must be indented as well as justified, i.e. both left-justified and right-justified.

III. STUDY FINDINGS

A. Demographics

The social-demographic data of the study participants reveals a diverse and representative sample. The age distribution shows that a significant portion, accounting for 32.2%, falls within the 18 to 25 age group, indicating a substantial representation of younger individuals in the study. A larger proportion, constituting 59.4% of the total, comprises participants aged 26 to 35, suggesting a predominant presence of young adults. Additionally, there is a smaller but noteworthy representation of participants aged 37 to 45, making up 8.5% of the total, indicating a mature subset within the cohort.

In terms of gender, the study maintains a balanced representation, with 40.8% of participants being male and 59.2% female. This balanced gender distribution ensures a diverse range of perspectives and experiences, enhancing the study's credibility and relevance. Examining the participants' academic years, the data reveals a gradual progression from lower to higher years of study. The study includes a limited number of participants in the earlier academic years (4.6% in Year 511 and 5.4% in Year 121), suggesting a relatively smaller representation of first year semester 2 and fifth-year students. The participation rate increases significantly, with Year 111 having the highest representation at 17.9%. This indicates a higher concentration of participants in the first year semester 1 and the later years of medical studies.

Table 1: Age distribution of the study respondents

| Age | Frequency(N=497) | Percentage (100%) |
|-------|------------------|-------------------|
| 18-25 | 160 | 32.2% |
| 26-35 | 295 | 59.4% |
| 37-45 | 42 | 8.5% |
| Total | 497 | 100% |

Table 2: Gender distribution of the study respondents

| Gender | Frequency(N=497) | Percentage (100%) |
|--------|------------------|-------------------|
| Male | 203 | 40.8% |
| Female | 294 | 59.2% |
| Total | 497 | 100% |



Table 3: Gender distribution of the study respondents

| Year of study | Frequency(N=497) | Percentage (100%) |
|--------------------|------------------|-------------------|
| Year 1: Semester 1 | 89 | 17.9% |
| Year 1: Semester 2 | 27 | 5.4% |
| Year 2: Semester 1 | 37 | 7.4% |
| Year 2: Semester 2 | 80 | 16.1% |
| Year 3: Semester 1 | 84 | 16.9% |
| Year 3: Semester 2 | 61 | 12.3% |
| Year 4: Semester 1 | 50 | 10.1% |
| Year 4: Semester 2 | 46 | 9.3% |
| Year 5: Semester 1 | 23 | 4.6% |
| Total | 497 | 100% |

B. Sleep Hygiene

The data on sleep hygiene practices among the participants highlights several key trends. First, a significant proportion, 58.4%, occasionally takes daytime naps lasting 2 or more hours, indicating a common practice that may affect nighttime sleep quality. Furthermore, 49.3% of participants report going to bed at different times from day-to-day, suggesting inconsistent sleep schedules. Irregular morning routines are also prevalent, with 51.9% stating that they get out of bed at different times daily, possibly disrupting their circadian rhythms.

In terms of pre-sleep behaviors, 46.5% of participants exercise to the point of sweating within one hour of bedtime, which can potentially impact their ability to fall asleep.

Moreover, 56.7% admit to staying in bed longer than they should two or three times a week, indicating that oversleeping may be a common issue. The data also suggests that 50.3% of participants use alcohol, tobacco, or caffeine within four hours of going to bed or after going to bed, a practice that can interfere with sleep. Additionally, 64.4% engage in activities like playing video games, using the internet, or cleaning before bedtime, which may disrupt their ability to relax and prepare for sleep.

Stress appears to be a significant factor, as 60.2% of participants go to bed feeling stressed, angry, upset, or nervous, potentially contributing to sleep disturbances. Lastly, the data shows that 56.5% of participants sleep in uncomfortable beds or bedrooms, which can negatively impact sleep quality. In summary, these findings emphasize the need for education and interventions to improve sleep hygiene practices among the participants, potentially leading to better sleep quality and overall well-being.

Table 4: Sleep Hygiene constructs measured

| Parameters | Always | Frequently | Never | Rarely | Sometimes |
|--|---------------|------------|---------------|----------------|----------------|
| I take daytime naps lasting two or more hours | 9 (1.8%) | 68 (13.7%) | 34 (6.8%) | 96 (19.3%) | 290 (58.4%) |
| I go to bed at different times from day to day | 56 (11.3%) | 94 (18.9%) | 11 (2.2%) | 91 (18.3%) | 245 (49.3%) |
| I get out of bed at different times from day to day | 43 (8.7%) | 94 (18.9%) | 16 (3.2%) | 86 (17.3%) | 258 (51.9%) |
| I exercise to the point of sweating within 1 hr. of going to bed | 11 (2.2%) | 62 (12.5%) | 68 (13.7%) | 125 (25.2%) | 231 (46.5%) |
| I stay in bed longer than I should two or three times a week | 16 (3.2%) | 72 (14.5%) | 24 (4.8%) | 103 (20.7%) | 282 (56.7%) |
| I use alcohol, tobacco, or caffeine within 4hrs of going to bed or after going to bed | 12 (2.4%) | 68 (13.7%) | 91 (18.3%) | 76 (15.3%) | 250 (50.3%) |
| I do something that may wake me up before bedtime (for example: play video games, use the internet, or clean | 22 (4.4%) | 77 (15.5%) | 13 (2.6%) | 65 (13.1%) | 320 (64.4%) |



| | | | | | |
|--|---------------|----------------|---------------|---------------|----------------|
| I go to bed feeling stressed, angry, upset, or nervous | 17 (3.4%) | 74 (14.9%) | 14 (2.8%) | 93 (18.7%) | 299 (60.2%) |
| I sleep on an uncomfortable bed (for example: poor mattress or pillow, too much or not enough blankets) | 17 (3.4%) | 72 (14.5%) | 63 (12.7%) | 92 (18.5%) | 253 (50.9%) |
| I sleep in an uncomfortable bedroom (for example: too bright, too stuffy, too hot, too cold, or too noisy) | 29 (5.8%) | 73 (14.7%) | 41 (8.2%) | 74 (14.9%) | 280 (56.3%) |
| I use my bed for things other than sleeping or sex (for example: watch television, read, eat, or study) | 55 (11.1%) | 113 (22.7%) | 8 (1.6%) | 57 (11.5%) | 264 (53.1%) |
| I do important work before bedtime (for example: pay bills, schedule, or study) | 37 (7.4%) | 122 (24.5%) | 8 (1.6%) | 49 (9.9%) | 281 (56.5%) |
| I think, plan, or worry when I am in bed | 37 (7.4%) | 78 (15.7%) | 7 (1.4%) | 72 (14.5%) | 303 (61.0%) |

C. Quality of life

The data on participants' quality of life, as assessed through various dimensions, provides valuable insights into their overall well-being. In terms of social satisfaction, a significant portion of participants, 43.3% rated their social life as a four, indicating a relatively high level of satisfaction, while 33.8% rated it as a five, suggesting a generally positive social experience outside of academics. Regarding physical health, a substantial 40.8% of participants rated their satisfaction as a four, signifying a relatively good perception of their physical well-being. Mental health satisfaction is notable, with 35.6% of participants rating it as a four and 33.2% rating it as a five, indicating a considerable level of contentment. Interestingly, participants demonstrated effective stress management skills, as 36.4% rated their stress management ability as a five, and 34.4% rated it as a four. Furthermore, the majority of participants, 38.6% gave a rating of five for the support they receive from family and friends, highlighting the significant positive impact of social support networks on their quality of life. Regarding self-care activities, the majority, and 71.4% reported engaging in self-care sometimes, indicating a balanced approach to taking care of their well-being.

Table 5: Statistics on the Quality of Life (QoL) of Students

| Parameters | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|-------------|-----------|---------------|----------------|----------------|---------------|---------------|
| How satisfied are you with your social life outside of academics? | 5 (1.0%) | 16 (3.2%) | 61 (12.3%) | 215 (43.3%) | 168 (33.8%) | 19 (3.8%) | 13 (2.6%) |
| How satisfied are you with your physical health? | 4 (0.8%) | 24 (4.8%) | 51 (10.3%) | 203 (40.8%) | 152 (30.6%) | 42 (8.5%) | 21 (4.2%) |
| How satisfied are you with your mental health? | 9 (1.8%) | 27 (5.4%) | 70 (14.1%) | 177 (35.6%) | 165 (33.2%) | 32 (6.4%) | 17 (3.4%) |
| How well do you feel you manage stress? | 8 (1.6%) | 25 (5.0%) | 61 (12.3%) | 171 (34.4%) | 181 (36.4%) | 39 (7.8%) | 12 (2.4%) |
| How well do you manage your time between academics and personal activities? | 8 (1.6%) | 16 (3.2%) | 58 (11.7%) | 175 (35.2%) | 192 (38.6%) | 41 (8.2%) | 7 (1.4%) |
| How would you rate the support you receive from family and friends? | 4 (0.8%) | 17 (3.4%) | 46 (9.3%) | 131 (26.4%) | 194 (39.0%) | 53 (10.7%) | 52 (10.5%) |

| Parameters | Rarely | Sometimes | Never |
|--|---------------|----------------|---------------|
| How often do you engage in self-care activities? | 86 (17.3%) | 355 (71.4%) | 56 (11.3%) |

A considerable 16.7% of participants reported feeling burnt out frequently, highlighting the high levels of stress and exhaustion experienced. Moreover, a substantial 75.9% of participants stated that they sometimes feel burnt out, emphasizing the pervasive nature of this issue. Similarly, symptoms of anxiety or depression were prevalent, with 81.7% of participants experiencing these symptoms sometimes. These findings underscore the importance of addressing mental health challenges, such as burnout and anxiety, within the study population. Implementing appropriate support systems and interventions becomes crucial to improving the overall well-being and mental health of the participants.

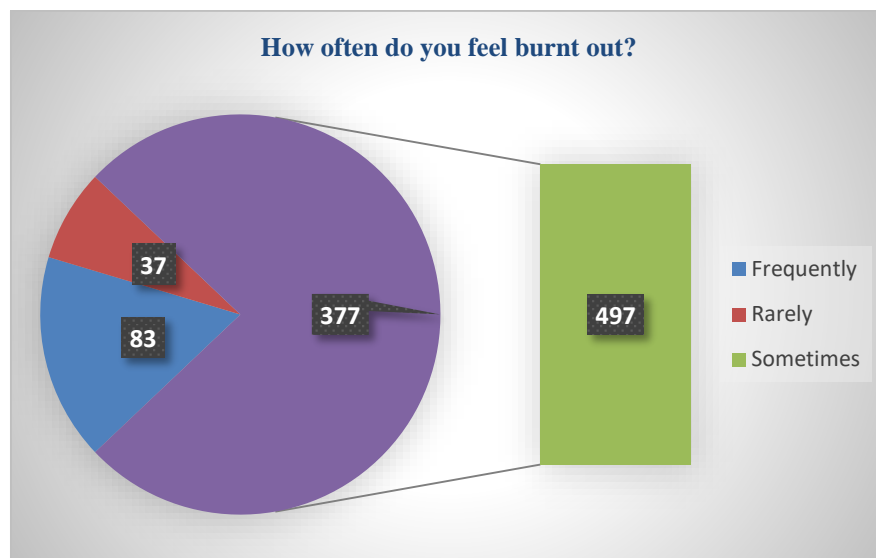


Figure 1: Variable statistics on symptoms of anxiety and depression

Table 6: Experience of anxiety or depression symptoms

| Experience of anxiety or depression symptoms | | | | | |
|--|------------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Frequently | 53 | 10.7 | 10.7 | 10.7 |
| | Rarely | 38 | 7.6 | 7.6 | 18.3 |
| | Sometimes | 406 | 81.7 | 81.7 | 100.0 |
| | Total | 497 | 100.0 | 100.0 | |

D. Academic Performance

The data on academic performance and study habits among participants provides valuable insights into their study routines and achievements. A significant majority of participants, 55.5% dedicate between 4 to 6 hours per day to studying, indicating a substantial commitment to their academic endeavors. Additionally, 34.0% of participants study between 2 to 4 hours daily, demonstrating a diligent approach to their studies. When asked to rate their overall academic performance, a considerable 57.1% of participants considered themselves average, while 39.2% believed their performance to be above average. Interestingly, when evaluating their previous major exam grades, a substantial portion of participants, and 39.6% received a B plus, reflecting a commendable level of academic achievement. The data suggests a dedicated study routine among the participants, contributing to their overall academic performance and achievements in their major exams.

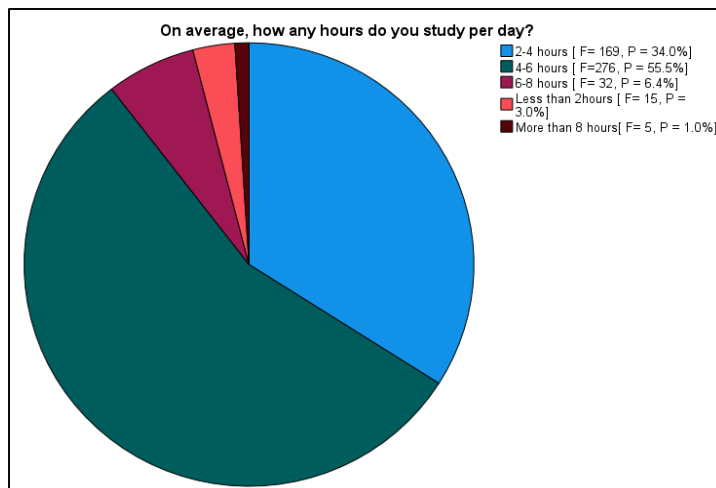


Figure 2: Study hours per day

Table 7: Overall Academic Rating

| Overall Academic Rating | | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|---------------|-----------|---------|---------------|--------------------|
| Valid | Above Average | 195 | 39.2 | 39.2 | 39.2 |
| | Average | 284 | 57.1 | 57.1 | 96.4 |
| | Below average | 5 | 1.0 | 1.0 | 97.4 |
| | Excellent | 7 | 1.4 | 1.4 | 98.8 |
| | Poor | 6 | 1.2 | 1.2 | 100.0 |
| | Total | 497 | 100.0 | 100.0 | |

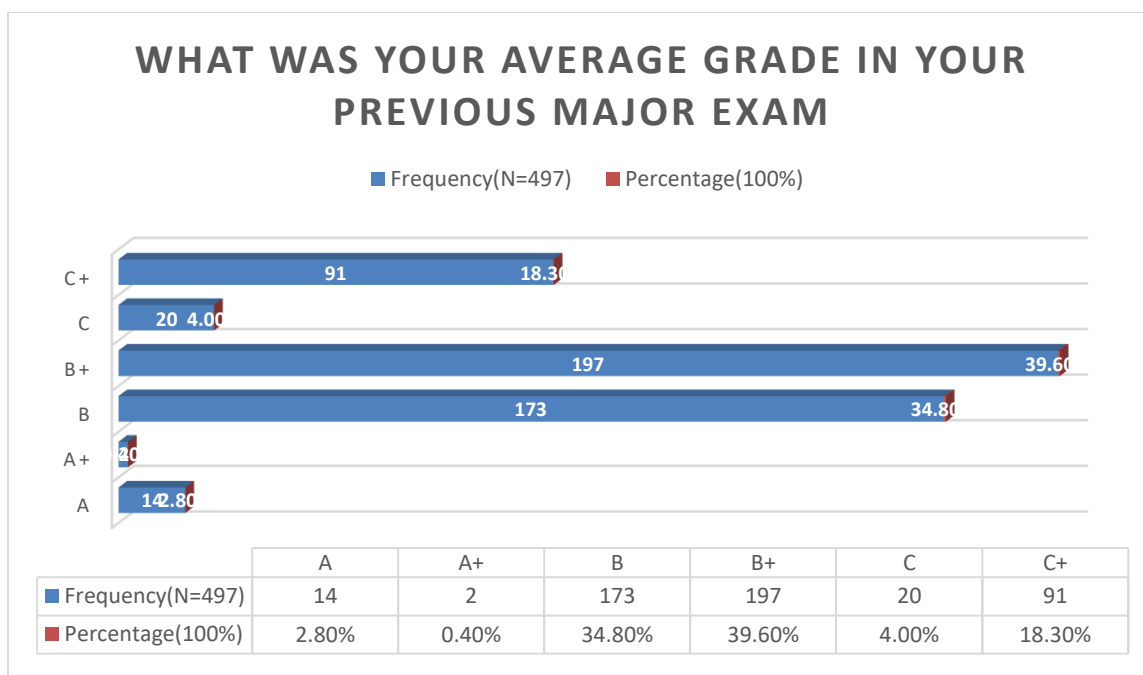


Figure 3: Average grade



E. Discussion of the Study Findings

The demographic analysis of the 497 participants in this study reveals a diverse and representative sample within the medical student population. The data illustrates a predominant presence of young adults, with 91.6% falling between the ages of 18 to 35, aligning with global trends in medical education demographics. The study maintains a balanced gender distribution (40.8% male, 59.2% female), emphasizing the inclusion of diverse perspectives. Academic progression showcases a gradual transition, with the highest participation observed in the first year (17.9%) and a substantial increase in later years, indicating a concentration of participants in both the early and advanced stages of medical studies.

F. Thesis One: Sleep Hygiene Practices Among Medical Students at the University of Lusaka

The findings related to sleep hygiene practices among participants exhibit both similarities and differences when compared to existing studies. The prevalence of daytime sleeping (58.4%) aligns with a study conducted by Dewald et al. (2010), indicating a widespread practice among medical students. However, the high rate of participants going to bed at different times daily (49.3%) diverges from the consistent sleep schedules recommended for good sleep hygiene (Buxton et al., 2018). Additionally, the common occurrence of oversleeping (56.7%) and engaging in stimulating activities before bedtime (64.4%) highlights specific challenges faced by this group, distinct from the general population. These unique patterns underscore the necessity for tailored interventions addressing these specific behaviors to improve overall sleep quality and well-being among medical students.

G. Thesis Two: Quality of Life Evaluation among Medical Students at the University of Lusaka

In the area of quality of life, the data reveals both parallels and distinctions when compared to similar studies. The effective stress management skills demonstrated by 36.4% of participants align with findings from Rotenstein et al.'s research (2016), suggesting a commonality in coping mechanisms among medical students. However, the notably high percentage of participants feeling burnt out frequently (16.7%) and experiencing symptoms of anxiety or depression occasionally (81.7%) underscores the urgent need for targeted mental health support, differentiating this group's challenges from those reported in Puthran et al.'s study (2016). These findings emphasize the necessity for comprehensive mental health programs aimed to address the specific concerns faced by this group, focusing on burnout prevention and addressing anxiety and depression symptoms to enhance their overall well-being.

H. Thesis Three: Academic Performance of Medical Students at the University of Lusaka

Regarding academic performance and study habits, the dedicated study routines among participants, with 55.5% dedicating 4 to 6 hours per day to studying, closely align with the commitment observed in studies by Dorrance et al. (2008). However, the relatively high proportion of participants rating themselves as average in academic performance (57.1%) despite their study efforts raises questions about the factors influencing their self-perception. This aligns with the findings of Artino et al. (2012), suggesting a potential discrepancy between perceived and actual academic achievements within this group. Exploring the underlying factors contributing to this perception could offer valuable insights into enhancing self-efficacy and confidence among medical students, potentially leading to improved academic outcomes.

I. Thesis Four: Relationship Between Sleep Hygiene, Quality of Life, and Academic Performance

This study provides a nuanced understanding of sleep hygiene, quality of life, and academic performance among medical students, highlighting unique challenges faced by this cohort. While some trends align with existing research, the specific behaviors and perceptions identified in this study emphasize the need for targeted interventions tailored to the distinct needs of medical students, aiming to improve their overall well-being, mental health, and academic success. Addressing these specific challenges through evidence-based interventions can contribute significantly to enhancing the educational experience and outcomes for medical students.

J. Conclusion

The first research question asks on what the sleep hygiene practices are among medical students at the University of Lusaka. A significant proportion of the participants engage in daytime napping however deviations from recommended sleep schedules and the prevalence of pre-sleep behaviours highlight specific challenges that are face by the cohort. The second research question asks on the quality of life among medical students at the University of Lusaka. This evaluation uncovers a multifaceted landscape. While there is evident effective stress management skills, a noteworthy amount experiences frequent burnout and occasional symptoms of anxiety or depression. This then emphasizes the need for targeted mental health support systems. The importance of creating a



supportive atmosphere within the academic community is shown by the positive effects of social support networks on individuals' quality of life. The third research question asks on the academic performance of medical students at the University of Lusaka. The examination of individuals' study habits and academic performance reveals a committed study schedule. Even after putting in a lot of study time, a sizable percentage of them rate their own academic performance as ordinary, suggesting that there may be a discrepancy between perceived and real academic success. Comprehending the elements that impact this viewpoint is essential in formulating tactics to enhance self-reliance and assurance in medical students, hence augmenting their scholastic achievements. The fourth research question asks on the relationship between sleep hygiene practices, quality of life and academic performance of medical students at the University of Lusaka. Interconnected dynamics are shown by investigating the links among sleep hygiene practices, academic performance, and quality of life. Although some findings are consistent with previous research, the distinct behaviors and attitudes found in this study highlight the need for focused treatments. Evidence-based solutions can play a major role in addressing these particular difficulties and promoting improved academic performance and well-being among medical students at the University of Lusaka in Zambia.

In conclusion, this study looked closely at how medical students' sleep habits, overall well-being, and academic performance are connected at the University of Lusaka in Zambia. By carefully studying the data we collected, we learned a lot about how long students sleep, what disturbs their sleep, and how satisfied they are with different parts of their lives, like their social and physical health. We found links between these aspects and how well students do in their studies. The study not only confirmed what we already knew but also revealed new important details. For example, we discovered how specific sleep problems can affect students' grades. These findings highlight the need for personalized help and support in schools. When schools understand how crucial good sleep and well-being are for academic success, they can create specific plans to help students in these areas. This research also paves the way for future studies, encouraging further exploration of how sleep, well-being, and education are connected, which can benefit both research and student support programs.

REFERENCES

1. Alotaibi, A. D., Alosaimi, F. M., Alajlan, A. A., & Abdulrahman, K. A. B. (2020). The relationship between sleep quality, stress, and academic performance among medical students. *Journal of family & community medicine*, 27(1), 23.
2. Arria, A. M., & DuPont, R. L. (2010). Nonmedical prescription stimulant use among college students: why we need to do something and what we need to do. *Journal of addictive diseases*, 29(4), 417-426.
3. Arria, A. M., Caldeira, K. M., Bugbee, B. A., Vincent, K. B., & O'Grady, K. E. (2015). The academic consequences of marijuana use during college. *Psychology of Addictive Behaviors*, 29(3), 564.
4. Azad, M. C., Fraser, K., Rumana, N., Abdullah, A. F., Shahana, N., Hanly, P. J., & Turin, T. C. (2015). Sleep disturbances among medical students: a global perspective. *Journal of clinical sleep medicine*, 11(1), 69-74.
5. Bode, A., & Kuula, L. (2021). Romantic love and sleep variations: Potential proximate mechanisms and evolutionary functions. *Biology*, 10(9), 923.
6. Buxton, O. M., Lee, S., Marino, M., Beverly, C., Almeida, D. M., & Berkman, L. (2018). Sleep health and predicted cardiometabolic risk scores in employed adults from two industries. *Journal of Clinical Sleep Medicine*, 14(3), 371-383.
7. Bosie, G. D., Tefera, T. W., & Hailu, G. S. (2012). Knowledge, attitude and practice with respect to sleep among undergraduate medical students of Mekelle University. *Sleep and Biological Rhythms*, 10, 264-269.
8. Brown, F. C., Buboltz Jr, W. C., & Soper, B. (2002). Relationship of sleep hygiene awareness, sleep hygiene practices, and sleep quality in university students. *Behavioral medicine*, 28(1), 33-38.
9. Caestine, J., Bopp, M., Bopp, C. M., & Papalia, Z. (2017). College student work habits are related to physical activity and fitness. *International journal of exercise science*, 10(7), 1009.
10. Caulfield, J. (2023, June 22). How to Do Thematic Analysis | Step-by-Step Guide & Examples. Scribbr. Retrieved December 11, 2023, from <https://www.scribbr.com/methodology/thematic-analysis/>
11. Carskadon, M. A. (2011). Sleep's effects on cognition and learning in adolescence. *Progress in brain research*, 190, 137-143.



12. Garbers, S., Umar, N. Q., Hand, R. E., Usseglio, J., Gold, M. A., & Bruzzese, J. M. (2021). Mind–body integrative health (mbih) interventions for sleep among adolescents: a scoping review of implementation, participation and outcomes. *Adolescent Research Review*, 1-25.
13. Gomes, A. A., Tavares, J., & de Azevedo, M. H. P. (2011). Sleep and academic performance in undergraduates: a multi-measure, multi-predictor approach. *Chronobiology International*, 28(9), 786-801.
14. Dewald, J. F., Meijer, A. M., Oort, F. J., Kerkhof, G. A., & Bögels, S. M. (2010). The influence of sleep quality, sleep duration and sleepiness on school performance in children and adolescents: A meta-analytic review. *Sleep medicine reviews*, 14(3), 179-189.
15. Del-Ben, C. M., Machado, V. F., Madisson, M. M., Resende, T. L., Valério, F. P., & Troncon, L. E. D. A. (2013). Relationship between academic performance and affective changes during the first year at medical school. *Medical teacher*, 35(5), 404-410.
16. Dorrance, K. A., Denton, G. D., Proemba, J., La Rochelle, J., Nasir, J., Argyros, G., & Durning, S. J. (2008). An internal medicine interest group research program can improve scholarly productivity of medical students and foster mentoring relationships with internists. *Teaching and learning in medicine*, 20(2), 163-167.
17. Falavigna, A., de Souza Bezerra, M. L., Teles, A. R., Kleber, F. D., Velho, M. C., Da Silva, R. C., ... & de Lessa Medina, M. F. (2011). Consistency and reliability of the Brazilian Portuguese version of the Mini-Sleep Questionnaire in undergraduate students. *Sleep and Breathing*, 15, 351-355.
18. Fenn, K. M., & Hambrick, D. Z. (2012). Individual differences in working memory capacity predict sleep-dependent memory consolidation. *Journal of Experimental Psychology: General*, 141(3), 404.
19. Ghaffar, U. B., Sami, W., Aldawsari, A. A., Mohammedalazmi, M., Okasi, H. A., Alsaleh, A. A., ... & Faraz, A. (2020). Association between Lifestyle and Academic Performance among Medical Students, Majmaah, Saudi Arabia. *Journal of Evolution of Medical and Dental Sciences*, 9(20), 1579-1585.
20. Helmenstine, Anne Marie, Ph.D.2020, August 27). What is a Variable in Science? Retrieved from <https://www.thoughtco.com/understanding-variables-in-science-609060>
21. Heidari, M., Borujeni, M. B., Borujeni, M. G., & Shirvani, M. (2017). Relationship of lifestyle with academic achievement in nursing students. *Journal of Clinical and Diagnostic Research: JCDR*, 11(3), JC01.
22. Henning, M. A., Krägeloh, C. U., Hawken, S. J., Zhao, Y., & Doherty, I. (2012). The quality of life of medical students studying in New Zealand: a comparison with nonmedical students and a general population reference group. *Teaching and learning in medicine*, 24(4), 334-340.
23. Lemma, S., Gelaye, B., Berhane, Y., Worku, A., & Williams, M. A. (2012). Sleep quality and its psychological correlates among university students in Ethiopia: a cross-sectional study. *BMC psychiatry*, 12, 1-7.
24. Lim, J., & Dinges, D. F. (2010). A meta-analysis of the impact of short-term sleep deprivation on cognitive variables. *Psychological bulletin*, 136(3), 375.
25. Long Xu, X., Zhu, R. Z., Sharma, M., & Zhao, Y. (2015). The influence of social media on sleep quality: a study of undergraduate students in Chongqing, China. *J Nurs Care*, 4(253), 2167-1168.
26. Lund, H. G., Reider, B. D., Whiting, A. B., & Prichard, J. R. (2010). Sleep patterns and predictors of disturbed sleep in a large population of college students. *Journal of adolescent health*, 46(2), 124-132.
27. Luo, M., Feng, Y., & Li, T. (2013). Sleep medicine knowledge, attitudes, and practices among medical students in Guangzhou, China. *Sleep and Breathing*, 17, 687-693.
28. Mazurkiewicz, R., Korenstein, D., Fallar, R., & Ripp, J. (2012). The prevalence and correlations of medical student burnout in the pre-clinical years: a cross-sectional study. *Psychology, health & medicine*, 17(2), 188-195.
29. Maslach, C., Jackson, S. E., & Leiter, M. P. (1997). *Maslach burnout inventory*. Scarecrow Education.
30. McIsaac, J. L. D., Kirk, S. F., & Kuhle, S. (2015). The association between health behaviours and academic performance in Canadian elementary school students: a cross-sectional study. *International journal of environmental research and public health*, 12(11), 14857-14871.
31. McCombes, S. (2023, June 22). *Sampling Methods | Types, Techniques & Examples*. Scribbr. Retrieved December 10, 2023, from <https://www.scribbr.com/methodology/sampling-methods/>



32. McCombes, S. (2022, October 10). Descriptive Research Design | Definition, Methods & Examples. Scribbr. Retrieved 18 December 2023, from <https://www.scribbr.co.uk/research-methods/descriptive-research-design/>
33. Mosley Jr, T. H., Perrin, S. G., Neral, S. M., Dubbert, P. M., Grothues, C. A., & Pinto, B. M. (1994). Stress, coping, and well-being among third-year medical students. *Academic Medicine*, 69(9), 765-7.
34. Mograss, M. A. , Ellenbogen, . Jeffrey M. , Cartwright, . Rosalind D. , Dang-Vu, . Thien Thanh and Foulkes, . David (2023, December 14). sleep. *Encyclopedia Britannica*. <https://www.britannica.com/science/sleep>
35. Morales-Rodríguez, F. M., Espigares-López, I., Brown, T., & Pérez-Mármol, J. M. (2020). The relationship between psychological well-being and psychosocial factors in university students. *International journal of environmental research and public health*, 17(13), 4778.
36. Nelson, K. L., Davis, J. E., & Corbett, C. F. (2022, January). Sleep quality: An evolutionary concept analysis. In *Nursing forum* (Vol. 57, No. 1, pp. 144-151).
37. Nsengimana, A., Mugabo, E., Niyonsenga, J., Hategekimana, J. C., Biracyaza, E., Mutarambirwa, R., & Nduwayezu, R. (2023). Sleep quality among undergraduate medical students in Rwanda: a comparative study. *Scientific Reports*, 13(1), 265.
38. Ojelabi, A. O., Graham, Y., Haighton, C., & Ling, J. (2017). A systematic review of the application of Wilson and Cleary health-related quality of life model in chronic diseases. *Health and quality of life outcomes*, 15(1), 1-15.
39. Puthran, R., Zhang, M. W., Tam, W. W., & Ho, R. C. (2016). Prevalence of depression amongst medical students: A meta-analysis. *Medical education*, 50(4), 456-468.
40. Rajendran, S. R., & Chamundeswari, S. (2019). Understanding the impact of lifestyle on the academic performance of middle-and high-school students.
41. Rampersaud, G. C., Pereira, M. A., Girard, B. L., Adams, J., & Metz, J. D. (2005). Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *Journal of the American dietetic association*, 105(5), 743-760.
42. Rodrigues, R. N. D., Viegas, C. A., Abreu e Silva, A. A., & Tavares, P. (2002). Daytime sleepiness and academic performance in medical students. *Arquivos de neuro-psiquiatria*, 60, 6-11.
43. Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J. B., Paulson, M. J., Guille, C., ... & Mata, D. A. (2016). Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. *Jama*, 316(21), 2214-2236.
44. Safhi, M. A., Alafif, R. A., Alamoudi, N. M., Alamoudi, M. M., Alghamdi, W. A., Albishri, S. F., & Rizk, H. (2020). The association of stress with sleep quality among medical students at King Abdulaziz University. *Journal of Family Medicine and Primary Care*, 9(3), 1662.
45. Sarwar, S., Aleem, A., & Nadeem, M. A. (2019). Health Related Quality of Life (HRQOL) and its correlation with academic performance of medical students. *Pakistan Journal of Medical Sciences*, 35(1), 266.
46. Siddiqui, A. F., Al-Musa, H., Al-Amri, H., Al-Qahtani, A., Al-Shahrani, M., & Al-Qahtani, M. (2016). Sleep patterns and predictors of poor sleep quality among medical students in King Khalid University, Saudi Arabia. *The Malaysian journal of medical sciences: MJMS*, 23(6), 94
47. Sundas, N., Ghimire, S., Bhusal, S., Pandey, R., Rana, K., & Dixit, H. (2020). Sleep quality among medical students of a tertiary care hospital: A descriptive cross-sectional study. *JNMA: Journal of the Nepal Medical Association*, 58(222), 76.
48. Shriane, A. E., Ferguson, S. A., Jay, S. M., & Vincent, G. E. (2020). Sleep hygiene in shift workers: a systematic literature review. *Sleep Medicine Reviews*, 53, 101336.
49. Suen, L. K., Tam, W. W., & Hon, K. L. (2010). Association of sleep hygiene-related factors and sleep quality among university students in Hong Kong. *Hong Kong Med J*, 16(3), 180-5.
50. Smolensky, M. H., Di Milia, L., Ohayon, M. M., & Philip, P. (2011). Sleep disorders, medical conditions, and road accident risk. *Accident Analysis & Prevention*, 43(2), 533-548.
51. Teherani, A., Martimianakis, T., Stenfors-Hayes, T., Wadhwa, A., & Varpio, L. (2015). Choosing a qualitative research approach. *Journal of graduate medical education*, 7(4), 669-670.



52. Teoli D, Bhardwaj A. Quality of Life. [Updated 2023 Mar 27]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK536962/>
53. Tobore, T. O. (2019). On the potential harmful effects of E-Cigarettes (EC) on the developing brain: The relationship between vaping-induced oxidative stress and adolescent/young adults social maladjustment. *Journal of adolescence*, 76, 202-209.
54. Wallis, A. L., Gretz, D. P., Rings, J. A., & Eberle, K. M. (2019). Assessing marijuana use, anxiety, and academic performance among college students. *Journal of College Counseling*, 22(2), 125-137.
55. Weaver, L. L., & Darragh, A. R. (2015). Systematic review of yoga interventions for anxiety reduction among children and adolescents. *The American Journal of Occupational Therapy*, 69(6), 6906180070p1-6906180070p9.
56. World Health Organization. (1999). Healthy living: what is a healthy lifestyle? (No. EUR/ICP/LVNG 01 07 02). Copenhagen: WHO Regional Office for Europe.
57. Wilson, I. B., & Cleary, P. D. (1995). Linking clinical variables with health-related quality of life: a conceptual model of patient outcomes. *Jama*, 273(1), 59-65.
58. World Health Organization. (2004). WHO technical meeting on sleep and health: Bonn Germany, 22–24 January 2004 (No. WHO/EURO: 2004-4242-44001-62044). World Health Organization. Regional Office for Europe.
59. Yazdi, Z., Loukzadeh, Z., Moghaddam, P., & Jalilolghadr, S. (2016). Sleep hygiene practices and their relation to sleep quality in medical students of Qazvin University of Medical Sciences. *Journal of caring sciences*, 5(2), 153.
60. Zhang, Y., Qu, B., Lun, S., Wang, D., Guo, Y., & Liu, J. (2012). Quality of life of medical students in China: a study using the WHOQOL-BREF. *PLoS one*, 7(11), e49714.

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