

ADDIS ABABA UNIVERSITY
College of Education and Language studies
School of Psychology

**Stress among undergraduate medical students at Addis Ababa university Prevalence,
cause and coping mechanisms**

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Acronyms

AAU	Addis Ababa University
ARS	Academic-Related Stressors,
CHS	College of health science
DRS	Desire and Drive-Related Stressors
GARS	Group Activity-Related Stressors
IRS	Interpersonal and Intrapersonal-Related Stressors
MSSQ	Medical Student Stressor Questionnaire
PSS	Perceived Stress Scale
SRS	Social Related Stressors
TLRS	Teaching and Learning-Related Stressors

Abstract

The purpose of this study was to assess Stress among undergraduate medical students at Addis Ababa university Prevalence, cause and coping mechanisms. A descriptive cross-sectional study design was employed. Among 875(year 1 to 6) medical students in the College of Health Sciences, School of Medicine Using Cochran formula 323 sample size was determined and stratified random sampling technique was used. Quantitative data was collected through a structured self-administered questionnaire that incorporated the Perceived Stress Scale (PSS-10), Medical Student Stressor Questionnaire (MSSQ-20), and Brief COPE Scale. Data was analyzed using descriptive and binary logistic regression with software SPSS version 26. The findings revealed that 32.8% of respondents experienced high perceived stress. Academic-related stressors were the strongest predictors of stress (AOR = 2.505, $p = 0.005$). Maladaptive coping strategies, particularly self-blame (AOR = 1.283, $p = 0.034$), increased stress, whereas adaptive coping strategies such as seeking informational support (AOR = 0.736, $p = 0.039$) and acceptance (AOR = 0.799, $p = 0.044$) reduced it. The study concludes that academic pressure and maladaptive coping mechanisms significantly contribute to stress among medical students, underscoring the need for interventions to strengthen adaptive coping and promote mental well-being.

Keywords: Stress, Coping Mechanisms, Descriptive Cross-Sectional Study, Medical Students, Addis Ababa University

Chapter 1: Introduction

1.1. Background

Stress is a global phenomenon and a major concern that has been extensively studied among medical students. Compared to their peers, medical students are more vulnerable to psychological burdens because their training involves a rigorous academic environment and demanding responsibilities (Rosiek et al., 2016; Shpakou et al., 2022; Timothy et al., 2019). As a result, many students are affected by various mental health problems, such as depression and anxiety (Asfaw et al., 2021; Sahile et al., 2021; Xiong et al., 2021). In Ethiopia, particularly at Addis Ababa University, the problem of stress among medical students reflects the broader global challenges observed in medical education while also being influenced by local academic and contextual factors (Yizengaw et al., 2021).

Ethiopian medical students face a unique set of stressors rooted in diverse cultural norms, academic pressures, financial constraints, and societal expectations. A high workload related to the curriculum and an insufficient support system have been identified as major stressors in a cross-sectional study conducted at Jimma University (Sahile et al., 2021; Yizengaw et al., 2021). These factors have been further aggravated by recent challenges, particularly the COVID-19 pandemic, which disrupted traditional educational systems and exacerbated long-standing mental health problems among students (Haider et al., 2022; Rahmi et al., 2019; Xiong et al., 2021).

Medical students employ various coping mechanisms to promote their psychological well-being and sustain effective academic engagement (Dahanayake et al., 2024; Wahid et al., 2025). Effective coping strategies, such as active problem-solving and seeking social support, have been

linked to better mental health outcomes (Abouammoh et al., 2020; Alrashed et al., 2023; Shankar et al., 2019). In contrast, studies indicate that cycles of emotional distress are often worsened by maladaptive coping strategies (Rahman et al., 2022; Sonawane et al., 2022; Tariq et al., 2023). Research among Ethiopian medical students has shown a notable reliance on maladaptive coping methods, such as avoidance and substance use, which may hinder their ability to effectively manage the challenges of medical education (Abraham et al., 2019; Hurissa et al., 2022). Moreover, coping experiences may vary across different socio-cultural contexts (Masilamani et al., 2020; Rosiek et al., 2016; Xiong et al., 2021). Therefore, unique coping patterns are expected among Ethiopian medical students.

To address the specific needs of medical students in Ethiopia and to assist educational institutions and support systems, it is essential to identify the existing coping mechanisms and assess their significance (Rahman et al., 2022; Shoji et al., 2024). These findings play an important role in helping students cope with the stressors inherent in medical education (Chiong et al., 2024; Rosiek et al., 2016).

Thus, the need to examine stress among undergraduate medical students at Addis Ababa University its prevalence, causes, and coping mechanisms remains a pressing concern. This study seeks to provide a comprehensive understanding of how these factors interact, offering insights into the patterns of stress and the effectiveness of different coping strategies among medical students. Such an exploration will contribute to the development of evidence-based mental health initiatives and support systems tailored to the realities of medical education.

1.2.Statement of the Problem

Medical students face greater psychological health challenges than their peers because the responsibilities and learning environment are highly demanding. At Addis Ababa University, more recent findings have shown considerably higher rates, with 64.9% (Meron, 2017), and in a study among medical students in Addis Ababa, the prevalence of problematic test anxiety was found to be 52.3%, while another study at the same institution reported a 51.3% prevalence of depression and 30.1% prevalence of anxiety among medical students (Kebede et al., 2019; Tsegay et al., 2019). These findings underscore the substantial and varied psychological burden faced by medical students.

At AAU, stressors such as exams, clinical rotations, interpersonal conflicts, and societal expectations disproportionately affect younger cohorts, preclinical students, and women, with female students reporting significantly higher levels of distress (Tsegay et al., 2019). Correspondingly, maladaptive coping strategies and systemic barriers such as limited social support and inadequate mental health services further exacerbate these challenges (Gelayee, 2017; Nigist, 2019). While global interventions addressing similar issues have shown success in reducing stress among medical students (Gazzaz et al., 2018), the situation at AAU remains insufficiently studied, leaving gaps in understanding how such approaches could be effectively adapted to the local context.

Although the prevalence and causes of stress have been extensively studied, critical gaps remain. First, while studies have identified stressors (e.g., academic rigor, clinical demands) and demographic correlations (e.g., gender, year of study), there is limited understanding of how

students actively cope with these challenges. For instance, Nigist's (2019) qualitative study of AAU's counseling services revealed that, although services were accessible, concerns were raised regarding counselor competency, underscoring the need for improved support systems. Second, existing literature often focuses on isolated stressors rather than examining their interaction with emerging factors such as digital learning pressures or post-pandemic challenges. Third, while self-medication and gender-specific stress responses have been documented (Asfaw et al., 2021; Gelayee, 2017), their relevance and impact within AAU's context remain largely unexplored.

This study aims to address existing gaps by investigating stress among undergraduate medical students at Addis Ababa University, focusing on its prevalence, causes, and coping mechanisms. It will update post-2019 epidemiological data on stress prevalence and capture shifts in academic, clinical, and social stressors. In doing so, the research will examine persistent challenges such as examinations and limited social support, evaluate the use and perceived effectiveness of both adaptive (e.g., counseling, peer support) and maladaptive coping strategies, and analyze gender-specific differences in stress experiences and coping mechanisms. Furthermore, the study will propose context specific recommendations to strengthen institutional support systems and promote students' mental well-being.

1.3.Purpose Of the Study

1.3.1. *General Purpose of the Study*

The general purpose of this study is to assess Stress among undergraduate medical students at Addis Ababa university Prevalence, cause and coping mechanisms. Thus, compressive insights will be understood based on the stressors, cause and their effective management

1.3.2. *Specific Purposes of the study*

Specifically, the current study attempts:

- To assess the prevalence of stress among medical undergraduates at Addis Ababa University.
- To identify major causes of stress experienced by medical undergraduate students at Addis Ababa University.
- To evaluate the coping mechanisms employed by medical undergraduate students at Addis Ababa University to manage stress effectively

1.4.The Significance of the Study

This study is significant for medical students as it identifies the major causes of stress and the coping strategies commonly used among them. By examining the relationship between stressors and coping mechanisms, the findings provide a better understanding of how medical students respond to academic and personal challenges that affect their mental well-being and academic performance. The results can serve as a foundation for developing evidence-based recommendations aimed at reducing stress and promoting healthy coping approaches among medical students. They can also guide the implementation of supportive programs such as stress

management training, counseling services, and student well-being initiatives within the medical school. Overall, this study adds valuable insight to the existing literature and serves as a baseline for future longitudinal research on stress and coping among university students.

1.5.Delimitation of the Study

The delimitation of this study refers to the boundaries intentionally set by the researcher to narrow the investigation. This study was restricted to undergraduate medical students at Addis Ababa University, thereby excluding postgraduate trainees, students from other faculties, or those from different universities. The geographical scope was limited to the College of Health Sciences, School of Medicine, and did not extend to other campuses or medical institutions across Ethiopia.

Methodologically, the study was delimited to a quantitative, descriptive cross-sectional design, excluding experimental or longitudinal methods that could establish causal relations or observe changes over time. The study was also theoretically guided by the Transactional Model of Stress and Coping and the Biopsychosocial Model, excluding other psychological or sociological theories that might explain stress from different perspectives. These delimitations ensured that the study remained focused, feasible, and consistent with its objectives, while maintaining clarity in scope and methodological rigor.

1.6.Scope of the study

The study focused on assessing stress among undergraduate medical students at Addis Ababa University, particularly its prevalence, causes, and coping mechanisms. The primary objectives

were to determine the prevalence of perceived stress, identify the major stress factors, and evaluate the coping strategies employed by students to manage these stressors.

The study was conducted among undergraduate medical students enrolled in the School of Medicine, College of Health Sciences, during the 2024/2025 academic year at Addis Ababa university. The investigation concentrated on key variables, including socio-demographic characteristics (age, gender, year of study, and marital status), academic, social, clinical, environmental, and personal stressors, as well as adaptive and maladaptive coping mechanisms. The study was limited geographically to the Addis Ababa University main campus where medical students pursue their training.

1.7.Operational Definition

Stress: In this study, stress refers to the level of psychological strain or tension experienced by undergraduate medical students, measured using a standardized stress assessment scale. Stress involves changes affecting nearly every system of the body, influencing how people feel and behave.

Coping Mechanisms: These are the specific strategies or behaviors employed by students to manage stress, interpreted as adaptive (e.g., problem-solving, seeking support) or maladaptive (e.g., avoidance, self-medication), based on participants' responses to coping related items in the questionnaire.

Medical students: Refers to undergraduate students enrolled in the School of Medicine at Addis Ababa University during the study period, regardless of year of study or gender, who are included as study participants.

Chapter 2: Review of Literature

2.1.Stress

According to the World Health Organization (2020), stress is the body's reaction to any change that requires an adjustment or response, involving physical, mental, or emotional strain or tension. The concept of stress has evolved significantly over the years, drawing from various disciplines such as psychology, medicine, and sociology. In modern understanding, stress is increasingly viewed as a subjective perception shaped by individual experiences, cultural context, and biological factors. This multidimensional framing recognizes that what constitutes a stressor and how it is experienced varies across individuals and societies.

Stress conceptualization plays a crucial role in understanding how individuals evaluate and respond to challenges, with cognitive appraisal being a key element. Researchers such as Liu (2021) emphasize this perspective to enhance and refine coping strategies that help individuals effectively manage stressors. Psychological outcomes are strongly linked to adaptive cognitive reappraisal processes that can alter one's perspective and reduce the adverse effects of stress, as indicated by subjective interpretations (Beltzer et al., 2014; Jamieson et al., 2012). This indicates that stress responses depend greatly on how situations are mentally interpreted. Recognizing this cognitive process helps develop strategies that strengthen emotional regulation and resilience.

Individual predispositions toward stress have been further explained by the Diathesis Stress Model, which describes how the interaction between predisposing factors and external stressors influences psychological outcomes (Ingram & Luxton, 2005). According to this model, differences in vulnerability and resilience determine how individuals experience and manage

stress. Feder et al. (2009) and Hill et al. (2012) further elaborated that these variations shape individual stress responses, and understanding these mechanisms can assist in designing targeted interventions that address specific population needs (Lyons, 2009). This shows the importance of identifying individual differences to predict stress vulnerability. Such understanding supports the creation of personalized interventions for effective stress management.

A broader understanding of stress also considers cultural influences, as underscored in the Conservation of Resources Theory, which explains that stress experiences are largely affected by sociocultural contexts rather than purely personal perceptions (Hobfoll, 2001). This model suggests that stress management strategies should consider multicultural factors and diverse coping methods. In addition, many researchers emphasize the role of biological factors. Neurobiological changes caused by stress can lead to differences in tolerance and susceptibility. These findings underscore the need to modify biological responses, alongside psychological and cultural interventions, to manage stress more effectively.

In conclusion, stress should be conceptualized through an integrated framework that encompasses cognitive, psychological, biological, and sociocultural dimensions. Such a comprehensive understanding not only enhances theoretical clarity but also guides the development of more effective prevention and intervention strategies. This integration can help build resilience, improve mental well-being, and reduce the overall negative impact of stress across different populations.

2.2.Global Prevalence of Stress

The prevalence of stress among medical students is a widely recognized issue and is not confined to any particular region. Medical students face stress at various stages of their academic journey, with studies indicating that approximately 90% of students report experiencing high levels of stress at some point. This widespread occurrence underscores the significance of stress as a critical concern in medical education globally. Evidence from different countries further supports this observation, underlining notable variations in stress prevalence: Thailand reports a prevalence of 61.4%, Malaysia 41.9%, and Sweden 31.2% (Aamir, 2017; Minhas et al., 2019). These differences emphasize that stress among medical students is influenced by a combination of curricular demands, cultural norms, and social expectations. The intensity and nature of stress can therefore vary depending on the educational system, societal pressures, and the specific challenges faced by students in different contexts (Aamir, 2017; Gazzaz et al., 2018; Minhas et al., 2019; Shoda & Titiloye, 2019). This global perspective emphasizes the need to recognize stress as a universal issue in medical training, while also acknowledging the contextual factors that shape its prevalence and impact.

Factors associated with stress among medical students are generally categorized into academic and psychological dimensions, reflecting the multifaceted nature of stress in this population. Academic stressors primarily stem from the demands of the medical curriculum, including heavy workload, the complexity of subjects, and frequent assessments, which together place considerable pressure on students. On the other hand, psychological stressors encompass personal and emotional challenges, such as social isolation, performance pressure, fear of failure, and other individual difficulties that can affect mental health (Abdulghani et al., 2011; Kim et al.,

2022; Kumar et al., 2016; Minhas et al., 2019). While both types of stressors are significant, research indicates that a substantial majority of medical students approximately 87.77% perceive academic stressors as the primary contributors to their overall stress levels (Yasmeen et al., 2024). This finding shows the pivotal role of the academic environment in shaping students' mental well-being and underscores the need to consider curriculum related demands as central factors in stress management. Recognizing the distinction between academic and psychological stressors is essential for developing comprehensive and targeted interventions that not only alleviate academic pressures but also support students' emotional and psychological resilience.

Further manifestations of stress among medical students indicate that cultural expectations significantly influence their susceptibility to stress. In Asian contexts, students often experience high familial expectations, which act as a form of cultural pressure that can intensify stress levels (Shoda & Titiloye, 2019). These expectations may include the pursuit of academic excellence, adherence to family aspirations, and fulfilling socially prescribed roles, all of which contribute to heightened stress. In contrast, medical students in Western countries frequently report that psychosocial dynamics such as competition, individualism, and personal achievement are the primary stress-inducing factors (Shoda & Titiloye, 2019). These differences underscore the role of local cultural norms in shaping how stress is experienced and perceived. The observed variation shows that while stress is a common experience among medical students worldwide, its sources and intensity are influenced by culturally specific expectations, societal values, and social structures, illustrating both the local and broader distinctions in the manifestation of stress.

In addition to examining the prevalence of stress, various studies have explored the coping mechanisms that medical students utilize to manage their stress. Common strategies identified include engaging in physical activities, seeking support from peers, and consulting health professionals for guidance and assistance (Bamuhair et al., 2015; Kurokawa et al., 2011; Liyanage, 2017). These coping mechanisms serve not only to alleviate immediate stress but also contribute to longer-term benefits, including improved academic performance, enhanced professional development, and greater resilience in the demanding environment of medical education (Saeed et al., 2016). The evidence suggests that effective coping strategies enable students to navigate academic pressures more successfully while maintaining their mental and physical well-being. Consequently, fostering adaptive coping approaches among medical students is essential, as it can significantly enhance their overall well-being, support their educational achievements, and prepare them for a sustainable and resilient career in the health profession.

In conclusion, the prevalence of stress among medical students is a complex and global issue with a range of factors such as academic, social, personal and environmental. This global issue dictates integrated efforts both at local and institutional scale that would support the educational system while ensuring a mental health environment and a manageable system.

2.3.African Context

In the African context at least one-third and possibly up to one-half of medical students show some form of psychological distress during their medical school (Mekonnen et al., 2024). Aggregated evidence is scarce in Africa though there are published articles with various outputs.

The prevalence of stress among medical students across countries such as Egypt, Nigeria, Kenya, and South Africa had a consistently high level of psychological strain experienced by students in diverse contexts. In Egypt, a significant proportion of students reported experiencing stress, with 86.5% indicating stress and nearly half of them (48.9%) experiencing severe stress. Moreover, resilience levels were generally low, with 49.9% of students showing low resilience and only 3.2% demonstrating high resilience (Mohammed et al., 2024). A separate study in Egypt found that nearly two-thirds of medical students (66.1%) reported high stress levels, primarily driven by concerns such as fear of harming patients, insufficient clinical practice, and limited training time (Wassif et al., 2019). In Nigeria, research revealed that an overwhelming majority of undergraduate medical trainees (94.2%) perceived their training as stressful, citing excessive academic workload (82.3%), inadequate holidays (76.4%), and limited time for recreation (76.2%) as the main contributing factors (Oku et al., 2015). In Kenya, most medical residents reported high levels of social support (71.8%) alongside moderate stress levels (61.6%), suggesting that supportive networks may mitigate stress to some extent. Similarly, in South Africa, a majority of participating students (78%) experienced stress at some point during their medical studies (Naidoo et al., 2014). Collectively, these findings underscore that stress among medical students is a widespread and persistent concern across different regions, reflecting the combined influence of academic demands, clinical responsibilities, and broader contextual factors on students' psychological well-being.

The literature indicates that stress and burnout among African medical students are pervasive and multifactorial. While prevalence estimates differ due to variations in methodology and

instruments the consistent finding is that academic pressure, financial strain, and weak institutional support mechanisms substantially heighten psychological vulnerability.

2.4.Local context

Medical education places psychosocial burdens on medical students, as reflected in the highest prevalence of stress compared to other peer disciplines. In the Ethiopian context, 47.7% of college students reported experiencing stress (Abebe et al., 2018), a rate comparable to that of medical students at different universities. Reports from various institutions such as Haramaya University (44%) (Asfaw et al., 2021), Arsi University (40.4%) (Melaku & Bulcha, 2020), Jimma University (52.4%) (Melaku et al., 2015), and Samara University (53.2%) (Kelemu et al., 2020) indicate that the prevalence of stress is not confined to a single institution but extends across medical schools in the country. However, a global review identified 33.8% stress prevalence among medical students, with higher rates recorded in the Middle East and Southeast Asia (Asfaw et al., 2021; Isa et al., 2021). These findings suggest that Ethiopian medical students experience a comparatively higher level of stress, emphasizing the need for greater attention to academic and psychosocial support within medical education.

These reports indicate systemic failure within Ethiopian higher education, where mental health support services are insufficient (Dachew et al., 2019; Kebede et al., 2019). Academic performance and stress are directly related, as psychological stress hinders academic success, leading to lower performance and an increased risk of medical errors (Mousa et al., 2016). These findings suggest the urgent need for educational reforms aimed at reducing stress and strengthening mental health resources within academic institutions (Rotenstein et al., 2016).

Addressing these challenges can create a more supportive learning environment that promotes student well-being and academic excellence.

In conclusion, figures across different institution vary but the previous literatures point out noticeable prevalence of stress among medical students in Ethiopia. Identified factors need to be implemented to enhance social support and institutional reforms that mitigate stress and other mental health challenges by students. Thus, efforts need to direct at creating supportive academic environments that targeted unique pressure experienced by medical students of Ethiopia.

2.5.Factors associated to Stress

2.5.1. Academic Pressures

Academic pressure remains one of the most significant sources of stress for medical students, and this pressure manifests in various forms. Research consistently signify exhaustive curricula, intense competition, and demanding examination schedules as major contributors. Many medical students experience feelings of inadequacy and overwhelming workloads that lead to mental health problems such as anxiety and depression (Dyrbye et al., 2005; Abdalla A. Saeed et al., 2016). Furthermore, the high frequency of assessments places students under extreme pressure, which often becomes uncontrollable during exam periods, while the fear of failure further intensifies stress (Kumar et al., 2016). These findings emphasize the need for balanced academic structures and supportive learning environments that can mitigate excessive stress and promote student well-being.

Undergraduate students usually face additional challenges while in transition to clinical, they struggle to cope with the new environment and new expectations while distressing. They must

adapt as the new practical experience is a way for important clinical practice than theoretical knowledge (Kim, 2025; Quek et al., 2019). These factors in combination lead to academic stress and an overall wellbeing and academic performance.

Academic pressure and transition to clinical environments exacerbate mental health challenges, compromising students' well-being and academic performance. This underscores the need for institutional interventions and balanced educational frameworks to address these stressors.

2.5.2. *Personal Factors*

Personal factors play a vital role in determining stress levels of medical students. The psychological burdens arose due to personal expectations, familial bondage and loneliness, relationship conflicts which aggravates further stress and mental health concerns this stress profoundly observed during transition phases (Alharbi et al., 2023; Siripongpan et al., 2022). These personal factors indicate that medical students' stress is influenced by emotional and social aspects.

Many medical students come from families where joining higher institute is priority. These expectations further exert pressure from society and family. Social and family expectation was explained by Siddiqui et al. (2021) and Anuradha et al. (2017) that perceived stress due to family expectation and fear could affect student's academic performance. Similarly, self-esteem could also affect the perception in medical students. This standards set by the environment and failing the expectation can foster self-doubt and intensifying stress (Alharbi et al., 2023). These findings show that both external demands from family and society, as well as internal elements like self-esteem, have a major impact on medical students' stress. Recognizing these impacts is

critical for developing supportive academic and social environments that can lower unreasonable expectations and boost students' emotional resilience.

2.5.3. *Clinical Training*

Clinical training represents one of the most significant sources of stress for medical students, and this stress is often exacerbated by academic and personal factors. As students transition from theoretical learning to direct patient care, they are confronted with new responsibilities, which can provoke fear and anxiety. The high levels of stress experienced during this phase are closely linked to the ethical expectations of the profession, the emotional challenges of patient interactions, and the stark realities of patient care, including experiences of illness and mortality (Loubir et al., 2014; Siddiqui et al., 2021). Additionally, performance anxiety and the pressure associated with decision-making can contribute to feelings of inadequacy and fear of failure, further compounding stress levels (Mujinya et al., 2022). Harsh feedback from supervisors is another reported stressor; when students perceive criticism as mistreatment rather than constructive guidance, it intensifies their sense of stress and vulnerability. Quek et al. (2019) indicated that a culture of criticism combined with a lack of supportive faculty can amplify feelings of isolation and psychological strain among students. These findings emphasize the critical need for supportive educational interventions in clinical training that address both academic challenges and emotional well-being, helping students navigate the demands of patient care while fostering resilience and confidence in their professional roles.

2.5.4. *Social Relationships*

The demanding workload and intensive schedules characteristic of medical training play a significant role in shaping students' social experiences and perceived stress levels. The rigorous academic environment often limits opportunities for maintaining social relationships, which are essential for overall psychological well-being. The intense focus required for medical studies and prolonged engagement in academic and clinical responsibilities reduces time and energy for social interaction, which are integral to mental health (Lapinski & Sexton, 2014; Seo et al., 2023). These circumstances stipulate the importance of promoting social connectedness and peer support within medical training programs, as strong social networks can help buffer stress and enhance overall well-being.

Peer relationships, as a form of social integration, offer emotional and psychological support, enabling students to cope more effectively with academic pressures. However, competition among peers can present additional challenges, as the pressure to outperform others may undermine collaboration and increase feelings of anxiety and stress. The prevalent peer-ranking mentality and the immediate sense of self-inadequacy that can arise from comparison with peers further intensify stress levels (Saravanan & Wilks, 2014). Consequently, the quality of social relationships whether supportive or competitive emerges as a critical factor influencing the overall stress experienced by medical students, underlining the need for interventions that foster positive social engagement alongside academic development.

2.5.5. *Financial Concerns*

Financial factor is another pressure exacerbating stress. In many academic situations medical training is expensive and financial stability and speculation is a concern. Financial stressors hamper academic performance psychological tradeoffs with education cost and living cost(Gazzaz et al., 2018). This finding shows the dual aspects of financial resilience in medical students: some successfully adapt through budgeting or support, while others face increased vulnerability affecting their academic focus and mental health.

In some instances students engage in part time works to support their expense that affect the academic performance(Mujinya et al., 2022) and students recreational opportunities limited by financial constraints further amplifies stress. Medical students feel future uncertainty in job market and future career prospects with sufficient financial stability. This concerns can produce considerable stress a focus to institutional measures on financial burdens in medical students(Mujinya et al., 2022). These findings reveal both the resilience and vulnerability of medical students while some demonstrate strong adaptability in balancing work and study demands others face significant academic and emotional setbacks due to persistent financial pressures.

2.5.6. *Environmental Stressors*

Environmental stressors are factors contributing to stress by medical students which include educational institutional culture and infrastructural settings. Institutional policies as an environment could create workload and unmet expectation that could pose pressure and affect academic experience. Unsupportive environment without administrative assistance can aggravate

stress level and an outcome on academic performance(Dyrbye et al., 2005). This implies the need for a strong institutional environment to improve students' coping skills and academic performance, as inadequate administrative support and infrastructure negatively impact their resilience and well-being.

Moreover, access to counseling services, poor recreational facilities, and inadequate study facilities can impair stress management. The absence of these resources' limits students' self-care efforts for mental health maintenance (Kim et al., 2022). Other factors, such as overcrowding and inadequate access to educational materials, along with poor communication with faculty, can further intensify stress levels (Saravanan & Wilks, 2014). Addressing these issues through better institutional support and improved learning environments is essential to promote students' overall well-being and academic success.

In conclusion, stress experienced by medical students arises from complex interaction of academic, personal, clinical, social, financial and environmental, which the dynamics could affect the wellbeing of medical students. To develop tailored intervention, the need to understand these dynamics is important to avoid psychological burden faced by medical students that future research should exploit the relationship and put forward effective strategies within medical education.

2.6.Coping strategies

Based on the transactional model of stress and coping proposed by Lazarus and Folkman (1984), coping strategies are primarily classified into problem-focused and emotion-focused approaches, each representing distinct cognitive and behavioral efforts to manage stress. Problem-focused

coping aims to address or modify the source of stress, while emotion-focused coping seeks to regulate the emotional response to it. In the context of this study, these foundational classifications are often interpreted and extended by researchers into adaptive and maladaptive categories to evaluate the effectiveness and outcomes of coping responses. This interpretation provides a deeper understanding of how medical students employ different strategies to manage academic and psychological pressures, with adaptive coping generally associated with positive adjustment and maladaptive coping linked to heightened distress.

2.6.1. Adaptive Coping Mechanisms

Adaptive coping mechanisms refer to the cognitive and behavioral strategies individuals use to manage or avoid stress. Among medical students, these strategies are particularly important, as they help in handling the pressures of academic performance while simultaneously supporting mental health and overall well-being. One prominent form of adaptive coping is active coping, which involves directly addressing stressors through practical actions such as problem-solving, creating structured study plans, and seeking guidance or support from faculty members. Students who employ active coping strategies are generally able to maintain lower levels of stress (Mansoor et al., 2021; Shiraly et al., 2023) and demonstrate greater control over their academic environment. This includes effective time management and organized study routines, which help ensure that heavy workloads and academic pressures do not overwhelm them.

Social support represents another crucial coping mechanism that assists students in mitigating stress. Support can come from family, friends, or institutional networks within medical schools, providing both emotional reassurance and practical assistance during challenging times. Students

who actively engage with their social support networks tend to experience lower levels of stress, as these connections offer guidance, encouragement, and tangible help in navigating academic and personal challenges (Loubir et al., 2014; Pitanupong, 2020; Sattar et al., 2024). Together, active coping and social support illustrate how adaptive strategies can empower medical students to manage stress more effectively, promoting resilience, emotional stability, and sustained academic performance.

Positive reframing is another valuable strategy, encouraging students to view challenges in a more positive light. By reinterpreting stressful situations as opportunities for personal growth, students can reduce their perception of stress and improve their overall mental health. Research has shown that students who use positive reframing tend to have better emotional well-being and academic performance (Findyartini et al., 2021; Sattar et al., 2024). Positive reframing enhances emotional resilience and adaptive thinking, but its effectiveness depends on individual mindsets and supportive environments

Lastly, leisure time activities offer a healthy and necessary escape from the demands of medical training. Engaging in sports, hobbies, and extracurricular activities allows students to recharge mentally and reduce stress. Research indicates that students who balance academic work with leisure pursuits experience lower stress levels and greater resilience (Jones et al., 2011; Lynette et al., 2020). These activities not only provide enjoyment but also contribute to a sense of accomplishment outside the academic sphere. Together, these adaptive coping mechanisms form a robust framework for managing the unique stressors faced by medical students, supporting both their academic success and their mental health.

2.6.2. *Maladaptive Coping Mechanisms*

Unlike adaptive strategy, maladaptive strategy is used to avoid stress from confrontation than facing and requesting support. While providing temporary relief, maladaptive coping strategy aggravates in long term problem solving. Avoidance coping deals with stressors by evading among others are procrastination, substance use, academic disengagement. These strategy leave the students in guilt and feeling of inadequacy while giving immediate relief. Those type of students who use avoidance strategy experience higher level of stress and burnout (Javed et al., 2023; Loubir et al., 2014; Puthran et al., 2016; Shiraly et al., 2023). While avoidance strategies provide temporary emotional relief, studies show they ultimately worsen stress and burnout, indicating a need for more constructive coping behaviors among medical students.

Another frequently employed maladaptive coping strategy is self-destruction, where students turn to activities like watching television or excessive social media to escape from their stressors. Although these activities may offer temporary relief, they ultimately delay the confrontation of academic challenges, resulting in greater stress accumulation and a sense of being overwhelmed (Lynette et al., 2020; Noordeen et al., 2018). This indicates that while distractions can temporarily reduce stress, they primarily reinforce avoidance behaviors that obstruct effective coping and long-term academic adaptation.

Self-blame is also a common maladaptive strategy, where students attribute stress and failure to their own shortcomings. This negative self-perception can fuel feelings of inadequacy and depression, leading to a downward spiral of deteriorating mental health over time. Addressing self-blame is crucial, as it may serve as a key target for interventions aimed at resilience building

among students (Javed et al., 2023; Paudel et al., 2022) These maladaptive coping strategies emphasizes the importance of fostering healthier, more adaptive coping mechanisms to improve students' mental health and academic performance.

2.7.Theoretical Framework

2.7.1. Lazarus and Folkman's Transactional Model of Stress and Coping

Lazarus and Folkman's Transactional Model of Stress and Coping is grounded in the premise that stress arises from the dynamic interaction between an individual and their environment. This model denotes the significance of subjective appraisal processes in determining how stress is perceived and managed. Stress is conceptualized as occurring when individuals evaluate the demands of a stressor as exceeding their available coping resources, leading to emotional responses that can be adaptive or maladaptive (Saeed et al., 2016). This understanding emphasizes the need to consider both the individual's perception of stress and the coping mechanisms employed to restore balance and psychological well-being

The model introduces two key appraisal processes: primary appraisal, which involves assessing whether an event is perceived as a threat, challenge, or benign, and secondary appraisal, which focuses on evaluating the resources and strategies available to manage the identified stressor. (Kumar et al., 2016). Together, these appraisals shape an individual's emotional and behavioral response to stress, influencing how effectively they adapt and maintain psychological balance.

This model is particularly relevant for medical students, who frequently encounter significant academic pressures and emotional challenges throughout their training. Research indicates that medical students are particularly susceptible to stress due to rigorous demands, frequent

assessments, and the high stakes associated with clinical performance (Kim, 2025). Academic stressors, including heavy workloads and extensive examination schedules, were commonly identified as sources of significant emotional distress among medical students, with 85% reporting feelings of stress primarily due to these factors (Saeed et al., 2016). These stresses can lead to maladaptive responses, such as avoidance of academic responsibility, further exacerbating feelings of inadequacy and anxiety (Siripongpan et al., 2022). This importance of fostering adaptive coping strategies and supportive academic environments that enable students to manage stress effectively and maintain both their psychological well-being and academic performance.

In applying the transactional model, it becomes evident that medical students who engage in positive appraisals, viewing challenges as opportunities for growth, are more likely to utilize adaptive coping strategies. These strategies may include problem-solving technique, seeking help from peers and faculty, and employing effective time management skills (Anuradha et al., 2017). Conversely, students perceived their stressor as overwhelming or insurmountable are prone to maladaptive coping mechanisms such as denial or avoidance, which can lead to increased anxiety levels and decreased academic performance (Alharbi et al., 2023). Therefore, promoting positive cognitive appraisal and teaching effective coping techniques within the medical curriculum can play a crucial role in enhancing students' resilience and reducing the negative impact of academic and emotional stressors.

The role of secondary appraisals assessing one's ability to cope with the identified threat is crucial in this context. It has been reported that students experiencing high levels of stress often

felt ill-equipped to manage their academic pressures, compounding their feelings of helplessness (Siddiqui et al., 2021). However, those who reported a strong support network exhibited lower levels of stress and anxiety, indicating a higher sense of efficacy in dealing with challenges (Abdulghani et al., 2011). This points to the importance of developing resources and coping strategies during medical training that can enhance students' perceptions of their ability to navigate stressful situations effectively.

The influence of coping strategies on the outcomes of stress cannot be overstated. Adaptive coping strategies, such as engaging in social support networks and utilizing emotional expression, are linked to more positive mental health outcomes (Quek et al., 2019). For instance, Gurvich et al. (2021) emphasize the role of emotion-focused coping strategies, such as positive reframing, in mitigating depressive symptoms among individuals experiencing high levels of stress. Just as evidence suggests that positive reframing can significantly lower depression scores, it is reasonable to conclude that developing a positive outlook through these appraisals is invaluable for medical students facing demanding academic and clinical pressures.

Moreover, the educational environment also plays a critical role in shaping students' stress and coping mechanisms. Institutions that emphasize supportive educational practices such as modifying curricula to include stress management education can significantly impact students' appraisals of their stressors. For example, initiatives at various medical schools that incorporate mindfulness and wellness programs have been shown to decrease overall stress levels and improve student resilience (Wassif et al., 2019). Thus, the institutional context can directly affect how students perceive and cope with the stresses of medical training.

2.7.2. *Biopsychosocial Model*

In the context of medical students, biopsychosocial model demonstrates the need to understand health and wellness in view of multiple nature such as biological, social and psychological factors. Which explains genetic disposition, peer support and competition and emotional responses and coping habits that influence experiences of stress. Social factors, such as peer relationships, family support, academic culture, and institutional networks, further modulate the impact of stress, providing both emotional and practical resources that can buffer stress or, conversely, exacerbate it when support is lacking. Research shows supporting environment to these multisectoral influences of stresses in medical students.(Heinen et al., 2017) .In this model a holistic understanding of stressors are emphasized that addresses academic, personal, and relational aspects of student life, pointing towards the importance of interventions , including mental health resources and social integration efforts in medical education.

2.8. Conceptual framework

The relationship between prevalence of stress, cause and underlining coping mechanism was illustrated (*Figure 1*). Stress prevalence, and key stressors from demographic, academic and social and evaluating coping mechanism as adaptive and maladaptive strategies.

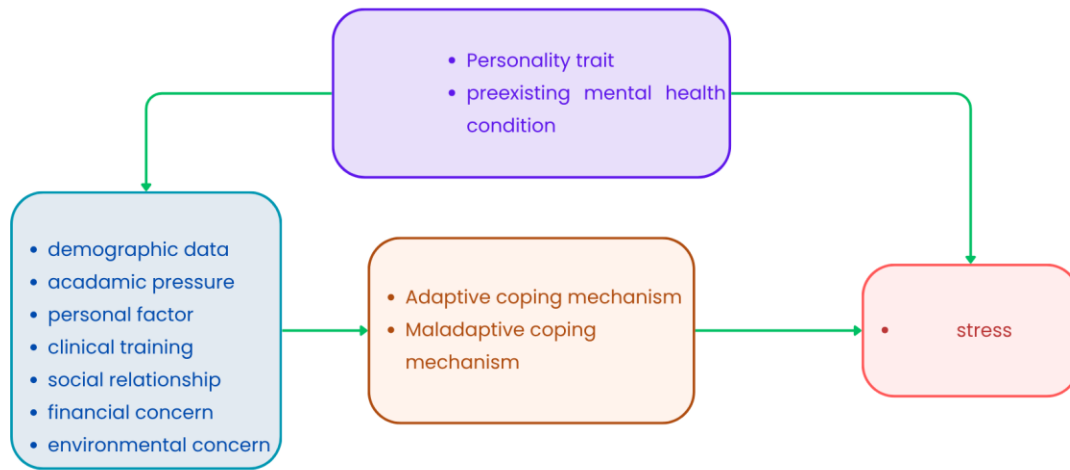


Figure 1 Conceptual framework

Source (Researcher's manipulation based on the literatures)

2.9.Implications of Reviewed Literature

The implication of the reviewed literatures revealed in compressive synthesis of prevalence, cause and coping mechanisms of medical students in global perspective and particularly in Ethiopia. In the literature pertinent theoretical frameworks were discussed that offer significant insight into the current study. The global prevalence of perceived stress among medical students reaches nearly 90%(Aamir, 2017; Gazzaz et al., 2018) this report suggests a need to tailored global intervention to the scale of diverse cultural and educational system and support system as the issue is urgent and unique to regions including Ethiopia.

In the Ethiopian context prevalence rate of stress in different studies ranges from 40.4% to 52.4% reveals the challenges of medical students in Ethiopia(Melaku & Bulcha, 2020; Sahile et al., 2021).While global intervention is important, the unique context of Ethiopia suggest a more localized intervention that foster social support and addressing socio-economic factors thereby mitigation of stress among medical students is ensured.

In broad analysis ,multiple sources of stress such as academic, personal factors, training demands, social and financial concerns and other environmental stressors were identified (Dyrbye et al., 2005; Kim et al., 2022).These interconnected factors imply a need to compressive approach and hence current educational system needs a reform that integrate academic ,mental health and social connections among students that create a more conducive learning environment.

The findings of different literature show the importance of coping strategies under adaptive and maladaptive mechanisms. These categories emphasize social support and positive coping practices to effect stress reduction(Javed et al., 2023; Mansoor et al., 2021). These positive practices were underscored as important interventions that promote health but enable us to maintain mental health outcomes.

Moreover, explanation of theoretical frameworks, under transaction model of stress and coping and biopsychosocial model validate the complexity and the need to application of holistic approaches intervention (Liu et al.,2021; Saeed et al.,2016). This understanding is vital component of resilience enchantment and coping skills among medical students.

In conclusion handling stress in medical students requires integrated approaches and culturally tailored. Educational institutions are compelled to prioritize mental health through structured support systems, enhanced peer networks, and fostering environments that promote adaptive coping strategies. By integrating these insights into the current study, there lies a meaningful opportunity to contribute to the ongoing efforts in combating stress and its implications on medical training, promoting a healthier educational landscape for future medical professionals.

Chapter 3: Research Methods

3.1. Research Design

A descriptive cross-sectional design was used, in which data were collected at a single point in time from medical students at Addis Ababa University in 2025. This design was selected for its cost-effectiveness and efficiency, making it suitable given the time constraints and feasibility considerations. It also allows the use of quantitative analysis methods while avoiding the need for data collection over extended periods.

3.2. Description of Study Area

This study was conducted in the College of Health Sciences (CHS) at Addis Ababa University. The College of Health Sciences has its origins in the early 1960s, when the then Faculty of Medicine was established as the first medical training institution in Ethiopia with the primary goal of producing skilled physicians to address the country's healthcare needs (AAU, 2025). In 2009/10, the College of Health Sciences (CHS) was officially established by merging separate health institutions under one umbrella. It consists of four schools, School of Medicine (SoM), School of Pharmacy (SoP), School of Public Health (SPH), and School of Allied Health Sciences (SAHS) along with Tikur Anbessa Specialized Hospital (TASH) serving as its main teaching hospital. SAHS offers training in nursing, midwifery, and medical laboratory technology. CHS currently has over 5,000 students and employs more than 600 full-time faculty members. The College presently offers eight undergraduate and over 70 postgraduate programs. (AAU, 2025).

3.3.Source of data/target population

The study targeted all undergraduate medical students enrolled at Addis Ababa University during the 2024/2025 academic year. A total of 875 students across all levels of the medical program were included in the target population. These students were actively engaged in both academic coursework and practical clinical training, representing the broader population of medical trainees within the institution.

3.4.Samples and sampling techniques

All medical students undergoing training at Addis Ababa University at the time of data collection were eligible to participate. A stratified random sampling technique was employed, where the strata were defined based on the year of study (from first to sixth year). The number of study participants selected from each stratum was determined proportionally to the total number of students in that academic year. After stratification, participants within each group were randomly selected to ensure representativeness and minimize selection bias.

The sample size (n) was calculated using Cochran's formula (1977) and adjusted for the finite population of 875 medical students enrolled in the College of Health Sciences (CHS). This yielded a sample size of 269. Considering a 20% non-response rate ($20\% \times 269 = 54$), the final required sample size was 323 participants.

$$n = \frac{(Z\alpha/2)^2 p(1 - p)}{d^2}$$

Where;

n represents the sample size,

$Z_{\alpha/2}$ signifies level of α at 0.05

p denotes the expected proportion of psychological distress (50 %),

d is the margin of error (0.05).

$$n = \frac{(1.96)^2 \times 0.5 (1 - 0.5)}{(0.05)^2} = 384$$

Sample size when $N < 10000$ is calculated by

$$\frac{n}{(1 + \frac{n}{N})} = \frac{384}{(1 + \frac{384}{875})} = 269; 20\% * 269 = 54; 269 + 54 = 323$$

3.5. Sampling procedure

All available undergraduate medical students (from Year 1 to Year 6) were considered as non-overlapping groups, serving as strata. The number of study participants selected from each stratum was determined proportionally to the population size of each academic year (Figure 2). Finally, eligible participants within each stratum were selected randomly.

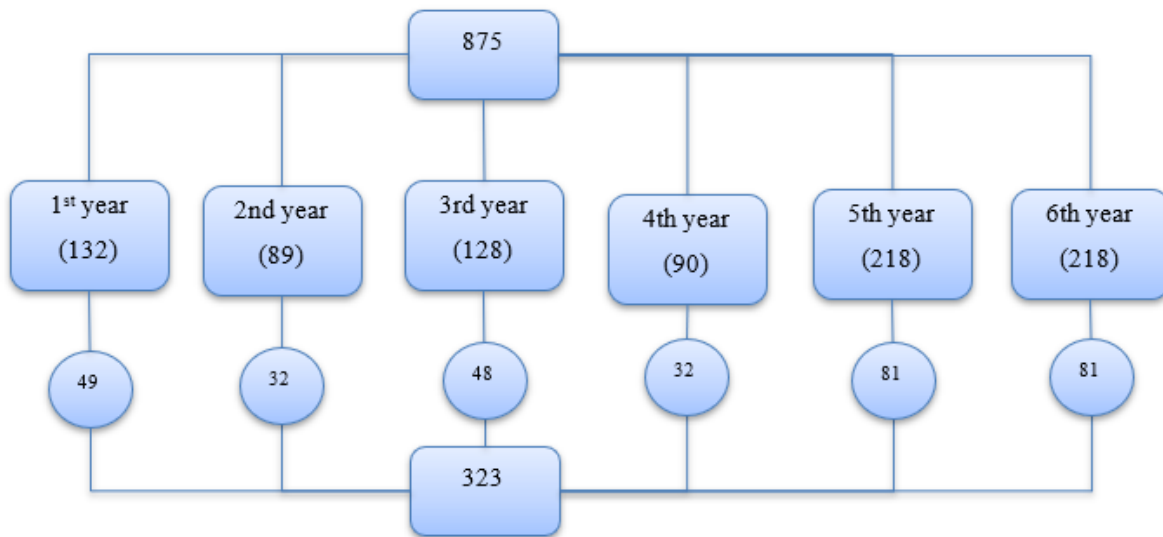


Figure 2 Proportion of sampled respondents from each year (year 1-6)

3.6. Eligibility criteria

Inclusion criteria

- Medical students who were available during the time of study
- Those who gave informed written consent
- Age above 18

Exclusion criteria

- Those who did not give consent
- Medical students who were available during the time of study

3.7.Study variables

In this study, stress is the dependent variable, indicating the perceived stress of medical students. Independent variables encompass various socio-demographic, academic, personal, environmental, financial, and social factors that influence stress. Socio-demographic factors include age, gender, year of study, and marital status. Additionally, coping mechanisms were assessed as an independent variable to explore how students manage and respond to stress. These mechanisms are categorized into adaptive and maladaptive coping strategies.

3.8.Data Collection Instruments

A structured questionnaire was administered to collect participants' background information, including socio-demographic characteristics, study, lifestyle, social support, substance use, and other related factors. In addition, three standardized quantitative instruments were used. The Perceived Stress Scale (PSS) is a questionnaire designed to measure an individual's experience of stress in daily life over the past month, consisting of ten items and known for its high validity and reliability (Cohen, 1988). The Medical Student Stressor Questionnaire-20 (MSSQ-20) was used to identify the causes of stress; it contains 20 items grouped into six stressor domains: academic-related stressors (ARS), interpersonal and intrapersonal-related stressors (IRS), social-related stressors (SRS), teaching and learning-related stressors (TLRS), desire and drive-related stressors (DRS), and group activity-related stressors (GARS) which together identify the sources and measure the severity of stress experienced by medical students (Yusoff et al., 2010). Finally, the Brief COPE Scale, consisting of 28 items rated on a four-point Likert scale ranging from "I have not been doing this at all (score 1)" to "I have been doing this a lot (score 4)," was used to assess coping mechanisms. The items were scored to produce 14 dimensions (minimum mean

score of 2 and maximum of 8), each reflecting the use of a coping strategy such as active coping, planning, acceptance, denial, self-distraction, substance use, emotional support, instrumental support, behavioral disengagement, venting, positive-reframing, humor, religion, and self-blame. These coping strategies were broadly categorized as avoidant coping, approach coping, or neither, with each category comprising specific subscales (Carver, 1997).

3.9.Data Collection Procedure

Institutional Ethical Committee permission and approval were obtained, along with written informed consent from participants. The number of students from each academic year (Year 1 to Year 6) was determined prior to data collection. The process began with the recruitment of participants selected through a stratified random sampling technique, ensuring proportional representation from each year's level. Participation was entirely voluntary, and respondents were informed of their right to withdraw at any stage without any consequence.

Data were collected using a self-administered structured questionnaire distributed through a Google Form link, providing students with flexibility in participation. Adequate time was allowed to ensure accurate and thoughtful responses, and anonymity was maintained throughout the study. A pretest was conducted on 10% of randomly selected undergraduate medical students to assess the clarity of wording, instructions, and ease of completion.

The questionnaire included sections on socio-demographic characteristics, study, lifestyle, social support, substance use, and other related factors. The remaining sections comprised standardized scales: the Perceived Stress Scale (PSS-10) to measure perceived stress levels (Appendix), the

Medical Student Stressor Questionnaire (MSSQ) to identify sources of stress (Appendix), and the Brief COPE Inventory to assess coping mechanisms (Appendix).).

3.10. Data Analysis

Data analysis was conducted based on the study objectives using both descriptive statistics and binary logistic regression to examine the relationship between independent and dependent variables, following verification of model assumptions and reliability. All necessary model assumptions were tested and confirmed (Appendix A 1–3). Internal consistency was assessed using Cronbach’s alpha, yielding values of 0.893 for the Brief COPE (28 items), 0.847 for the PSS-10, and 0.946 for the MSSQ, indicating high reliability.

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were computed to summarize and present participants’ demographic characteristics appropriately. For the binary logistic regression analysis, independent variables such as demographic characteristics, stressors, and coping mechanisms were examined against the dependent variable, which represented stress status (categorized as “High” or “Low”). In this study, PSS-10 scores of 25 or higher were classified as high perceived stress, while scores below 25 were considered low perceived stress (Pedrozo-Pupo et al., 2020).

Variables with a p-value less than 0.25 in the bivariate analysis were included in the multivariate analysis. Adjusted Odds Ratios (AOR) with a 95% Confidence Interval (CI) were computed, and a p-value of less than 0.05 was considered statistically significant. All analyses were performed using SPSS version 26.

3.11. Ethical Considerations

As the research employed structured questionnaires as the primary data collection tool, ensuring credibility and adherence to ethical standards was of utmost importance. Prior to participation, all respondents received a comprehensive explanation of the study's purpose, procedures, potential risks, and benefits. Participants were informed about their rights, including voluntary participation, the right to withdraw at any stage and the assurance of anonymity and confidentiality. Informed consent was embedded at the beginning of the questionnaire, requiring participants to read and acknowledge their agreement before proceeding. Data was collected anonymously through a secure Google Form link to protect participants' identities, and no personal identifiers were recorded. All information obtained was used solely for research purposes and stored securely with restricted access to maintain confidentiality. The study protocol was reviewed and approved by the Institutional Ethical Committees of Addis Ababa University College of Health Sciences and the School of Psychology, ensuring that all ethical principles, including autonomy, beneficence, and confidentiality, were upheld throughout the research process.

Chapter 4: Results

4.1.Demographic characteristics

A total of 323 medical students from Addis Ababa University participated in the study (Table 1). From the study participants 193 (59.8%), were female and 130(40.2%) were males. The largest age group was 20–24 years (51.4%), followed by those above 24 years (31.9%) and below 20 years (16.7%). Most respondents were single (87.3%), and most are 5th (25.1%) and 6th (25.1%) year while 2nd year and 4th year (9.9%) are the least represented.

Factors related to study revealed that more than 41.5% of the students reported studying more than 30 hours per week while 9.6% reported studying less than 10 hours per week. Workload in the student reports revealed that a heavy workload (39.3%), overwhelming (23.2%) and only 13% reported workload is light. Lifestyle factors showed that one third of students (110, 34.1%) never engaged in physical exercise, while only 6.8% exercised more than three times a week. In terms of sleep, 31% reported sleeping less than five hours a night, and just 3.9% reported sleeping more than seven hours. Most students (79.6%) reported having a support system, 8% reported always communicating regularly with others, while 26% communicated frequently.

Based on the findings, majority of participants were young, female, and single, with most in their 5th and 6th years of study. Academic workload was substantial, with a significant proportion of students studying over 30 hours per week and reporting heavy or overwhelming workloads. Lifestyle factors indicate low levels of physical activity and inadequate sleep among many

students, suggesting potential risks to their overall well-being. Despite these challenges, most students reported having a support system.

Table 1

Demographic characteristics of medical students of Addis Ababa University(n=323)

Variable	Frequency (%)
Gender	
Female	193(59.8)
Male	130(40.2)
Age	
<20	54(16.7)
20 to 24	166(51.4)
>24	103(31.9)
Academic year	
1'st year	49(15.2)
2'nd year	32(9.9)
3'rd year	48(14.9)
4'th year	32(9.9)
5'th year	81(25.1)
6'th year	81(25.1)
Marital status	
Single	282(87.3)
Married	41(12.7)
Study hours	
<10	31(9.6)
10 to 20	46(14.2)
20 to 30	112(34.7)
>30	134(41.5)
Workload	
very light	42(13.0)
Manageable	79(24.5)
Heavy	127(39.3)
Overwhelming	75(23.2)
Physical exercise habit	
Never	110(34.1)
Occasionally	123(38.1)
2 to 3 times a week	68(21.1)
more than 3 times a week	22(6.8)
Sleep hours	

<5	104(31.0)
5 to 6	119(35.4)
6 to 7	100(29.8)
>7	13(3.9)
Support system	
No	66(20.4)
Yes	257(79.6)
Communication habit	
never	32(9.9)
rarely	51(15.8)
occasionally	130(40.2)
frequently	84(26.0)
always	26(8.0)

Table 2 Caffeine use is the most common substance use activity among medical students, with more than half (58.7%) reporting it, most likely as a coping mechanism for academic pressures. Furthermore, the prevalence of alcohol use (22.4%) and tobacco use (16.5%) reveals that a proportion of students participate in potentially dangerous substance use, necessitating interventions, despite 'drug' use being the lowest reported at 9.3%.

Table 2

Substance use by students

Substance use	Category	Frequency (%)
Alcohol	No	250(77.6)
	Yes	72(22.4)
Tobacco	No	269(83.5)
	Yes	53(16.5)
Caffeine	No	133(41.3)
	Yes	189(58.7)
Drug	No	292(90.7)
	Yes	30(9.3)

4.2.Prevalence of Stress Among Medical Undergraduate Students at Addis Ababa University

The mean total PSS-10 score among respondents was 20.71 ± 7.36 . Using the cutoff score of ≥ 25 . The high perceived stress was reported by 106 (32.8%) of the participants while low perceived stress was reported by 217(67.2%) of them (Table 3). Though the finding that nearly one in three students is in the high-stress prevalence category indicates a considerable need for targeted mental health support.

Table 3

Stress level of AAU medical students

Stress level	Frequency	Percent
Low stress	217	67.2
High stress	106	32.8.
Total	323	100.0

4.3.Major factors associated to stress.

Potential predictors from bivariate analysis were selected and multivariate binary logistic regression (Table 4) based on PSS-10 scores (low, high) was conducted to identify factors independently associated with high stress among participants and Adjusted odds ratios (AOR) with 95% confidence intervals (CI) and p-values were reported to assess the strength and significance of associations.

The result indicates that none of sociodemographic factors (gender, age, marital status, and year of study) except year of study were associated with perceived stress. Year 2 (AOR = 0.231; 95% CI: 0.060-0.887; $p = 0.033$) and Year 6 (AOR = 0.143; 95% CI: 0.024–0.832; $p = 0.03$) had significantly associated with low stress compared to Year 1 students. Males had higher odds of

experiencing high stress compared to females, although this association was non-significant (AOR = 1.722; 95% CI: 0.890–3.33; p = 0.1)

Study hours and perceived workload were included to assess academic demands. Prevalence of high stress increased with study hour, among those with high stress level, 4(3.8%) of the students who study <10 hours while 90(84.9%) had study hours 20 or more. Students studying more than 30 hours per week or reporting an overwhelming workload had higher odds of high stress, these associations did not reach statistical significance respectively of AOR=2.90;95% CI: 0.728-11.589; p=0.131, and AOR=3.144;95%CI:0.683-14.47; p=0.142

Frequency of communication with was strong predictor of perceived stress. Participants who communicated always (AOR=15.583;95%CI:2.008-120.926; p=0.009) were significantly more likely to report high stress compared to those who never communicated. Academic-related stressors (ARS), social-related stressors (SRS), and group activity-related stressors (GARS) were included in the multivariate analysis however only ARS was significantly associated with high stress (AOR = 2.505; 95% CI: 1.321–4.749; p = 0.005).

Table 4

Multivariate analysis to identify factors associated to stress

Variables	Perceived stress level		AOR (95%, CI)		P
	Low(n=217,%)	High(n=106,%)			
Gender					
female	140(64.5)	53(50)		reference	
male	77(35.5)	53(50)	1.722	0.890	3.335
					0.107
Age class					
<20	31(14.3)	23(21.7)		reference	0.293
20 to 24	99(45.6)	67(63.2)	1.313	0.320	5.388
>24	87(40.1)	16(15.1)	0.595	0.117	3.035
					0.533

Marital status							
single	186(85.7)	96(90.6)		reference			
married	31(14.3)	10(9.4)	1.467	0.479	4.495	0.428	
year							
year 1	30(13.8)	19(17.9)		reference			0.015*
year 2	21(9.7)	11(10.4)	0.231	0.060	0.887	0.033*	
year 3	23(10.6)	25(23.6)	0.682	0.133	3.505	0.647	
year 4	22(10.1)	10(9.4)	0.182	0.030	1.082	0.061	
year 5	49(22.6)	32(30.2)	0.488	0.100	2.386	0.376	
year 6	72(33.2)	9(8.5)	0.143	0.024	0.832	0.030*	
Study hours							
<10	27(12.5)	4(3.8)		reference			0.434
10 to 20	34(15.6)	12(11.3)	2.472	0.545	11.206	0.240	
20 to 30	76(35.0)	36(34.0)	2.045	0.506	8.268	0.316	
>30	80(36.9)	54(50.9)	2.905	0.728	11.589	0.131	
workload							
vert light	39(18.0)	3(2.8)		reference			0.019
manageable	67(30.8)	12(11.3)	0.666	0.137	3.245	0.615	
heavy	77(35.5)	50(47.2)	2.090	0.486	8.988	0.322	
overwhelming	34(15.7)	41(38.7)	3.144	0.683	14.479	0.142	
Support system							
no	39(18.0)	27(25.5)					
yes	178(82.0)	79(74.5)	1.048	0.474	2.317	0.909	
Communication							
never	30(13.8)	2(1.9)		reference			0.025*
rarely	34(15.7)	17(16.1)	3.050	0.485	19.165	0.234	
occasionally	76(35.0)	54(50.9)	5.105	0.874	29.814	0.070	
frequently	61(28.1)	23(21.7)	2.419	0.406	14.428	0.332	
always	16(7.4)	10(9.4)	15.583	2.008	120.926	0.009*	
Substance use frequency							
never	41(18.9)	13(12.3)		references			0.031*
occasionally	66(30.4)	16(15.1)	0.417	0.137	1.266	0.123	
frequently	74(34.1)	54(50.9)	1.536	0.550	4.290	0.412	
very frequently	36(16.6)	23(21.7)	1.015	0.304	3.385	0.981	
Academic-related stressors							
ARS	3.50±0.87	3.97±0.76	2.505	1.321	4.749	0.005*	
Social related stressors							
SRS	3.15±1.02	3.29±0.88	0.868	0.553	1.360	0.536	
Group activity-related stressors							
GARS	3.31±1.05	3.60±0.92	0.682	0.409	1.140	0.144	
Avoidance							
self-distraction, items 1	4.95±1.60	4.96±1.50	0.939	0.730	1.208	0.624	

denial, items 3 and 8	4.40±1.82	4.54±1.72	1.102	0.868	1.399	0.426
substance use, items 4	4.01±1.99	4.29±2.06	1.111	0.903	1.366	0.321
behavioral	4.40±1.77	4.75±1.66	1.032	0.807	1.320	0.800
venting, items 9 and 21	4.91±0.61	5.05±1.53	0.891	0.686	1.157	0.386
self-blame, items 13 and	4.64±0.80	5.41±1.67	1.283	1.019	1.616	0.034*
Approach						
active coping, items 2	5.44±1.73	5.51±1.47	0.990	0.751	1.306	0.946
emotional support,	5.18±1.78	5.40±1.57	1.087	0.843	1.402	0.521
use of informational	5.28±1.59	5.25±1.54	0.736	0.550	0.984	0.039*
positive reframing,	5.23±1.79	5.20±1.47	1.117	0.864	1.444	0.400
planning, items 14 and	5.40±1.72	5.55±1.50	1.010	0.749	1.363	0.947
acceptance, items 20	5.21±1.82	5.08±1.60	0.799	0.611	0.993	0.044*
Neither/Or						
humor, items 18 and 28	4.40±1.78	4.45±1.66	0.896	0.717	1.120	0.334
religion, items 22 and	5.17±1.97	5.61±1.95	1.294	1.011	1.656	0.040*
Constant			0.007			0.001*

4.4.Coping mechanisms Employed.

Based on the Brief-COPE strategy (Table 5), the mean ($\pm$ SD) of the total coping score was 69.40 ($\pm$ 14.53). Of the broad categories of coping approaches, approach coping achieved the highest mean ($\pm$ SD) score, 31.82 ($\pm$ 7.90). Among subscales of coping strategies, active coping achieved the highest mean ($\pm$ SD) score accounting for 5.46 ($\pm$ 1.65), while substance use was the least stress coping strategy reported with a score of 4.10 ($\pm$ 2.02)

The mean score of self-blame was among students with high stress (Mean $\pm$ SD = 4.89 $\pm$ 1.80) was significantly associated with perceived stress, with students scoring higher on self-blame having 1.28 times higher odds of experiencing high stress compared to those scoring lower, after

adjusting for demographics (Table 4) and other coping dimensions (AOR=1.28; 95% CI=1.01-1.61; $p=0.034$).

The mean score of Religion (5.31 ± 1.97), however, in the multivariate logistic regression analysis, religion was significantly associated with perceived stress, with students scoring higher on religion having 1.29 times higher odds of experiencing high stress compared to those scoring lower, after adjusting for demographics and other coping dimensions. The mean score of use of informational system (5.27 ± 1.57) and acceptance (5.17 ± 1.75) are high and had respectively of lower odds of experiencing stress (AOR=0.736; 95% CI:0.550-0.984; $p=0.039$; AOR=0.799; 95% CI:0.611-0.993; $p=0.044$).

Table 5

Brief COPE scale with higher dimension

Copping styles		Copping score
Avoidance	Self-distraction, items 1 and 19	4.95 ± 1.57
	Denial, items 3 and 8	4.45 ± 1.78
	Substance use, items 4 and 11	4.10 ± 2.02
	Behavioral disengagement, items 6 and 16	4.51 ± 1.74
	Venting, items 9 and 21	4.95 ± 1.59
	Self-blame, items 13 and 26	4.89 ± 1.80
	Total	27.85 ± 7.18
Approach	Active coping, items 2 and 7	5.46 ± 1.65
	Emotional support, items 5 and 15	5.25 ± 1.72
	Use of informational support, items 10 and 23	5.27 ± 1.57
	Positive reframing, items 12 and 17	5.22 ± 1.69
	Planning, items 14 and 25	5.45 ± 1.66
	Acceptance, items 20 and 24	5.17 ± 1.75
	Total	31.82 ± 7.90
Neither/Or	Humor, items 18 and 28	4.42 ± 1.74
	Religion, items 22 and 27	5.31 ± 1.97
	Total	9.73 ± 2.84

Chapter 5: Discussion

This descriptive cross-sectional study was undertaken involving 323 undergraduate medical students aimed to assess the perceived stress and coping strategy. The finding indicated that one third (32.8%) of medical students in Addis Ababa CHS experiences high level of stress with mean total PSS-10 score 20.71 ± 7.36 this score lower than Swaminathan et al. (2015) (21.09 ± 4.7) in India and Shah et al. (2010) (30.84) in Pakistan and similar to the report of Thangaraj and D'souza (2014) in Bangalore (20.29 ± 6.24) and a Malaysian report by Al-Dubai et al. (2014) (20.4). The high perceived stress was reported by 106 (32.8%) of the participants while low perceived stress was reported by 217 (67.2%).

5.1. Prevalence of Stress Among Medical Undergraduate Students at Addis Ababa

University

In this study, high perceived stress was reported by 106 (32.8%) of participants, while low perceived stress was reported by 217 (67.2%). This prevalence is comparable to findings from other countries, indicating that medical students commonly experience stress. For instance, studies in Sweden (31.2%), Malaysia (41.9%), and Thailand (61.4%) report similar rates of stress among medical students (Aamir, 2017; Minhas et al., 2019). Likewise, research from Saudi Arabia indicates a stress prevalence of 57% among medical students (Abdulghani et al., 2011). These findings suggest that the stress experienced by medical students in this study is consistent with global trends, reflecting shared academic, clinical, and social challenges faced by medical students internationally (Kim, 2025; Kumar et al., 2016). However, the difference could arise because of variable factors that can be traced as curricular, cultural and institutional support

systems are among others. Moreover, differences in stress assessment tools, support system and its structures, and unique experiences of faculties may partly explain the variability in reported stress levels across studies.

This prevalence is somewhat lower than what has been reported in other Ethiopian universities, including Jimma University (52.4%) and Haramaya University (44%) (Asfaw et al., 2021; Melaku et al., 2015). Despite the differences in magnitude, these findings collectively indicate that stress is a common experience among medical students in Ethiopia, signifying the demanding nature of medical education across the country. This result and others give insight to the widespread scenario of stress in the country's medical education system. Most frequently reported factors include the demanding curriculum, extended study hours, and heavy workloads, which were also reported in the demographic data.

The findings of this study shows that perceived stress is a prevalent issue among medical students, both locally and internationally. Although the prevalence of high perceived stress in this study (32.8%) is lower than that reported in some Ethiopian universities, it aligns closely with global trends, indicating that medical students universally face significant academic and clinical pressures. The variation in prevalence between different studies may be attributed to multiple factors, including differences in curricula, cultural expectations, institutional support systems, and the tools used to measure stress. Importantly, the consistency in identified stressors such as demanding coursework, extended study hours, and heavy workloads underscores the pervasive impact of the medical education environment on student well-being. These findings not only confirm the need for stress monitoring and support programs within Ethiopian medical schools

but also emphasize the potential benefits of adopting strategies and interventions that have been effective in other educational contexts to mitigate the burden of stress among medical students.

5.2. Major factors associated to stress

The complex nature of perceived stress among medical students was underscored by the multivariate analysis, which revealed both significant and non-significant predictors, providing a nuanced understanding of how various factors interact to shape students' stress experiences.

While demographic characteristics such as gender, age, and marital status did not emerge as statistically significant predictors in this study, they nonetheless offered valuable insights into patterns of stress within the study population. For instance, gender was not a significant predictor of stress (AOR = 1.722; 95% CI: 0.890–3.33; $p = 0.1$); however, it was notable that a larger proportion of female students (140, 64.5%) fell under the low stress category compared to male students (77, 35.5%). This contrasts with numerous studies reporting higher stress levels among female students, often explained by heightened emotional reactivity, greater academic anxiety, and sensitivity to social or performance related pressures (Hasanah et al., 2022; Lemesa & Abeshu, 2017). The divergence observed in this study suggests that the relationship between gender and stress may be context-dependent, influenced by factors such as cultural norms, the academic environment, peer support systems, and the coping mechanisms adopted by students.

Similarly, marital status did not significantly predict stress, even though previous research has suggested that single students may experience elevated stress levels due to limited emotional or social support (Ibrahim et al., 2013). This discrepancy may be explained by the presence of compensatory or mediating factors that buffer the effects of marital status on perceived stress.

For instance, students who are single might develop strong peer networks, participate in supportive academic or social communities, or access institutional mental health and counseling resources that help them manage stress effectively. In addition, personal resilience and adaptive coping mechanisms such as problem-solving skills, emotional regulation, and positive reframing may play a critical role in mitigating the potential stress associated with being unmarried. Therefore, the non-significant association observed in this study suggests that marital status alone may not be a decisive determinant of stress levels among medical students; rather, the availability and utilization of social and psychological resources appear to have a more direct influence on how students experience and manage stress.

The year of study emerged as a critical determinant of perceived stress among medical students, showing how academic progression shapes stress experiences. In this study, students in their second and sixth years were significantly less likely to report high stress compared to first-year students, who often struggle with feelings of inadequate knowledge, limited clinical skills, and the challenges of adapting to a rigorous medical curriculum (Melaku et al., 2015). The particularly low odds ratios observed in senior students suggest that experience, academic self-efficacy, and established coping mechanisms act as protective factors, enabling them to manage stress more effectively. This trend reflects a natural adaptation process as students transition from preclinical to clinical training. Early-year students frequently face transitional challenges, including unfamiliar academic workloads, limited coping skills, and the pressure of adjusting to a new environment with high expectations (Durand-Bush et al., 2015; Hong, 2022; Mosley Jr et al., 1994). In contrast, senior students gradually acquire the skills to approach and manage patient care, reducing anxiety associated with clinical responsibilities. Over time, they develop

strategies to cope with stress, which may include adopting an overconfident demeanor, thorough preparation, or actively seeking learning opportunities to build competence and confidence (Nadelson et al., 1977). Therefore, first-year students, who tend to be the most susceptible to stress. Structured orientation sessions, early exposure to therapeutic skills, and mentorship programs can all help to speed up the development of appropriate coping mechanisms, improve academic adjustment, and boost emotional resilience. By focusing support efforts on students at important transitional times, medical schools can minimize overall stress and build a more positive and sustainable learning environment.

Study and workload factors, while elevated in their association with stress, were not statistically significant predictors in the multivariate model. This finding contrasts with prior research where academic pressure consistently ranked as a primary stressor (Alfaro Vasquez et al., 2022; Okoro, 2018). It requires medical students to study for endless hours, attend long clinical rotations, and give countless exams and tests (Ahmad et al., 2022). In this study students who had <10 hours of study with high level of perceived stress were few (4,3.8%) while those study hours with 20 or more were more than quarter of all students (90,84.9%), but this factor did not contribute as a stressor. The lack of significance in this study could be attributed to students' individual differences in time management or resilience. It also suggests that the quality of study time, rather than sheer quantity, may be more relevant to stress levels, an insight supported by studies on academic self-regulation (Misra & Castillo, 2004). These subtle experiences exhibits the importance of personalized academic support interventions that address not only workload but also study efficiency and coping skills.

Social factors presented a particularly complex picture. Contrary to the common assumption that frequent peer communication acts as a protective factor against stress, this study revealed that students who always communicated with their peers had significantly higher odds of reporting stress (AOR = 15.583; $p = 0.009$). This counterintuitive finding suggests that not all forms of peer interaction are inherently beneficial. While peer communication is generally believed to provide emotional support, shared understanding, and a sense of belonging, excessive or unbalanced interaction may inadvertently heighten stress levels. This paradox aligns with emerging evidence suggesting that peer relationships can also become sources of strain through mechanisms such as social comparison, peer pressure, and stress contagion (Ukeh et al., 2023; Vetrivel et al., 2024). This finding emphasizes the need to shift the focus from merely encouraging social interaction to fostering healthy, supportive communication that genuinely alleviates stress.

In highly competitive academic environments such as medical training, frequent peer communication may foster subtle competition and comparison, where students evaluate their academic progress, clinical performance, or coping capacity against that of their peers. Such dynamics can increase perceived inadequacy or fear of underperformance, thereby amplifying stress. Similarly, peer pressure to meet collective expectations such as maintaining high grades or demonstrating emotional strength can create additional psychological burden. Moreover, stress contagion, the process through which emotional strain is transmitted among individuals in close social networks, may contribute to a cycle where stressed peers unintentionally elevate each other's anxiety levels.

Medical education has been reported as one of the most stressful academic curricula (Saeed et al., 2016), and medical students are more prone to various academic and nonacademic stressors compared to students from other disciplines and the general population (Melaku & Bulcha, 2020; Saeed et al., 2016). In the present study, domain-specific stressors underscored the dominant role of academic-related stress, as measured by the Medical Student Stressor Questionnaire (MSSQ) under the Academic Related Stressor (ARS) domain. Students experiencing higher academic-related stress were more than twice as likely to report elevated overall stress levels (AOR = 2.505; $p = 0.005$). This finding is consistent with previous studies identifying academic performance pressure, examinations, and workload as central stress drivers among medical students (Adomako-Saahene, 2019; Geravand & Shokri, 2009). Similarly, Paudel et al. (2024) reported that about 47% of participants had high levels of ARS, while Okoye (2022) found that ARS caused high-level stress in 51.6% and severe stress in 7.8% of students, reinforcing the global relevance of academic strain as a major psychological burden in medical training.

The present findings also reveal that, despite the significant influence of academic stress, social and group-related stressors did not retain statistical significance in the multivariate analysis. This suggests that the effect of social stress may be indirect, potentially mediated by factors such as coping style, perceived social support, or academic resilience. Students who demonstrate stronger self-regulatory or adaptive coping mechanisms may be better equipped to buffer social pressures and maintain psychological stability despite demanding academic conditions. Such patterns emphasize that while academic stress remains the most dominant, it does not exist in isolation but interacts dynamically with students' internal coping resources and environmental support systems.

5.3.Coping mechanisms Employed

Maladaptive strategies under the avoidance domain, such as self-blame (AOR = 1.283; $p = 0.034$), were positively associated with stress, consistent with existing evidence that internalizing blame exacerbates anxiety and diminishes self-efficacy (Gbenga & David, 2015). This finding reinforces the view that self-blame reflects a self-directed, emotion-focused response that intensifies rather than relieves psychological distress. When students attribute stressful experiences or academic challenges to personal shortcomings, they are more likely to experience feelings of helplessness and lower confidence in their ability to cope effectively. Such internalized responses may contribute to a cycle of negative emotions and impaired academic functioning, particularly within competitive and high pressure environments such as medical education.

Emotional coping, of which religious coping is a prime example, is often adopted when individuals perceive stressors as uncontrollable or beyond their immediate influence (Azale et al., 2018). Previous studies have found religious coping to be one of the most frequently used strategies among individuals dealing with depression and other forms of psychological distress (Krägeloh, 2011). In the Ethiopian context, where the majority of the population identifies strongly with a religion, it is unsurprising that religious coping emerged as a salient mechanism for managing stressful experiences (Azale et al., 2018). In this study, religious coping exhibited a complex relationship with stress (AOR = 1.294; $p = 0.040$), a finding that supports the reports of Sukeri et al. (2024) and Akbar et al. (2024). This dual nature of religious coping may be understood in terms of its positive and negative dimensions.

Positive religious coping, such as seeking comfort through faith, prayer, and meaning making, can enhance resilience, foster optimism, and provide a sense of control through spiritual frameworks (AnnisaFaradila et al., 2023). Conversely, negative religious coping characterized by feelings of spiritual guilt, questioning one's faith, or interpreting stress as divine punishment can amplify emotional distress and reduce adaptive functioning. The results of this study reflect this dual pathway, where religion serves both as a protective and risk factor, depending on the nature and interpretation of one's spiritual beliefs.

Conversely, adaptive coping strategies such as seeking informational support ($AOR = 0.736$; $p = 0.039$) and acceptance ($AOR = 0.799$; $p = 0.044$) were associated with lower stress levels. These findings indicate that students who actively sought guidance, advice, or clarity from others, and those who practiced acceptance of uncontrollable circumstances, experienced reduced psychological strain. The strategy of adaptive coping is often employed in conjunction with problem-focused coping to manage stress more effectively (Ding et al., 2021). This suggests that students who adopt constructive and proactive responses such as gathering information or reframing stressors within their control are better able to regulate emotions and prevent stress escalation.

The current results are consistent with previous research indicating that problem-focused coping and acceptance enhance psychological resilience and reduce perceived stress (Carver et al., 1989), and similar observations were made by Fonseca et al. (2021). Together, these findings reinforce the theoretical understanding that adaptive coping facilitates effective stress management by promoting cognitive reappraisal, self-regulation, and solution-oriented thinking.

Acceptance, in particular, allows individuals to acknowledge the reality of challenging situations without excessive emotional reactivity, thereby conserving mental energy for adaptive problem solving.

However, Fonseca et al. (2021) also underscored that individual and situational variations may limit the universal benefit of such coping strategies. In real-world contexts, the effectiveness of adaptive coping depends on both personal attributes such as resilience, self-efficacy, and emotional regulation and external conditions, including academic workload, social support, and available resources. This dynamic nature of coping implies that students often employ flexible strategies, shifting between emotion-focused and problem-focused approaches depending on the context. As noted by Fonseca et al. (2021), individuals may initially resort to emotion-focused coping to manage immediate distress before transitioning to more problem-focused strategies as the situation becomes manageable.

Encouraging students to engage in constructive coping behaviors, such as seeking guidance from mentors or practicing acceptance of uncontrollable challenges, could form the basis of effective stress management programs. From a practical standpoint, these findings suggest several targets for intervention. First year students represent a high-risk group that would benefit from intensive orientation and mentoring programs. Academic stress management workshops focusing on time management, study strategies, and realistic goal setting could help mitigate academic pressures.

Limitation of the study

Despite the efforts made to ensure the validity and reliability of this study, several limitations must be acknowledged. The study used descriptive cross-sectional design, which captures data at a single point in time. This limits the ability to establish causal relationships. Data were collected through self-administered questionnaires, which may be subjected to social desirability bias or may have introduced response bias. Additionally, since the study was conducted only within one institution, generalizability of the findings to other universities or fields of study is limited. The quantitative approach excluded qualitative insights that could have provided deeper understanding of students' emotional and contextual experiences. Despite these limitations, the study's findings remain a credible reflection of stress patterns and coping behaviors among medical students at Addis Ababa University.

Chapter 6: Summary, Conclusions and Recommendations

6.1.Summary

In this study, 323 undergraduate medical students from Addis Ababa University participated in assessing the prevalence, causes, and coping mechanisms of perceived stress. Based on the Perceived Stress Scale (PSS-10), 32.8% of the respondents experienced a high level of perceived stress, while 67.2% reported a low level, with an overall mean score of 20.71 ± 7.36 . This prevalence is consistent with global evidence, indicating that stress is a common experience among medical students due to academic and personal challenges.

The findings revealed that academic-related stressors were the strongest predictors of high perceived stress (AOR = 2.505; $p = 0.005$). Students in their first year were found to be significantly more stressed compared to those in higher years, particularly 2 and 6 year students (AOR = 0.231 and 0.143, respectively), suggesting that adaptation and experience reduce stress over time. However, demographic factors such as gender, age, and marital status were not significant predictors of perceived stress in this study. The high stress among early year students may be attributed to academic transitions, heavy workload, and limited coping experience.

According to the Brief COPE scale, the average coping score was 69.40 ± 14.53 , coping strategies among participants. Adaptive coping mechanisms such as seeking informational support (AOR = 0.736; $p = 0.039$) and acceptance (AOR = 0.799; $p = 0.044$) were found to be protective against stress. In contrast, maladaptive coping strategies particularly self-blame (AOR = 1.283; $p = 0.034$) and avoidance were associated with higher stress levels. Interestingly, communication (AOR = 15.58; $p = 0.009$) and religious coping (AOR = 1.294; $p = 0.040$)

showed positive associations with stress, reflecting complex individual and cultural dynamics in coping behavior.

6.2.Conclusions

The findings of this study revealed that significant proportion of the respondents experienced high perceived stress, emphasizing the urgent need for comprehensive interventions that address both academic and non-academic stressors. First-year students were identified as particularly vulnerable, primarily due to transitional challenges, limited coping skills, and the demands of adapting to a rigorous academic environment. This emphasizes the importance of implementing structured mentoring and orientation programs to ease their adjustment.

Furthermore, academic-related stressors emerged as the predominant source of stress among medical students, underscoring the necessity of academic support measures such as workload adjustments, flexible learning approaches, and stress management training. The study also found that maladaptive coping mechanisms, especially self-blaming, were significantly associated with higher perceived stress, while adaptive strategies such as acceptance and seeking informational support were effective in mitigating stress levels. Additionally, social interactions and religious coping, though widely used, demonstrated complex effects that could either alleviate or exacerbate stress depending on their quality and context. Therefore, guiding students toward constructive and health-promoting engagement in these areas is essential.

6.3.Recommendations

- ❖ The College of Health Sciences, School of Medicine at Addis Ababa University, should strengthen psychosocial support services by expanding counseling programs and creating safe spaces where students can openly discuss academic, emotional, and personal challenges.
- ❖ Orientation programs should be designed to introduce students to academic environment and to equip them with coping strategies, stress management techniques, and campus navigation skills.
- ❖ Based on the findings, adaptive coping strategies such as acceptance, problem solving and seeking informational support are associated with lower stress levels. Therefore, these strategies should be encouraged through workshops and peer support programs while discouraging maladaptive responses like self-blame.
- ❖ Since academic-related factors were identified as the main sources of stress, course loads, schedules, and assessment methods should be reviewed and adjusted to promote a more balanced and supportive academic experience.
- ❖ Future research should consider longitudinal and qualitative approaches to better understand changes in stress levels over time and gain deeper insights into the lived experiences of medical students.

References

- Aamir, I. S. (2017). Stress Level Comparison of Medical and Nonmedical Students: A Cross Sectional Study Done at Various Professional Colleges in Karachi, Pakistan. *Acta Psychopathologica*, 03(02). <https://doi.org/10.4172/2469-6676.100080>
- AAU. (2025). *Addis Ababa University*. Retrieved 26/03/25 from <https://aau.edu.et/pages/A-A-U-%20-S-e-r-v-i-c-e-s/%20%20detail?title=Tikur~Anbessa~Specialized~Hospital>
- Abdulghani, H. M., Alkanhal, A., Mahmoud, E., Ponnampuruma, G., & AlFaris, E. (2011). Stress and Its Effects on Medical Students: A Cross-Sectional Study at a College of Medicine in Saudi Arabia. *Journal of Health Population and Nutrition*, 29(5). <https://doi.org/10.3329/jhpn.v29i5.8906>
- Abebe, A. M., Kebede, Y. G., & Mengistu, F. A. (2018). Prevalence of Stress and Associated Factors Among Regular Students at Debre Birhan Governmental and Nongovernmental Health Science Colleges North Showa Zone, Amhara Region, Ethiopia 2016. *Psychiatry Journal*, 2018, 1-7. <https://doi.org/10.1155/2018/7534937>
- Abraham, J., Navya, C. J., & Joshy, V. M. (2019). Perceived Stress and Coping Strategies Among Post Graduate Students of a Medical College in Thrissur, Kerala. *International Journal of Community Medicine and Public Health*, 6(2), 814. <https://doi.org/10.18203/2394-6040.ijcmph20190213>
- Adomako-Saahene, N. (2019). *Assessment of Perceived Levels of Stress and Coping Mechanisms Among University Students*. Minnesota State University, Mankato.
- Ahmad, B., Ayub, W., Farman, M., & Rehman, A. (2022). Daily tasks management and stress in undergraduate medical students of peshawar. *Northwest journal of medical sciences*.

- Akbar, M. A.-F. Y., Karimah, A., Susilo, I., & Rejeki, P. S. (2024). The Correlation Between the Level of Depression and Religious Coping Among Medical Students Class of 2020 Universitas Airlangga. *Jurnal Psikiatri Surabaya*.
- Al-Dubai, S. A., Barua, A., Ganasegeran, K., Jadoo, S. A., & Rampal, K. G. (2014). Concurrent validity of the Malay version of Perceived Stress Scale (PSS-10). *Asian J Psychiatr*, 15(1), 8-13.
- Alfaro Vasquez, R., Carranza Esteban, R. F., Mamani-Benito, O., & Caycho-Rodríguez, T. (2022). Examining academic self-efficacy and perceived social support as predictors for coping with stress in Peruvian university students. *Frontiers in Education*,
- Alharbi, R. F., Alamri, D., & Ismail, A. (2023). Stress and Its Effects on Medical Students in Early Years. *Journal of Ecophysiology and Occupational Health*, 285-290.
<https://doi.org/10.18311/jeoh/2023/33896>
- Alrashed, F. A., Ahmad, T., Sattar, K., Aldaihan, M. M., Almurdi, M. M., Alrashed, L. K., Shaheen, A. A. M., & Alsubiheen, A. M. (2023). Impact of COVID-19 Pandemic on Stress and Coping Strategies Among Medical Students: A Cross-Sectional Study. *International Journal of Advanced and Applied Sciences*, 10(7), 195-202.
<https://doi.org/10.21833/ijaas.2023.07.021>
- AnnisaFaradila, AzimatulKarimah, & Irwadi3, I. (2023). The Relationship between Religious Coping and Resilience in Universitas Airlangga Medical Students Class of 2020 in Pandemic Time. *Jurnal Psikiatri Surabaya*.
- Anuradha, R., Dutta, R., Raja, D., Sivaprakasam, P., & Patil, A. B. (2017). Stress and Stressors Among Medical Undergraduate Students: A Cross-Sectional Study in a Private Medical

- College in Tamil Nadu. *Indian Journal of Community Medicine*, 42(4), 222.
https://doi.org/10.4103/ijcm.ijcm_287_16
- Asfaw, H., Fekadu, G., Tariku, M., & Oljira, A. (2021). Anxiety and Stress Among Undergraduate Medical Students of Haramaya University, Eastern Ethiopia. *Neuropsychiatric Disease and Treatment*, Volume 17, 139-146.
<https://doi.org/10.2147/ndt.s290879>
- Azale, T., Fekadu, A., Medhin, G., & Hanlon, C. (2018). Coping strategies of women with postpartum depression symptoms in rural Ethiopia: a cross-sectional community study. *BMC Psychiatry*, 18(1), 41.
- Bamuhair, S. S., Farhan, A. I. A., Althubaiti, A., Agha, S., Rahman, S. U., & Ibrahim, N. O. (2015). Sources of Stress and Coping Strategies Among Undergraduate Medical Students Enrolled in a Problem-Based Learning Curriculum. *Journal of Biomedical Education*, 2015, 1-8. <https://doi.org/10.1155/2015/575139>
- Beltzer, M., Nock, M. K., Peters, B. J., & Jamieson, J. P. (2014). Rethinking Butterflies: The Affective, Physiological, and Performance Effects of Reappraising Arousal During Social Evaluation. *Emotion*, 14(4), 761-768. <https://doi.org/10.1037/a0036326>
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. *International journal of behavioral medicine*, 4(1), 92-100.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: a theoretically based approach. *Journal of personality and social psychology*, 56(2), 267.
- Chiong, A. E., Corpus, E. J. D., Coralde, S. P. L., Coronel, N. K. A., Chuatak, J. T. Y., Cruz, L. L. A., Bries, F. S. M., & Rozul, C. D. A. (2024). Development and Validation of a Stressor-

- Coping Style Scale for Students in a Public Medical School. *Acta Medica Philippina*.
<https://doi.org/10.47895/amp.vi0.8599>
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley & Sons.
- Cohen, S. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health* (pp. 31–67). Sage Publications.
- Dachew, B. A., Biftu, B. B., Tiruneh, B. T., Anlay, D. Z., Wassie, M. A., & Betts, K. (2019). Prevalence and determinants of mental distress among university students in Ethiopia: A systematic review protocol. *Systematic Reviews*, 8(1), 78. <https://doi.org/10.1186/s13643-019-0966-z>
- Dahanayake, K. S., Udesha, K. S., Yasassri, R. G. C., Perera, K. U., Gunarathna, R. A. S. B., & Peries, W. A. N. N. (2024). Prevalence of Psychological Distress and Associated Coping Mechanisms of Undergraduate Medical Students in Selected Universities in Western Province. 26. <https://doi.org/10.31705/fomaas.2024.7>
- Ding, Y., Fu, X., Liu, R., Hwang, J., Hong, W., & Wang, J. (2021). The impact of different coping styles on psychological distress during the COVID-19: the mediating role of perceived stress. *International Journal of Environmental Research and Public Health*, 18(20), 10947.
- Durand-Bush, N., McNeill, K., Harding, M., & Dobransky, J. (2015). Investigating stress, psychological well-being, mental health functioning, and self-regulation capacity among university undergraduate students: is this population optimally functioning? *Canadian Journal of Counselling and Psychotherapy*, 49(3).

- Dyrbye, L. N., Thomas, M. R., & Shanafelt, T. D. (2005). Medical student distress: causes, consequences, and proposed solutions. *Mayo Clinic Proceedings*,
- Feder, A., Nestler, E. J., & Charney, D. S. (2009). Psychobiology and Molecular Genetics of Resilience. *Nature Reviews Neuroscience*, 10(6), 446-457.
<https://doi.org/10.1038/nrn2649>
- Findyartini, A., Greviana, N., Putera, A. M., Sutanto, R. L., Saki, V. Y., & Felaza, E. (2021). The Relationships Between Resilience and Student Personal Factors in an Undergraduate Medical Program. *BMC Medical Education*, 21(1). <https://doi.org/10.1186/s12909-021-02547-5>
- Fonseca, S. M., Cunha, S., Faria, S., Campos, R., & Queiros, C. (2021). Why are emergency medical technicians' coping strategies dysfunctional? Direct and indirect effects of resilience and perceived stress. *International emergency nursing*, 56, 100995.
- Gazzaz, Z. J., Baig, M., Bader Salem Mana Al, A., Mohammed Mahdi Owaid Al, S., Alhendi, A. S. A., Al-Grad, M. S. H., & Qurayshah, M. A. A. (2018). Perceived Stress, Reasons for and Sources of Stress Among Medical Students at Rabigh Medical College, King Abdulaziz University, Jeddah, Saudi Arabia. *BMC Medical Education*, 18(1).
<https://doi.org/10.1186/s12909-018-1133-2>
- Gbenga, J. B., & David, B. T. (2015). Influential determinants of capacity building to cope with stress among university students. *Journal of Sports and Physical Education*, 2(3), 48-53.
- Gelayee, D. A. (2017). Self-Medication Pattern Among Social Science University Students in Northwest Ethiopia. *Journal of Pharmaceutics*, 2017, 1-5.
<https://doi.org/10.1155/2017/8680714>

- Geravand, F., & Shokri, O. (2009). Academic stressors and reactions to stressors: Testing the mediating effects of coping styles. *Journal of Modern Psychological Researches*, 3(12), 101-122.
- Gurvich, C., Thomas, N., Thomas, E. H., Hudaib, A.-R., Sood, L., Fabiatos, K., Sutton, K., Isaacs, A., Arunogiri, S., & Sharp, G. (2021). Coping styles and mental health in response to societal changes during the COVID-19 pandemic. *International journal of social psychiatry*, 67(5), 540-549.
- Haider, S. I., Ahmed, F., Pasha, H., Pasha, H., Farheen, N., & Zahid, M. T. (2022). Life Satisfaction, Resilience and Coping Mechanisms Among Medical Students During COVID-19. *Plos One*, 17(10), e0275319. <https://doi.org/10.1371/journal.pone.0275319>
- Hasanah, U., Oktaviani, M., Elmanora, E., Zulfa, V., Mulyati, M., & Kabbaro, H. (2022). Mental health, academic stress, and coping strategy among college students.
- Heinen, I., Bullinger, M., & Kocalevent, R. D. (2017). Perceived Stress in First Year Medical Students - Associations With Personal Resources and Emotional Distress. *BMC Medical Education*, 17(1). <https://doi.org/10.1186/s12909-016-0841-8>
- Hill, M. N., Helleman, K. G. C., Verma, P., Gorzalka, B. B., & Weinberg, J. (2012). Neurobiology of Chronic Mild Stress: Parallels to Major Depression. *Neuroscience & Biobehavioral Reviews*, 36(9), 2085-2117. <https://doi.org/10.1016/j.neubiorev.2012.07.001>
- Hobfoll, S. E. (2001). The Influence of Culture, Community, and the Nested-Self in the Stress Process: Advancing Conservation of Resources Theory. *Applied Psychology*, 50(3), 337-421. <https://doi.org/10.1111/1464-0597.00062>

- Hong, B. K. (2022). Mediating Effect of Stress Coping Method in the Relationship Between Covid-19 Stress and Academic Burnout of College Students. *Han'gug hag'gyo bo'geon gyoyug haghoeji*. <https://doi.org/10.35133/kssche.20221130.01>".
- Hurissa, B. F., Koricha, Z. B., & Dadi, L. S. (2022). Challenges and Coping Mechanisms Among Women Living With Unrepaired Obstetric Fistula in Ethiopia: A Phenomenological Study. *Plos One*, 17(9), e0275318. <https://doi.org/10.1371/journal.pone.0275318>
- Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of studies of depression prevalence in university students. *Journal of psychiatric research*, 47(3), 391-400.
- Ingram, R. E., & Luxton, D. D. (2005). Vulnerability-Stress Models. 32-46. <https://doi.org/10.4135/9781452231655.n2>
- Isa, Z. M., Anuar, A. A., Azmi, A. D., Selvan, S. T., Hisham, N. S., & Qing, Y. (2021). Does Caffeine Intake Influence Mental Health of Medical Students? *Malaysian Journal of Public Health Medicine*, 21(2), 22-28. <https://doi.org/10.37268/mjphm/vol.21/no.2/art.626>
- Jamieson, J. P., Nock, M. K., & Mendes, W. B. (2012). Mind Over Matter: Reappraising Arousal Improves Cardiovascular and Cognitive Responses to Stress. *Journal of Experimental Psychology General*, 141(3), 417-422. <https://doi.org/10.1037/a0025719>
- Javed, K., Nazir, A., & Malik, Z. (2023). Stress and Coping Skills Among Undergraduate Medical Students- A Cross Sectional Study. *Pakistan Postgraduate Medical Journal*, 34(02), 73-76. <https://doi.org/10.51642/ppmj.v34i02.488>

- Jones, F. M. E., Fellows, J., & Horné, D. (2011). Coping With Cancer: A Brief Report on Stress and Coping Strategies in Medical Students Dealing With Cancer Patients. *Psycho-Oncology*, 20(2), 219-223. <https://doi.org/10.1002/pon.1751>
- Kebede, M. A., Anbessie, B., & Ayano, G. (2019). Prevalence and Predictors of Depression and Anxiety Among Medical Students in Addis Ababa, Ethiopia. *International Journal of Mental Health Systems*, 13(1). <https://doi.org/10.1186/s13033-019-0287-6>
- Kelemu, R. T., Kahsay, A. B., & Ahmed, K. Y. (2020). Prevalence of Mental Distress and Associated Factors Among Samara University Students, Northeast Ethiopia. *Depression Research and Treatment*, 2020, 1-7. <https://doi.org/10.1155/2020/7836296>
- Kim, Y. R. (2025). Stress and Coping Skills in Medical Students. *Korean Journal of Medical Education*, 37(1), 59-63. <https://doi.org/10.3946/kjme.2025.323>
- Kim, Y. R., Park, H. J., Koo, B. H., Hwang, J. Y., & Lee, Y. H. (2022). A Study on the Mental Health of Students at a Medical School During COVID-19 Outbreak: A Retrospective Study. *Journal of Yeungnam Medical Science*, 39(4), 314-321. <https://doi.org/10.12701/jyms.2022.00437>
- Krägeloh, C. U. (2011). A systematic review of studies using the Brief COPE: Religious coping in factor analyses. *Religions*, 2(3), 216-246.
- Kumar, S., S, K., Kulkarni, P., Siddalingappa, H., & Manjunath, R. (2016). Depression, Anxiety and Stress Levels Among Medical Students in Mysore, Karnataka, India. *International Journal of Community Medicine and Public Health*, 359-362. <https://doi.org/10.18203/2394-6040.ijcmph20151591>

- Kurokawa, K., Tanahashi, T., Murata, A., Akaike, Y., Katsuura, S., Nishida, K., Masuda, K., Kuwano, Y., Kawai, T., & Rokutan, K. (2011). Effects of Chronic Academic Stress on Mental State and Expression Of glucocorticoid Receptor A and B Isoforms in Healthy Japanese Medical Students. *Stress*, 14(4), 431-438. <https://doi.org/10.3109/10253890.2011.555930>
- Lapinski, J., & Sexton, P. (2014). Still in the Closet: The Invisible Minority in Medical Education. *BMC Medical Education*, 14(1). <https://doi.org/10.1186/1472-6920-14-171>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company.
- Lemesa, D., & Abeshu, G. (2017). Assessment of perceived sources, consequences and coping mechanisms of stress among wolkite university first year regular students: a descriptive survey study.
- Liu, J. J. W. (2021). Stress: Conceptualization, Framing, and Induction. <https://doi.org/10.32920/ryerson.14663853>
- Liu, Z., Liu, R., Zhang, Y., Zhang, R., Liang, L., Wang, Y., Wei, Y., Zhu, R., & Wang, F. (2021). Association Between Perceived Stress and Depression Among Medical Students During the Outbreak of COVID-19: The Mediating Role of Insomnia. *Journal of Affective Disorders*, 292, 89-94. <https://doi.org/10.1016/j.jad.2021.05.028>
- Liyanage, G. (2017). Psychological Distress Among Final Year Medical Undergraduates in a Sri Lankan University. *International Journal of Community Medicine and Public Health*, 4(11), 3952. <https://doi.org/10.18203/2394-6040.ijcmph20174483>

- Loubir, D. B., Serhier, Z., Diouny, S., Battas, O., Agoub, M., & Othmani, M. B. (2014). Prevalence of Stress in Casablanca Medical Students: A Cross-Sectional Study. *Pan African Medical Journal*, 19. <https://doi.org/10.11604/pamj.2014.19.149.4010>
- Lynette, J. V. d. M., Botha, A., & Joubert, G. (2020). Resilience and Coping Strategies of Undergraduate Medical Students at the University of the Free State. *South African Journal of Psychiatry*, 26. <https://doi.org/10.4102/sajpsychiatry.v26i0.1471>
- Lyons, D. M. (2009). Developmental Cascades Linking Stress Inoculation, Arousal Regulation, and Resilience. *Frontiers in Behavioral Neuroscience*, 3. <https://doi.org/10.3389/neuro.08.032.2009>
- Mansoor, S., Azad, N., Zubair, U. B., & Khan, K. H. (2021). Association of Perceived Stress and Coping Strategies With Depressive Symptoms in Students at a Private Medical College in Islamabad. *Pakistan Armed Forces Medical Journal*, 71(5), 1676-1681. <https://doi.org/10.51253/pafmj.v71i5.4770>
- Masilamani, R., Jabbar, M. A., Liang, C. S., You, H. L. S., Jonathan, L. J. K., Pei-Suen, W., Yuan, Y., & Ling, Y. M. (2020). Stress, Stressors, and Coping Strategies Between Pre-Clinical and Clinical Medical Students at Universiti Tunku Abdul Rahman. *Malaysian Journal of Public Health Medicine*, 20(1), 175-183. <https://doi.org/10.37268/mjphm/vol.20/no.1/art.503>
- Mekonnen, C. K., Abate, H. K., Beko, Z. W., Zegeye, A. F., & Azagew, A. W. (2024). Prevalence of depression among medical students in Africa: Systematic review and meta-analysis. *Plos One*, 19(12), e0312281. <https://doi.org/10.1371/journal.pone.0312281>

- Melaku, L., & Bulcha, G. (2020). The depression, anxiety, and stress and their sociodemographic correlates among undergraduate medical students of Arsi University, Southeast Ethiopia. *International Journal of Health & Allied Sciences*, 9(2), 105-105.
- Melaku, L., Mossie, A., & Negash, A. (2015). Stress Among Medical Students and Its Association With Substance Use and Academic Performance. *Journal of Biomedical Education*, 2015, 1-9. <https://doi.org/10.1155/2015/149509>
- Meron, G. (2017). *Mental Distress Among Medical Students Of Addis Ababa University ,Ethiopia,A Follow Up Study* Addis Ababa University].
- Minhas, F., Mujtaba, M. A., Jamil, S., Javed, U., Rabbani, M. W., & Minhas, I. (2019). Comparative Analysis of Perceived Medical School Stress Among Freshman & Graduate Year Senior Students. *Annals of Psychophysiology*, 6, 30-34. <https://doi.org/10.29052/2412-3188.v6.i1.2019.30-34>
- Misra, R., & Castillo, L. G. (2004). Academic stress among college students: Comparison of American and international students. *International Journal of stress management*, 11(2), 132.
- Mohammed, H. E., Bady, Z., Abdelhamid, Z. G., Elawfi, B., AboElfarh, H. E., Elboraay, T., & Abdel-Salam, D. M. (2024). Factors influencing stress and resilience among Egyptian medical students: a multi-centric cross-sectional study. *BMC Psychiatry*, 24(1), 393.
- 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), 765-767.

- Mousa, O. Y., Dhamoon, M. S., Lander, S., & Dhamoon, A. S. (2016). The MD Blues: Under-Recognized Depression and Anxiety in Medical Trainees. *Plos One*, 11(6), e0156554. <https://doi.org/10.1371/journal.pone.0156554>
- Mujinya, R., Kalange, M., Ochieng, J. J., Ninsiima, H. I., Eze, E. D., Afodun, A. M., Nabirumbi, R., Sulaiman, S. O., Kairania, E., Echoru, I., Okpanachi, A. O., Matama, K., Asimwe, O. H., Nambuya, G., Usman, I. M., Osuwat, L. O., Zirintunda, G., Ssempijja, F., Nansunga, M., . . . Kasozi, K. I. (2022). Cerebral Cortical Activity During Academic Stress Amongst Undergraduate Medical Students at Kampala International University (Uganda). *Frontiers in Psychiatry*, 13. <https://doi.org/10.3389/fpsyt.2022.551508>
- Nadelson, C. C., Notman, M. T., & Poussaint, A. F. (1977). Early clinical experience in behavioral science teaching. *J Med Educ*, 52(8), 683-685. <https://doi.org/10.1097/00001888-197708000-00013>
- Naidoo, S., Van Wyk, J., Higgins-Opitz, S. B., & Moodley, K. (2014). An evaluation of stress in medical students at a South African university. *South African Family Practice*, 56(5), 258-262.
- Nigist, W. (2019). Subjective experience of distress and perception towards care among medical students receiving counselling services at student counselling clinic, College of Health Sciences, AAU; a qualitative study. Addis Ababa University].
- Noordeen, F., Jayathilaka, T., Pitchai, F. N. N., Yapa, H. R. N., Jayarathne, I., Nawarathne, T., Piyasena, I. R. N., Priyanka, M., Shivanka, J. V. P. G., Uden, T., Yeshi, S., Gurung, R., Ifla, M. I. F., & Dorji, K. (2018). Stress Coping Mechanisms Practiced by Medical

- Undergraduates of a State Medical School in Sri Lanka. *Sri Lanka Journal of Social Sciences*, 41(2), 101. <https://doi.org/10.4038/sljss.v41i2.7697>
- Okoro, E. (2018). *Assessment of stress related issues & coping mechanisms among college students*. Minnesota State University, Mankato.
- Okoye, O. C. (2022). Perceived Stress and Stressors among Undergraduate Medical Students of a Nigerian Institution. *Malawi Medical Journal*, 34, 245 - 251.
- Oku, A., Owoaje, E., Oku, O., & Ikpeme, B. (2015). Prevalence of stress, stressors and coping strategies among medical students in a Nigerian medical school. *Afr J Med Health Sci*, 14(1), 29.
- Paudel, A., Koirala, N. R., Upadhyay, S., Mishra, R., Karki, D., & Koirala, A. (2024). Stress Among Undergraduate Medical Students in a Medical College of Nepal. *Birat Journal of Health Sciences*.
- Paudel, U., Parajuli, A., Shrestha, R., Kumari, S., Yadav, S. A., & Marahatta, K. (2022). Perceived Stress, Sources of Stress and Coping Strategies Among Undergraduate Medical Students of Nepal: A Cross-Sectional Study. *F1000research*, 11, 167. <https://doi.org/10.12688/f1000research.75879.1>
- Pedrozo-Pupo, J. C., Pedrozo-Cortés, M. J., & Campo-Arias, A. (2020). Perceived stress associated with COVID-19 epidemic in Colombia: an online survey. *Cad Saude Publica*, 36(5), e00090520. <https://doi.org/10.1590/0102-311x00090520>
- Pitanupong, J. (2020). Stress and Coping Strategies Among Thai Medical Students in a Southern Medical School. *Siriraj Medical Journal*, 72(3), 238-244. <https://doi.org/10.33192/smj.2020.32>

- Puthran, R., Zhang, M., Tam, W., & Ho, R. (2016). Prevalence of Depression Amongst Medical Students: A Meta-Analysis. *Medical Education*, 50(4), 456-468. <https://doi.org/10.1111/medu.12962>
- Quek, T. C., Tam, W., Tran, B. X., Zhang, M., Zhang, Z., Ho, C. S. H., & Ho, R. (2019). The Global Prevalence of Anxiety Among Medical Students: A Meta-Analysis. *International Journal of Environmental Research and Public Health*, 16(15), 2735. <https://doi.org/10.3390/ijerph16152735>
- Rahman, D. K., Nadeem, A., & Riaz, B. (2022). Perceived Stress, the Sources, Severity and Coping Mechanisms Among Undergraduate Medical Students in a Pakistani Medical School. *Pakistan Armed Forces Medical Journal*, 72(4), 1379-1383. <https://doi.org/10.51253/pafmj.v72i4.5682>
- Rahman, S. U., Rizwan, H. C., Khan, M. A. W., Malik, S. B., & Minhas, I. A. (2022). The Relationship of Coping Strategies With Stress, Anxiety and Depression Among Medical Students. *J Pak Psychiatr Soc*, 19(01), 7-11. <https://doi.org/10.63050/jpps.19.01.134>
- Rahmi, A., Karimah, A., & Rehatta, N. M. (2019). Original Article: Cause of Stress and Coping Mechanism Among Medical Students Year 2013 – 2015 in Universitas Airlangga. *Jurnal Kedokteran Syiah Kuala*, 19(2). <https://doi.org/10.24815/jks.v19i2.18056>
- Rosiek, A., Rosiek-Kryszewska, A., Leksowski, Ł., & Leksowski, K. (2016). Chronic Stress and Suicidal Thinking Among Medical Students. *International Journal of Environmental Research and Public Health*, 13(2), 212. <https://doi.org/10.3390/ijerph13020212>

- Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J., Peluso, M. J., Guille, C., Sen, S., & Mata, D. A. (2016). Prevalence of Depression, Depressive Symptoms, and Suicidal Ideation Among Medical Students. *Jama*, 316(21), 2214. <https://doi.org/10.1001/jama.2016.17324>
- Saeed, A. A., Bahnassy, A., Al-Hamdan, N., Almudhaibery, F. S., & Alyahya, A. Z. (2016). Perceived Stress and Associated Factors Among Medical Students. *Journal of Family and Community Medicine*, 23(3), 166. <https://doi.org/10.4103/2230-8229.189132>
- Sahile, A. T., Ababu, M., Alemayehu, S., Abebe, H., Endazenew, G., Wubshet, M., Getachew, H., & Tadesse, T. (2021). Prevalence and Severity of Homestay Followed Depression, Anxiety, and Stress During Pandemics of Covid-19 Among College Students in Addis Ababa, Ethiopia, 2020. A Cross Sectional Survey. *Journal of Psychology & Clinical Psychiatry*, 12(1), 5-8. <https://doi.org/10.15406/jpcpy.2021.12.00695>
- Saravanan, C., & Wilks, R. (2014). Medical Students' Experience of and Reaction to Stress: The Role of Depression and Anxiety. *The Scientific World Journal*, 2014, 1-8. <https://doi.org/10.1155/2014/737382>
- Sattar, K., Meo, S. A., & Yusoff, M. S. B. (2024). Decoding the Interplay of Medical Professionalism, Mental Well-Being, and Coping in Undergraduate Medical Students Across Culture: Using Structural Equation Modeling. *Frontiers in Medicine*, 11. <https://doi.org/10.3389/fmed.2024.1468654>
- Seo, E. H., Kim, S.-G., Lee, J.-H., Dickey, C. C., Kim, M. Y., Ghumman, R. K., & Yoon, H.-J. (2023). Psychosocial Factors Influencing Quality of Life Among Medical Students. *Psychiatry Investigation*, 20(11), 1077-1085. <https://doi.org/10.30773/pi.2023.0161>

- Shah, M., Hasan, S., Malik, S., & Sreeramareddy, C. T. (2010). Perceived stress, sources and severity of stress among medical undergraduates in a Pakistani medical school. *BMC Medical Education*, 10(1), 2.
- Shankar, P. R., Cox, A., Leon, G., Kumaresan, E., & Dakubo, G. D. (2019). Stress and Coping Strategies Among Undergraduate Nursing and Medical Students at American International Medical University, St Lucia. *Education in Medicine Journal*, 10(4), 23-30. <https://doi.org/10.21315/eimj2018.10.4.3>
- Shiraly, R., Roshanfekar, A., & Griffiths, M. D. (2023). Psychological Distress, Social Media Use, and Academic Performance of Medical Students: The Mediating Role of Coping Style. <https://doi.org/10.21203/rs.3.rs-2579265/v1>
- Shoda, M. A., & Titiloye, M. A. (2019). Perceived Stress and Coping Mechanism Among Medical Students of University of Ibadan, Nigeria. *Acta Scientifci Nutritional Health*, 3(9), 128-134. <https://doi.org/10.31080/asnh.2019.03.0414>
- Shoji, K., Noguchi, N., Waki, F., Saito, T., Kitano, M., Edo, N., Koga, M., Toda, H., Kobayashi, N., Sawamura, T., & Nagamine, M. (2024). Empathy and Coping Strategies Predict Quality of Life in Japanese Healthcare Professionals. *Behavioral Sciences*, 14(5), 400. <https://doi.org/10.3390/bs14050400>
- Shpakou, A., Naumau, I., Krestyaninova, T. Y., Znatnova, A. V., Lollini, S. V., Surkov, S., & Kuzniatsou, A. (2022). Physical Activity, Life Satisfaction, Stress Perception and Coping Strategies of University Students in Belarus During the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*, 19(14), 8629. <https://doi.org/10.3390/ijerph19148629>

- Siddiqui, N., Satpathy, P., Parida, D., & Sutar, R. (2021). Prevalence of Stress, Stressors, and Coping Strategies Among Medical Undergraduate Students in a Medical College of Mumbai. *Journal of Education and Health Promotion*, 10(1), 318. https://doi.org/10.4103/jehp.jehp_1395_20
- Siripongpan, A., Namkune, T., Uthansakul, P., Jumphoo, T., & Duangmanee, P. (2022). Stress Among Medical Students Presented With an EEG at Suranaree University of Technology, Thailand. *Health Psychology Research*, 10(2). <https://doi.org/10.52965/001c.35462>
- Sonawane, S., Sharma, H., & Tetarbe, T. (2022). To Study the Influence of Stress Level With Obesity in Medical Students of India. *Ip International Journal of Forensic Medicine and Toxicological Sciences*, 6(4), 153-157. <https://doi.org/10.18231/j.ijfmts.2021.032>
- Sukeri, N. S. s., Mazzuki, N. F. A., Abdullah, M. I., Jaffer, U., Mohd Kadri, N., & Che Mohd Nassir, C. M. N. (2024). MENTAL HEALTH, RELIGIOSITY, AND RELIGIOUS COPING: A CROSS-SECTIONAL STUDY AMONG MEDICAL AND HEALTH SCIENCES STUDENTS. *International Journal of Education, Psychology and Counseling*.
- Swaminathan, A., Viswanathan, S., Gnanadurai, T., Ayyavoo, S., & Manickam, T. (2015). Perceived stress and sources of stress among first-year medical undergraduate students in a private medical college Tamil Nadu. *National Journal of Physiology, Pharmacy and Pharmacology*, 6(1), 9-9.
- Tariq, R., Fragaki, M., Jabeen, A., Murtaza, S., Dastgir, H., & Khalid, L. (2023). Stress and Coping Strategies Among Postgraduate Medical Students in Lahore. *The Healer Journal*

- of Physiotherapy and Rehabilitation Sciences*, 3(3), 415-422.
<https://doi.org/10.55735/hjprs.v3i3.140>
- S. Thangaraj, & L. D'souza. (2014). Prevalence of stress levels among first year medical undergraduate students. 1, 176–181.
https://www.researchgate.net/publication/284313895_Prevalence_of_stress_levels_among_first_year_medical_undergraduate_students
- Timothy, A., Saxena, S., Mani, R., Dwivedi, A. K., & Ryali, V. S. R. (2019). Association of Educational Stress With Depression, Anxiety, and Substance Use Among Medical and Engineering Undergraduates in India. *Industrial Psychiatry Journal*, 28(2), 160.
https://doi.org/10.4103/ipj.ipj_3_20
- Tsegay, L., Shumet, S., Damene, W., Gebreegziabhier, G., & Ayano, G. (2019). Prevalence and determinants of test anxiety among medical students in Addis Ababa Ethiopia. *BMC Medical Education*, 19, 1-10.
- Ukeh, M. I., Hassan, A. S., & Dauda, I. A. (2023). Stress and Coping Strategies as Predictors of Psychological Wellbeing Among Nigeria University Students.
- Vetrivel, S., Saravanan, T., Maheswari, R., & Arun, V. (2024). Coping Mechanisms for Stress Among Students at Universities. In *Student Well-Being in Higher Education Institutions* (pp. 157-186). IGI Global.
- Wahid, M. H., Triastari, S. K., Amirah, S., & Zhuhra, R. T. (2025). Exploring the Adaptation Processes of First-Year Medical Students: A Mixed-Method Study. *Education in Medicine Journal*, 17(1), 129-148. <https://doi.org/10.21315/eimj2025.17.1.10>

- Wassif, G. O., Gamal-Eldin, D., & Boulos, D. N. K. (2019). Stress and Burnout Among Medical Students. *Journal of High Institute of Public Health*, 0(0), 189-197.
<https://doi.org/10.21608/jhiph.2019.63794>
- World Health Organization. (2020). *Stress*. <https://www.who.int/news-room/questions-and-answers/item/stress>
- Xiong, P., Ming, W. K., Zhang, C., Bai, J., Luo, C., Cao, W., Zhang, F., & Tao, Q. (2021). Factors Influencing Mental Health Among Chinese Medical and Non-Medical Students in the Early Stage of COVID-19 Pandemic. <https://doi.org/10.21203/rs.3.rs-139929/v1>
- Yasmeen, Q., Yasmeen, N., & Yasmeen, S. (2024). Stress Levels and the Factors Associated With Perceived Stress Among Medical Students. *Journal of Rehman Medical Institute*, 9(4), 22-25. <https://doi.org/10.52442/jrmi.v9i4.596>
- Yizengaw, M. A., Mamo, G., Abdu, S., & Terefe, B. (2021). Perceived Stress and Coping Strategies Among Undergraduate Health Science Students of Jimma University Amid the COVID-19 Outbreak: Online Cross-Sectional Survey. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.639955>
- Yusoff, M. S. B., Rahim, A. F. A., & Yaacob, M. J. (2010). The development and validity of the Medical Student Stressor Questionnaire (MSSQ). *ASEAN journal of psychiatry*, 11(1), 231-235.

Appendix A

Table A1:

Collinearity test (Tolerance and VIF)

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	-.122	.182		-.673	.501	-.480	.235		
gender	.058	.049	.061	1.182	.238	-.038	.154	.901	1.109
age	-.078	.056	-.114	-1.401	.162	-.188	.032	.362	2.759
marital	.062	.075	.045	.822	.411	-.086	.210	.801	1.248
year	-.017	.021	-.065	-.822	.412	-.058	.024	.384	2.605
studyhrs	.041	.026	.087	1.579	.115	-.010	.093	.786	1.273
workload	.101	.026	.209	3.810	.000	.049	.153	.798	1.253
sleephrs	-.066	.029	-.123	-2.290	.023	-.122	-.009	.827	1.209
havesupportsys	-.018	.064	-.016	-.286	.775	-.144	.108	.790	1.266
communic	.045	.024	.103	1.887	.060	-.002	.092	.801	1.249
subsfreq	.024	.027	.051	.911	.363	-.028	.077	.757	1.321

arsMean	.121	.046	.225	2.626	.009	.030	.212	.327	3.058
srsMean	-.042	.035	-.088	-1.210	.227	-.110	.026	.454	2.205
garsMean	-.042	.039	-.093	-1.080	.281	-.120	.035	.322	3.108
c119	-.010	.020	-.033	-.504	.615	-.048	.029	.552	1.813
c38	.004	.018	.016	.233	.816	-.032	.040	.493	2.029
c411	.022	.016	.094	1.373	.171	-.009	.053	.506	1.975
c616	.007	.019	.028	.388	.698	-.030	.045	.461	2.167
c921	-.008	.019	-.026	-.391	.696	-.046	.031	.542	1.845
c1326	.032	.017	.122	1.808	.072	-.003	.066	.527	1.899
c27	-.008	.021	-.029	-.382	.703	-.050	.034	.412	2.426
c515	.013	.020	.047	.648	.517	-.026	.051	.461	2.171
c1023	-.033	.023	-.111	-1.450	.148	-.078	.012	.410	2.441
c1217	.022	.019	.082	1.159	.247	-.016	.061	.481	2.079
c1425	.004	.022	.013	.160	.873	-.040	.047	.382	2.621
c2024	-.037	.019	-.140	-1.943	.053	-.075	.000	.461	2.168
c1828	-.013	.016	-.047	-.787	.432	-.044	.019	.672	1.488
c2227	.034	.018	.146	1.905	.058	-.001	.070	.407	2.457

a. Dependent Variable: dependent

Table A2

Collinearity diagnostics

Collinearity Diagnostics ^a																																
Model	Dimension	Eigenvalue	Condition Index	(Constant)	Variance Proportions																											
					gender	age	marital	year	studyhrs	workload	sleephrs	havesupports ys	communic	subsfreq	arsMean	srsMean	garsMean	c119	c38	c411	c616	c921	c1326	c27	c515	c1023	c1217	c1425	c2024	c1828	c2227	
1	1	23.588	1.000		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	2	.926	5.048		.00	.03	.00	.66	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	3	.614	6.199		.00	.76	.00	.07	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	4	.483	6.989		.00	.00	.00	.01	.01	.00	.00	.43	.01	.04	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	5	.360	8.095		.00	.00	.00	.01	.01	.01	.02	.03	.00	.00	.11	.00	.00	.00	.00	.01	.02	.01	.00	.00	.00	.01	.00	.01	.00	.01	.00	
	6	.338	8.356		.00	.01	.00	.02	.01	.00	.07	.01	.01	.00	.11	.00	.00	.00	.00	.03	.07	.01	.00	.00	.00	.00	.00	.00	.00	.02	.00	
	7	.277	9.228		.00	.10	.01	.05	.04	.00	.07	.17	.19	.01	.06	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	8	.230	10.127		.00	.02	.00	.01	.01	.00	.23	.09	.04	.21	.18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	9	.158	12.231		.00	.00	.00	.00	.01	.00	.40	.10	.00	.46	.14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
	10	.135	13.212		.00	.00	.02	.05	.08	.02	.00	.03	.36	.01	.08	.00	.00	.00	.00	.00	.02	.01	.02	.00	.00	.00	.01	.00	.00	.06	.01	
	11	.111	14.573		.00	.00	.00	.00	.02	.01	.01	.02	.15	.07	.13	.00	.03	.02	.00	.00	.01	.00	.00	.03	.01	.00	.00	.00	.00	.00	.36	.00
	12	.096	15.644		.00	.00	.00	.00	.00	.09	.00	.04	.03	.00	.02	.01	.02	.03	.00	.10	.00	.00	.01	.22	.00	.00	.00	.05	.00	.00	.01	.00
	13	.084	16.800		.00	.00	.01	.00	.03	.24	.05	.03	.02	.05	.07	.01	.00	.00	.00	.04	.31	.05	.00	.04	.00	.02	.01	.01	.00	.00	.00	.01
	14	.082	16.988		.00	.00	.00	.01	.02	.07	.01	.00	.01	.05	.01	.01	.05	.01	.06	.04	.04	.14	.01	.03	.00	.04	.02	.00	.01	.01	.05	.00
	15	.068	18.602		.00	.00	.00	.00	.03	.23	.03	.00	.03	.02	.00	.00	.02	.01	.07	.06	.33	.03	.00	.04	.00	.00	.01	.00	.03	.00	.07	.01
	16	.057	20.408		.00	.00	.01	.00	.00	.01	.01	.00	.00	.00	.00	.01	.04	.01	.21	.01	.00	.00	.42	.00	.00	.02	.00	.00	.00	.00	.10	.07
	17	.055	20.621		.00	.01	.00	.00	.00	.09	.00	.01	.02	.01	.03	.00	.00	.00	.00	.18	.04	.01	.01	.04	.01	.18	.03	.00	.00	.18	.13	.08
	18	.052	21.398		.00	.00	.00	.00	.01	.00	.01	.00	.03	.00	.02	.00	.00	.00	.00	.20	.00	.24	.04	.05	.05	.00	.01	.21	.00	.11	.00	.07
	19	.043	23.441		.00	.00	.00	.01	.00	.02	.00	.00	.00	.00	.00	.01	.01	.04	.34	.07	.00	.03	.20	.14	.01	.18	.00	.01	.00	.01	.12	.01
	20	.040	24.342		.00	.01	.00	.00	.00	.00	.00	.00	.01	.02	.00	.00	.03	.03	.00	.04	.03	.11	.03	.09	.02	.10	.00	.17	.15	.13	.00	.17
	21	.039	24.603		.00	.00	.00	.00	.00	.00	.01	.00	.01	.01	.00	.00	.09	.00	.09	.13	.07	.09	.04	.00	.10	.02	.08	.01	.00	.21	.00	.25
	22	.033	26.858		.03	.01	.37	.05	.41	.02	.01	.00	.03	.00	.01	.00	.01	.00	.01	.01	.02	.00	.03	.00	.00	.08	.15	.00	.02	.01	.02	.04
	23	.030	28.231		.02	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.01	.23	.03	.05	.02	.01	.07	.16	.02	.05	.02	.07	.37	.02	.20	.00	.10
	24	.028	29.158		.02	.01	.06	.01	.05	.03	.00	.00	.00	.02	.00	.01	.02	.03	.04	.00	.00	.01	.00	.02	.50	.03	.28	.02	.01	.08	.02	.09
	25	.026	30.295		.05	.00	.06	.02	.09	.01	.00	.02	.00	.00	.00	.03	.19	.16	.01	.02	.01	.02	.00	.07	.17	.17	.20	.00	.06	.00	.00	.02
	26	.024	31.591		.02	.00	.00	.00	.01	.00	.02	.01	.00	.00	.00	.02	.23	.02	.08	.04	.00	.13	.00	.15	.03	.10	.01	.10	.64	.02	.00	.01
	27	.015	39.474		.04	.02	.19	.02	.10	.13	.03	.00	.02	.01	.00	.39	.00	.38	.01	.00	.01	.00	.03	.01	.03	.00	.03	.01	.04	.01	.00	.00
	28	.011	46.512		.01	.01	.26	.00	.09	.02	.00	.00	.01	.02	.00	.50	.02	.23	.00	.00	.01	.00	.00	.01	.02	.02	.09	.00	.00	.00	.00	.03
a. Dependent Variable: dependen																																

Table A3*Model fit*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	289.862	.319	.448
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Table A4

<i>Hosmer and Lemeshow Test</i>			
Step	Chi-square	df	Sig.
1	4.442	8	.836

Appendix B

Dear Participant, I am Liyana Behailu, a researcher from the Addis Ababa University, College of Education and Language Studies, School of Psychology, conducting a study titled " Stress among undergraduate medical students at Addis Ababa University Prevalence, cause and coping mechanisms." This research seeks to understand stress, associated factors, and coping strategies among medical students.

Your participation in this study is completely voluntary. The information you provide will be used solely for academic purposes and will be kept strictly confidential. Your responses will be recorded anonymously, and no identifying information will be collected or linked to your answers. You have the right to withdraw at any time without any negative consequences. By ticking the box below, you confirm that you have understood the purpose of the study and agree to participate.

I have read and understood the above information and voluntarily agree to participate in this study.

☐ Yes

☐ No

PART I: DEMOGRAPHIC CHARACTERISTICS

1. Age: ____ years

☐ <20

☐ 20 to 24

☐ >24

2. Gender:

☐ Male

☐ Female

3. Marital Status:

☐ Single

☐ Married

4. Year of Study:

☐ 1st Year

☐ 2nd Year

☐ 3rd Year

☐ 4th Year

☐ 5th Year

☐ 6th Year

PART II: STUDY-RELATED FACTORS

1. How many hours do you spend studying per week?

☐ Less than 10 hours

- ☐ 10–20 hours
- ☐ 20–30 hours
- ☐ More than 30 hours

2. How do you perceive the workload at the university?

- ☐ Very light
- ☐ Manageable
- ☐ Heavy
- ☐ Overwhelming

PART III: LIFESTYLE AND SUPPORT FACTORS

1. How often do you engage in physical exercise or sports?

- ☐ Never
- ☐ Occasionally
- ☐ 2–3 times a week
- ☐ More than 3 times a week

2. How many hours of sleep do you get per night on average?

- ☐ Less than 5 hours
- ☐ 5–6 hours
- ☐ 6–7 hours
- ☐ More than 7 hours

3. Do you have a support system (friends, family, or mentors) to help you cope with stress?

- ☐ Yes
- ☐ No

4. How often do you communicate with family members or friends?

☐ Never

☐ Rarely

☐ Occasionally

☐ Frequently

☐ Always

PART IV: SUBSTANCE USE AND OTHER FACTORS

1. Do you use any of the following substances regularly? (Check all that apply)

☐ Alcohol

☐ Tobacco

☐ Caffeine (coffee, tea, energy drinks)

☐ Drugs (e.g., recreational or prescription)

☐ None

2. How often do you use the substances listed above?

☐ Never

☐ Occasionally

☐ Frequently

☐ Very frequently

Appendix C

PART V: PERCIEVED STRESS SCALE (PSS10)

No.	PSS-10 Questions	Never (0)	Almost Never (1)	Sometimes (2)	Fairly Often (3)	Very Often (4)
1	In the last month, how often have you been upset because of something that happened unexpectedly?					
2	In the last month, how often have you felt that you were unable to control the important things in your life?					
3	In the last month, how often have you felt nervous and “stressed”?					
4*	In the last month, how often have you felt confident about your ability to handle personal problems? (<i>Reverse-scored</i>)					
5*	In the last month, how often have you felt that things were					

	going your way? (<i>Reverse-scored</i>)					
6	In the last month, how often have you found that you could not cope with all the things that you had to do?					
7*	In the last month, how often have you been able to control irritations in your life? (<i>Reverse-scored</i>)					
8*	In the last month, how often have you felt that you were on top of things? (<i>Reverse-scored</i>)					
9	In the last month, how often have you been angered because of things that were outside of your control?					
10	In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?					

Appendix D

PART VI: MEDICAL STUDENT STRESSOR QUESTIONNAIRE (MSSQ)

Stressor domain	Items	(1)	(2)	(3)	(4)	(5)
		No stress at all	Mild stress	Moderate stress	High stress	Severe stress
ARS	Tests/examinations					
	Falling behind in reading schedule					
	The large amount of content to be learned					
	Lack of time to review what has been learned					
	Heavy workload					
IRS	Verbal/physical/abuse by other student(s)					
	Verbal/physical/abuse by teacher(s)					
	Verbal/physical/abuse by personnel(s)					
	Conflict with teacher(s)					
TLRS	Not enough feedback from teacher(s)					

	Uncertainty of what is expected of me					
	Lack of recognition for work done					
SRS	Unable to answer questions from patients					
	Talking to patients about personal problems					
	Facing illness or death of the patients					
DRS	Unwillingness to study medicine					
	Parental wish for you to study medicine					
GARS	Participation in class presentation					
	Need to do well (imposed by others)					
	The feeling of incompetence					

Appendix E

PART VII: BRIEF COPE

The following questions ask how you have sought to cope with a hardship in your life. Read the statements and indicate how much you have been using each coping style.

Sno.	Items	(1)	(2)	(3)	(4)
		I haven't been doing this at all	A little bit	A medium amount	I've been doing this a lot
1	I've been turning to work or other activities to take my mind off things.				
2	I've been concentrating my efforts on doing something about the situation I'm in.				
3	I've been saying to myself "this isn't real".				
4	I've been using addictive behaviors or substances to make myself feel better.				
5	I've been getting emotional support from others				
6	I've been giving up trying to deal with it.				
7	I've been taking action to try to make the situation better				

8	I've been refusing to believe that it has happened				
9	I've been saying things to let my unpleasant feelings escape				
10	I've been getting help and advice from other people.				
11	I've been using alcohol or other drugs to help me get through it				
12	I've been trying to see it in a different light, to make it seem more positive				
13	I've been criticizing myself				
14	I've been trying to come up with a strategy about what to do				
15	I've been getting comfort and understanding from someone.				
16	I've been giving up the attempt to cope.				
17	I've been looking for something good in what is happening				
18	I've been making jokes about it.				
19	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping				

20	I've been accepting the reality of the fact that is has happened				
21	I've been expressing my negative feelings				
22	I've been trying to find comfort in my religion or spiritual beliefs				
23	I've been trying to get advice or help from other people about what				
24	I've been learning to live with it.				
25	I've been thinking hard about what steps to take.				
26	I've been blaming myself for things that happened				
27	I've been praying or meditating.				
28	I've been making fun of the situation.				

መጠይቅ 1

ክፍል 1: አጠቃላይ መረጃ

1. ዕድሜ:

☐ <20

☐ 20 to 24

☐ >24

2. ፆታ:

☐ ወንድ

☐ ሴት

3. የጋብቻ ሁኔታ:

☐ ያላገባ/ች

☐ ያገባ/ች

4. ስንተኛ ዓመት ኖት?:

☐ 1ኛ

☐ 2ኛ

☐ 3ኛ

☐ 4ኛ

☐ 5ኛ

☐ 6ኛ

ክፍል 2: ከጥናት ጋር የተይይዙ ምክንያቶች

1. በሳምንት ስንት ሰዓት ለጥናት ያወላሉ?

☐ ከ 10 ሠዓት ያነሰ

☐ 20–30 ሠዓት

☐ ከ10–20 ሠዓት

☐ ከ30 ሠዓት የበለጠ

2. የዩኒቨርሲቲው የትምህርት ጫና እንዴት ነው?

☐ ቀላል

☐ የምወጣው ነው

☐ ይከብዳል

☐ በጣም ከባድ ነው

ክፍል 3: የአኗኗር ዘይቤ እና ድጋፎች

1. ስንት ጊዜ አካላዊ እንቅስቃሴ ወይም ስፖርት ይሰራሉ?

☐ በፍጹም

☐ እንደ ሁኔታው

☐ በሳምንት ከ 2–3 ቀናት

☐ በሳምንት ከ 3 ቀናት በላይ

2. በአማካይ በቀን ስንት የእንቅልፍ ሰዓት አሎት?

☐ ከ 5 ሠዓት ያነሰ

☐ ከ 5–6 ሠዓት

☐ 6–7 ሠዓት

☐ ከ 7 ሠዓት የበለጠ

3. ከስትረስ ለመጠበቅ እገዛ ያገኛሉ? (ጻደኞች፣ ቤተሰብ፣ የመሳሰሉት) ስትረስን ለመቋቋም እንዲረዳዎ?

☐ አዎ

☐ የለም

4. በምን ያህል ጊዜ ከቤተሰብ ወይም ከጓደኞች ጋር የመገናኘት ልምድ አሎት?

☐ የለም

☐ አልፎ አልፎ

☐ እንደሁኔታው

☐ በተደጋጋሚ

☐ ሁልጊዜ

ክፍል 4: ከሱስ ጋር የተያያዙ ምክንያቶች

1. ከሚከተሉት ውስጥ የሚጠቀሙትን ይምረጡ? (አንድ ወይም ከዛ በላይ መምረጥ ይችላሉ)

☐ አልኮል

☐ ሲጋራ

☐ ካፊን (ቡና፣ሻይ፣ሃይል ሰጪ መጠጦች)

☐ መድሃኒቶች (አድካሚ ወይም በባለሞያ የታዘዘ)

☐ የለም

2. ከላይ ከተገለጹት በምን ያህል ድግግሞሽ ይጠቀማሉ?

☐ ምንም አልጠቀምም

☐ እንደሁኔታው

☐ በተደጋጋሚ

☐ በጣም አዘወትራለው

መጠይቅ 2

ክፍል 4: እሳቤያዊ እስትረስ ልኬት 10 (PSS10)፣ እስትረስ መለኪያ

ተቁ.	እሳቤያዊ እስትረስ ልኬት	በፍጹም (0)	የለም ማለት ይቻላል(1)	አንዳንዴ(2)	በዛ ላለ ጊዜ (3)	ብዙ ጊዜ (4)
1	ባለፈው ወር ብቻ በድንገት በተከሰተ ነገር ስንት ጊዜ ተናደድክ/ሽ?					
2	ባለፈው ወር ብቻ ስንት ጊዜ የሕይወትዎን አስፈላጊ ነገሮች መቆጣጠር እንደቻላህ ተሰማህ/ሽ?					
3	ባለፈው ወር ስንት ጊዜ የጭንቀት/የውጥረት ስሜት ተሰምቶሃል/ተሰምቶሻል?					
4*	ባለፈው ወር የግል ችግር የመፍታት አቅምህ ላይ ምን ያህል ጊዜ በራስ መተማመን ተሰምቶሃል/ተሰምቶሻል?					
5	ባለፈው ወር ነገሮች ስንት ጊዜ በአንተ መንገድ እየሄዱ እንደሆነ ተሰምቶህል/ተሰምቶሻል?					
6	ባለፈው ወር ስንት ጊዜ ማድረግ ያለብህን ነገሮች ሁሉ ማድረግ አልቻልክም/ሽም?					
7*	ባለፈው ወር ስንት ጊዜ በሕይወትህ ያሉ					

	የቁጣ ስሜቶችን መቆጣጠር ቻልክ/ሸ?					
8*	ባለፈው ወር ስንት ጊዜ ነገሮችን በተሳካ ሁኔታ እንዳስተናገድክ ተሰማህ/ሸ?					
9	ባለፈው ወር ስንት ጊዜ ከቁጥጥርህ ውጭ በሆኑ ነገሮች ተናናደድክ/ተናደድሽ?					
10	ባለፈው ወር ስንት ጊዜ ችግሮች በጣም እንደተደራረቡህ እና ማለፍ እንደማትችል ተስምቶሃል/ተስምቶሻል?					

መጠይቅ 3

ክፍል 5: ለሕክምና ተማሪዎች የተዘጋጀ የእስትረስመጠይቅ (MSSQ)

		(1)	(2)	(3)	(4)	(5)
		ምንም እስትረስ የለም	ቀለል ያለ እስትረስ	መካከ ለኛ እስትረስ	ከፍተ ኛ ስትረስ	በጣም ከበድ ያለ እስትረስ
የ እስትረስ መለኪያ	መጠይቆች					
ከትምህርት ጋር የተዛመዱ እስትረስ አምጪ ምክንያቶች (Academic-Related Stressors)	ፈተናዎች					
	በማንበብ ዕቅድ ላይ ወደ ኋላ መቅረት					
	የትምህርት ይዘት					

	ሙብዛት					
	የተማርከውን/የተማርሽውን ለመከለስ ጊዜ አለመኖር					
	ከባድ የስራ ጫና					
ከግል ሰብዕና ጋር የተዛመዱ እስትረስ አምጪ ምክንያቶች (Interpersonal and Intrapersonal-Related Stressors)	በሌሎች ተማሪዎች የቃል/አካላዊ ትንኮሳ					
	በመምህራን የቃል/አካላዊ ትንኮሳ					
	ከአስተዳድር የቃል/አካላዊ ትንኮሳ					
	ከመምህራን ጋር ግጭት					
ከመማር ማስተማር ጋር የተዛመዱ እስትረስ አምጪ ምክንያቶች (Teaching and Learning-Related Stressors)	ከመምህራን በቂ ግብረ መልስ አልማኘት					
	ስልህ መጠበቅ-በኝነት እርግጠኛ አለመሆን					
	ለተሰራው ስራ ዕውቅና ማጣት					
ከማህበረሰብ ጋር የተዛመዱ እስትረስ አምጪ ምክንያቶች	ከታካሚዎች የሚመጡ					

ምክንያቶች (Social Related Stressors)	ጥያቄዎችን መመለስ አለመቻል					
	ከታካሚዎች ጋር ስለ ግላዊ ችግሮች ማውራት					
	የታካሚዎችን ህመም ወይም ሞት መጋፈጥ					
ከምኞትና ከውስጥ የመነጨ እስትረስ አምጪ ምክንያቶች (desire and drive-related stressors)	የህክምና ትምህርት ለመማር ፈቃደኛ አለመሆን					
	በወላጆች ፍላጎት ሕክምናን ማጥናት					
የቡድን እንቅስቃሴ ጋር የተዛመዱ እስትረስ አምጪ ምክንያቶች (group activity- related stressors)	የክፍል ውስጥ ተሳትፎ					
	በሌሎች ጫና የተነሳ የሚምጣ የመሰራት ፍላጎት					
	የብቃት ማነስ ስሜት					

መጠይቅ 4

ክፍል 5: እስትረስ የመቋቋም ስልተ-መጠይቅ(BRIEF COPE)

የሚከተሉት ጥያቄዎች ያጋጠመዎት ማንኛውንም ተገዳሮት ለመቋቋም እና ለማለፍ ያደረጉትን ጥረት ለመገምገም የቀረቡ ናችው። በየደረጃው ለሚጠየቁት ምን ያህል እንደተጠቀሙብት ያመልክቱ።

ተቁ.	መጠይቆች	(1)	(2)	(3)	(4)
		ፈፅሞ	በትንሹ	በልክ	በጣም
1	ከችግሮቼ ለመሸሽ ወደ ስራ ወይም ሌሎች እንቅስቃሴዎች አተኩራለሁ።				
2	ከተፈጠረው ሁኔታ ለመውጣት ትኩረት ቀይሬ እየሰራሁ ነው።				
3	“ይህ እውነት አይደለም” ብዬ ለራሴ እየነገርኩት ነው።				
4	ጥሩ ስሜት እንዲሰማኝ አልኮል ወይም ሌሎች አደንዛዥ እጾችን እየተጠቀምኩ ነው።				
5	ከሌሎች የስሜት ድጋፍ እያገኘሁ ነው።				
6	ሁኔታውን ለመቋቋም መሞከር አቁሜያለሁ።				
7	ሁኔታውን ለማሻሻል እርምጃ እየወሰድኩ ነው።				
8	ይህ እንደተከሰተ ማመን አልፈልግም				
9	የተፈጠረብኝ መጥፎ ስሜት ለመሸሽ የተለያዩ ነገሮችን እናገራለሁ።				
10	ከሌሎች ሰዎች እርዳታ እና ምክር እያገኘው ነው።				
11	ሁኔታውን እንድቋቋም እንዲረዳኝ አልኮል ወይም ሌሎች አደንዛዥ እጾችን ተጠቅሜያለሁ።				
12	ነገሩን በተለየ መንገድ በማየት አዎንታዊ እንዲመስል ለማድረግ ጥረት አድርጌያለሁ።				
13	ራሴን ስወቅስ ቆይቻለሁ				
14	ምን ማድረግ እንዳለብኝ ስልት ለመንደፍ ስሞከር ቆይቻለሁ።				
15	ከአንድ ሰው መፅናናትን እና መረዳትን አግኝቻለሁ				
16	ለመቋቋም መሞከር ላይ ተሰፋ ቆርጫለሁ				
17	እየሆነ ካለው ነገር ውስጥ ጥሩ ነገር እየፈለኩ ነው				
18	በመቀለድ አቃለዬው አልፋለሁ				

19	ስለ ጉዳዩ ብዙ ላለማሰብ፤ ለምሳሌ ፊልም ማየት፤ ቴሌቪዥን ማየት፤ ማንበብ፤ በሀሳብ መመስገ፣ መተኛት ወይም ገበያ በመውጣት የተለያዩ ነገሮችን አድርጊያለሁ።				
20	የተፈጠረው ነገር እውነት መሆኑን ተቀብያለሁ።				
21	አሉታዊ ስሜቶቼን መግለፅ እየገለጽኩ ነው				
22	በሀይማኖቴ ወይም በመንፈሳዊ እምነቶቼ መፅናናትን ለማግኘት ሞክሪያለሁ።				
23	ምን ማድረግ እንዳለብኝ ከሌሎች ሰዎች ምክር ወይም እርዳታ ለማግኘት ሞክሪያለሁ።				
24	ከሁኔታው ጋር መኖርን ተምሪያለሁ።				
25	ምን እርምጃዎችን መውሰድ እንዳለብኝ ጠንክሬ አስቤያለሁ።				
26	ለተከሰቱት ነገሮች ራሴን እየወቀስኩ ነው				
27	ጸልያለሁ ወይም አሰላስያለሁ።				
28	በሁኔታው ላይ ቀልጃለሁ/አላግጫለሁ።				