



**COPING MECHANISMS IN MEDICAL STUDENTS IN GENERATION
Z: A SYSTEMATIC REVIEW**

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Abstract

Coping mechanisms are a person's efforts to overcome problems. Each person has different ways of dealing with problems, both positive and negative Coping. Using adaptive coping techniques will reduce the risk of getting stress, but maladaptive coping mechanisms will increase the risk of getting stress. To discover what coping mechanisms medical students in Generation Z use. Methods: This research was conducted using a systematic review method. Journal articles within the last five years were identified according to the topic. From the identification results, 20 relevant journals were found. No single coping mechanism works for everyone, but some adaptive coping mechanisms provide better health outcomes. The cause of many maladaptive coping mechanisms in Gen Z medical students is uncontrollable stress.

Keywords: stress, coping mechanism, medical student, z generation

INTRODUCTION

Everyone's life is definitely affected by stress. Stress feels oppressive inside the individual. This is due to the mismatch between the desired expectations and the reality faced by the individual. Stress has negative impacts on every aspect of human life, including physical, psychological, and social aspects (Fink, George. (2016)).

Stress can occur at various age levels and jobs, not to mention students. The source of stress, also called a stressor, is a state or situation of a person that can trigger stress. In students, stressors can come from the scope of lectures and outside the campus. Examples of academic stressors are changes in how you study from high school to college, unsatisfactory academic results or achievements, lack of free time, and other problems. Non-academic stressors include the distance of student life from home, lack of financial management, interaction and relating to a new environment, cultural differences with new residences and other personal matters. (Acharya J, Sahani S, 2022).

The sources of stress in medical students are more diverse in shape and severity compared to other majors because there are many activities that must be followed by medical students, especially in Generation Z. Activities that



were followed started from the initial introductory lecture of modules/blocks, clinical skills (skills lab), tutorial discussions, practicums, plenaries, expert lectures, and also final semester exams. There are also activities outside lectures, such as student organizations. (M. Anissa, et al., 2022)

College life for medical students is a drain on time, energy, and mind that makes them stressed. Therefore, students should Make an effort to overcome stress as a coping mechanism. Research on Baiturrahmah University medical students found that 47% experienced mild depression (M. Anissa, et al., 2022).

According to Indotang (2015), the coping mechanism is a person's effort to overcome the problems experienced. According to Son research et al. (2020), Generation Z medical students use various ways to deal with stress, both positive Coping and negative Coping. Negative coping forms include smoking, drinking, playing games until forgetting time, drugs, excessive masturbation, and healing. Positive Coping can be in the form of breathing exercises, worship, routine activities, and positive reframing. (Qodris et al., 2023).

Not all students will experience stress; it all depends on the student's coping mechanism. Using good (adaptive) coping techniques will reduce the risk of getting stress, but the worse (maladaptive) coping mechanisms will increase the risk of getting stress such as depression (Qodris et al., 2023).

According to research by Bakhtiar and Asriani (2015) maladaptive is a coping strategy that can inhibit integration functions, decrease autonomic, break growth, and tend to dominate the environment. The categories are not eating or overeating, overworking or avoiding work, speeding on the street to drinking until drunk. (Qodris, et al., 2023). Therefore, this study wanted to find out the coping mechanism of medical students in Generation Z through a systematic review.

METHOD

The method used in this study was a systematic review, which involved identifying relevant journals using search words such as coping mechanism, medical students, and generation Z. The journals searched come from published journals and have open access within the last 5 years using google scholar, PubMed and EBSCOHost.

Inclusion Criteria

The inclusion criteria that are considered worthy of being used as a source for this research are:

- 1) Journal articles published between 2019-2023;
- 2) Journal articles are written in Indonesian, English, and Malay.
- 3) Journal article corresponding to systematic review "Coping Mechanism in Medical Students in Generation Z."

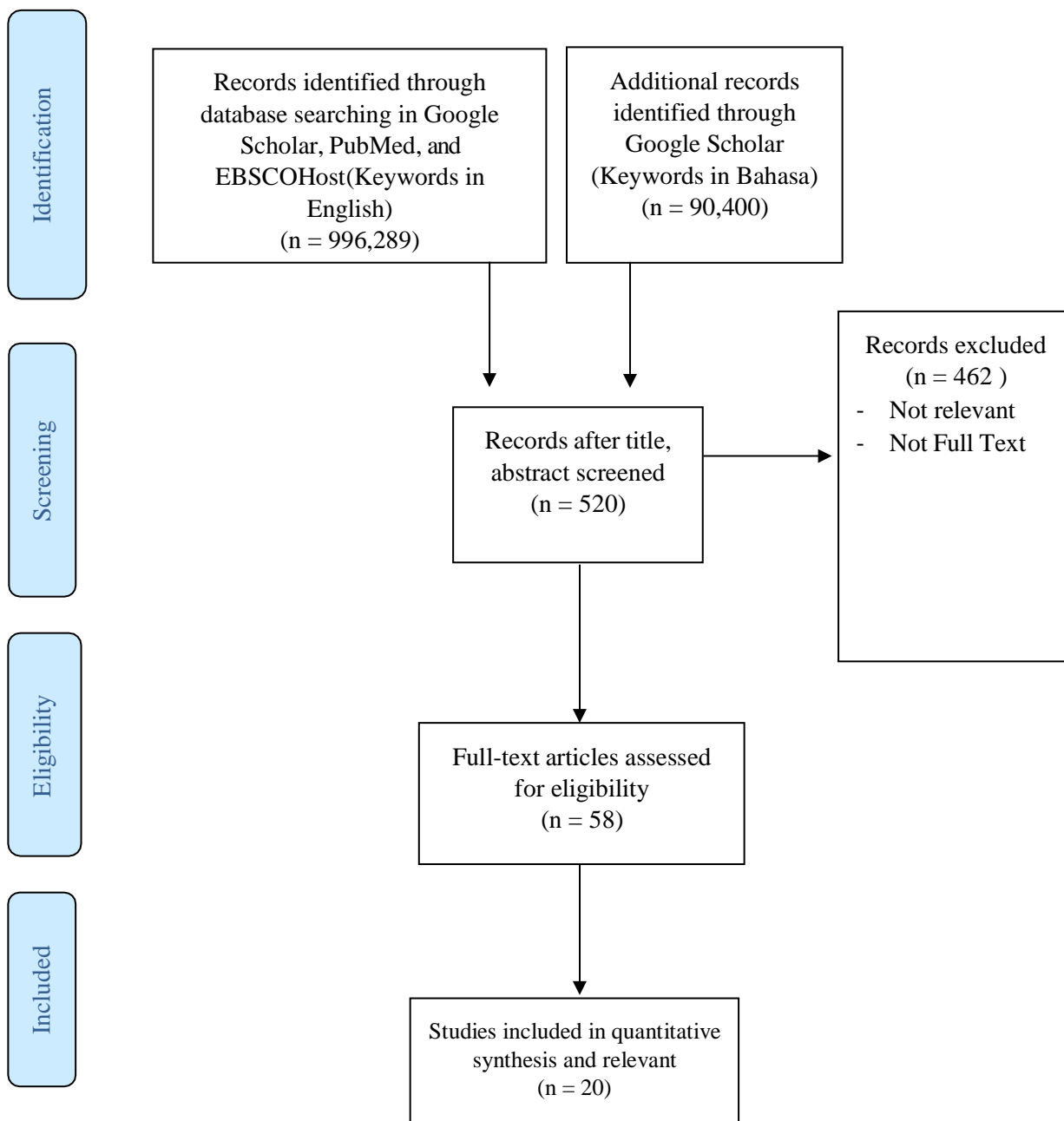
Exclusion Criteria

Journal articles that are not relevant to the research title, journal

articles published under 2019 or more than five years, and incomplete journal articles.

Study Selection

The results of the study selection can be depicted in a flow diagram.





RESULT

A total of 20 articles were analyzed using a matrix table to see the data presented from each article and will be analyzed what coping mechanisms are done by generation z medical students.

NO	TITLE	AUTHOR	YEAR OF PUBLISH	METHOD AND DATA COLLECTION	RESULTS
1	The relationships between resilience and student personal factors in an Undergraduate Medical Program	Findyartin i, et al.	2021	This cross-sectional study was conducted on undergraduate medical students in years 1-6. Respondents were asked to complete three validated questionnaires: the Connor-Davidson Resilience Scale (CD-RISC) to measure resilience, Brief-COPE to assess coping mechanisms, and the Big Five Personality Test to measure five dimension personality.	A total of 1040 respondents filled out the questionnaire (response rate of 75.42%). Students at the preclinical and clinical stages have a pretty good level of durability and a higher score on the adaptive coping mechanism than on mechanism coping , which is maladaptive. Adaptive and maladaptive coping mechanisms, Big Five Personality traits (extraversion, kindness, conscientiousness, neuroticism, and openness), and student academic achievement explains 46.9% of students' resilience scores.



2	The relationship between gender and coping mechanisms with burnout events in first-year medical students	Rena Palapi, Ardi Findartini	2019	The cross-sectional study used a total sample of first-year students from a medical school.	One hundred sixty-seven respondents (98.9% response rate) completed the Short Addressing Problems Questionnaire and the Maslach Fatigue Inventory Survey. The results showed that there was no significant relationship between gender and burnout ($p > 0.05$). In contrast, maladaptive/dysfunctional Coping had a significant positive correlation with emotional exhaustion ($r=0.403$, $p<0.001$) and cynicism ($r=0.372$, $p<0.001$). Adaptive Coping has a significant negative correlation with cynicism ($r=-0.165$, $p=0.033$) and
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					Significant positive correlation with perception Personal achievement ($r=0.417$, $p<0.001$).
3	The assessment of stress level, anxiety, depressive symptoms, and defense mechanisms among Polish and English medical students	Pawlaczky et al	2020	The study involved two groups of year medical students first a group of Polish and English-speaking medical students. division, consisting of 305 participants (n=204 Polish, n=101 English, male=127, female=176). It is divided into two periods: Students receive the author's questionnaire during the exam-free academic period and then complete the same questionnaire during the exam session. The survey comprise question- Questions related to demographics and learn the habits in between the Participants and included Defense Style and Stress Questionnaire Anxiety Depression Scales. Data analyzed using the STATISTICA version 12.0, and $p\leq 0.05$ are considered	Polish medical students experienced significantly improved overall stress levels ($p=0.007858$) and depressive symptoms ($p=0.030420$) compared to students of the English division. Polish students also experienced more symptoms of stress, depression, and anxiety during the exam period compared to the exam-free period ($p=0.000625$), which did not apply to English-speaking students. English division students scored higher on mature defense mechanisms than Polish students ($p = 0.000001$). The use of mature defense mechanisms was negatively correlated with the intensity of stress, anxiety, and depressive symptoms in both groups, while immature defense mechanisms drove higher values of those variables ($p = 0.000001$).



				significant.	
4	Symptoms of depression and anxiety in Indonesian medical students: association with coping strategy and resilience	Ramadiant o, et al	2022	Undergraduate medical students from each year of study (Preclinical Years 1 to 4, Clinical Years 1 and 2) at the Faculty Medicine Indonesian universities are randomly selected to participate deep This cross-sectional study. That The research questionnaire	Among 532 respondents, 22.2% reported depressive symptoms and 48.1% reported anxiety, including- 3.0% and 8.1% had very severe depression and anxiety, respectively. Students who did not live with immediate family had higher depression scores; Female students and those in Preclinical Year 1 and Clinical Year 1 showed higher results scores



				included characteristics of sociodemographics. A lot of depression and anxiety symptom Analyzed with	Emergency. A countermeasure strategy
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				Compare betw een different socio- demographic groups and by measuring their correlation with strategies countermeasures and endurance.	Dysfunction and lower resilience are higher predictors of depression and anxiety symptom.
5	Strategy coping for medical education students during online lectures	Ahmad, et al	2022	This study used quantitative methods with a survey research design. Survey conducted in this study using questionnaires distributed through Google Form.	The results obtained in this study showed that overall Syiah Kuala University Medical Education students had a tendency to use stress coping strategies in the form of problem focused coping compared to emotional- focused Coping, namely with a percentage difference of 93% of participants totaling 70 people and 7% of participants respectively total 5 people.



6	Prevalence of depression and anxiety and correlations between depression, anxiety, family functioning, social support and coping styles among Chinese medical students	Shao, et al	2020	<p>The sample was 2,057 medical students from Chongqing Medical and Pharmaceutical College in China</p> <p>Investigated with a self-report questionnaire, which includes demographic information.</p>	<p>The prevalence of depressive and anxiety symptoms among medical students was 57.5 and 30.8%, respectively. Older students (≥ 20 years) experienced higher levels of depression and anxiety.</p> <p>More depression and Anxiety symptoms were exhibited among students with a significant financial burden, stress caused by large studies, and poor sleep quality. Students with great job pressure show more anxiety symptoms. Students who lived alone or had poor relationships with lovers or classmates or friends showed higher depression and anxiety scores. Symptoms of depression and anxiety have a very significant correlation with functioning family, social support, and coping styles.</p>
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7	Prevalence of Anxiety and Burnout, and Coping Mechanisms among Clinical Year Medical Undergraduate Students in the National University of Malaysia Amidst the COVID-19 Pandemic	Tee, et al	2022	Penelitian cross-sectional	Among the three coping mechanisms, avoidant Coping had a significant moderate positive correlation with the presence of anxiety ($r = 0.3966$, $p < 0.001$) and the presence of fatigue ($r = 0.341$, $p < 0.001$). While coping that is neither an approach nor an avoidance has a weak positive correlation with The presence of burnout ($r = 0.176$, $p = 0.001$).
8	Perceived stress, sources of stress and coping strategies among undergraduate medical students of Nepal: a cross-sectional study [version 2; peer review: 1 approved, 1 approved with reservations]	Paudel, et al	2022	Self-administered questionnaires are cross-sectional based. Demographic variables were collected and stress levels assessed using PSS 14 (Perceived Stress Scale 14).	The five most commonly used coping strategies are active Coping, acceptance, planning, self-distraction, and instrumental strategies support. The least common coping mechanism is drug use. All The MSSQ domain is positively correlated with the total PSS score. Student with higher PSS scores tend to use behavioral release, venting emotions, and blaming yourself as coping strategies main.



9	<p>MECHANISM MALA DAPTIVE COPING RELATED TO PROPOS E ANXIETY: STUDY CUT LATITUDE IN MEDICAL EDUCATION STUDENTS</p>	Sandra, et al	2022	<p>The design of this study was a cross-sectional observational analytical study. This research uses convenient method sampling.</p>	<p>Adaptive and maladaptive coping mechanisms widely used by Respondents are active Coping and avoidance, respectively. Generation year difference ($p = 0.000; <0.05$) and age ($p = 0.000; <0.05$) had a significant difference in proportion to anxiety levels, but did not with sex ($p = 0.103; >0.05$). Adaptive and maladaptive coping mechanisms were found to have differences The proportion of anxiety levels differs significantly, which is where the prevalence severe anxiety found</p>
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					Increase on maladaptive Coping.
10	Medical Students' Use of Different Coping Strategies and Relationship With Academic Performance in Preclinical and Clinical Years	Jocelyn, et al	2017	Research Ini get Status Exceptions from University of Michigan School of Medicine Institutional Review Board.	Students vary greatly in their use of each Coping. strategy. Student more tend to use active strategies. better than passive ones. Planned Problem Solving and Seeking Social Support is the most used, and Avoidance of Refugees and Distance is the least Used.
11	Life satisfaction, resilience and coping mechanisms among medical students during COVID-19	Haider, et al	2022	Cross-sectional web-based survey conducted from Undergraduate Medical Students from year 1 to year 5.	As 351 student (from 500 students) complete the questionnaire. A moderately negative and slightly linear correlation between life satisfaction and coping avoidance was reported. Life satisfaction showed a fairly positive and slightly linear correlation with resilience. Intelligence score. Three variables remained significant in the final model: Resilience, coping avoidance, and religion overcome.



12	Knowledge and coping style about depression in medical students: A cross-sectional study in China	Lian, et al.	2023	Survey Based Online was developed at Changzhi Medical College. The questionnaires included demographic and socioeconomic data, questions about depression knowledge and mimicking depression styles, and the Zung Self-Rating Depression Scale (SDS). Respondents returned a number of 1931 questionnaires.	The results of the logistic regression analysis found that depressed students who chose the coping method rather than no coping method were more likely to be women OR = 1,470 (1,078, 2,005), rural population OR = 1,496 (1,038, 2,156), in poor family relationships OR = 2,428 (1,790, 3,293), and had lower levels of cognitive depression knowledge OR = 1.920 (1.426, 3.226).
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13	Relationship Coping Mechanisms, Sleep Quality and Learning Motivation with Anxiety Levels on Medical Students	Alfiana, et al	2023	Research Ini be research quantitative, the type of research that will Used that is Observational method analytical with data retrieval secara cross sectional.	(i) this result research show that students mostly choose Problem Focused Coping as many as 61 people (62.9%) and (ii) while Emotional Focused Coping (28,9%).
14	RELATIONSHIP OF COPING MECHANISMS WITH STRESS LEVELS FOR PERKULIAHAN DISTANC E FOR STUDY PROGRAM STUDENTS EDUCATI ON DOCTOR UNIVERSI TAS MATARAM	Danu, et al	2022	This study is an analytical observational study that takes data directly cross-sectionally. The questionnaires used are: Medical Student Stressor Questionnaire (MSSQ) for stress levels and Brief Cope Inventory for the coping mechanism.	From 188 Respond students, Those who experience moderate stress have The largest percentage is 50.5% (95 people), coping mechanisms that the most widely used is Emotion Focused Coping which is as many as 144 people (76.6%) while those who chose Problem Focused Coping were 44 people (23,4%).



15	The relationship between coping mechanisms and anxiety scores in facing medical skills exams in students of the Medical Education Study Program at the University of Mataram	Nurrahmasi a, et al	2021	This study used a cross-sectional design.	As 207 students participated in the study. Student anxiety scores were 70.00 (31-94) and 83.1% use problemfocused coping. The use of problem-focused Coping was significantly associated with anxiety scores the lower one (p=0.032). There was no association between anxiety scores and resultstest Skills Medical in both first and second year students (p > 0.05)
16	TRUST RELATIONSHIP SELF WITH MECHAN ISM COPING DEEP FACE THESI S STUDENT MEDICINEUNIVERSIT Y	Qodris, et al	2023	The types of research used in this study are analytical Kuantitative with a plan research This uses the Cross Sectional plan.	Known frequency distribution of respondents' confidence Most were moderate as many as 77 people (69.4%) and coping mechanisms were mostly was maladaptive by 62 people (55.9%). There is a significant relationship between



	MALAHAYATI CLASS OF 2019				confidence with coping mechanism (p-value = 0.014) and also displays correlation value amounted to 0.234.
17	RELATIONSHIP OF SELF-EFFICACY WITH MECHANISM DEEP FACE THESIS STUDENT MEDICINE UNIVERSIT Y MALAHAYATI	Nurfazira, et al	2023	Kind The research used in this study is quantitative analytics with research design This uses the Cross Sectional plan.	Known distribution The frequency of respondents' self-efficacy was mostly moderate as many as 78 people (74.3%) and Coping mechanisms were mostly maladaptive in 62 people (55.9%). There is a relationship which was significant between self-efficacy and coping mechanisms (p-value = 0.002) and also displayed a correlation value of 0.297.
18	How medical students cope with stress: a cross-sectional look at strategies and their sociodemographic antecedents	Neufeld, et al	2021	Descriptive and comparative statistics were performed, including multivariate analysis of variance, for Explore how gender and year affect strateg y countermeasures.	The participation rate was 49% (47% male and 53% female). Overall, students' coping strategies are Most are adaptive, though with a few exceptions. Women use behavior release more, while men use behavior release more lack of emotional and instrumental support. In addition, third-year students use denial to cope with stress more than students in other years.



19	Delivering Bad News: Emotional Perspective and Coping Strategies of Medical Students	Sobczak that under	2023	291 fifth- and sixth-year students from 14 medical universities took part in our study. Their response was analyzed from the point of view their experience – whether the individual received the news	Students with delivery experience were likelier to experience failure and guilt ($p = 0.005$). Anxiety prediction (59.3%), stress (41.9%) and sadness (33.7%) were highest in students with no DBN experience. These students are the most
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				<p>bad, delivering the bad news itself, Watched news poorly delivered, or have no experience at all. We use content analytics (CA) to examine responses and analyze Classified variables using χ^2 test, logistic regression, and predictive modeling with multiple correspondence analysis (MCA).</p>	<p>tend to make statements that indicate a lack of methods and strategies for coping with difficult emotions. Drowning students deep experience DBN, more frequent disclosure necessity to discuss their emotions with an experienced doctor, family member, or a person friend and Use conversations as strategy countermeasures.</p>
20	Adult Personality and It's Relationship with Stress Level and Coping Mechanism among Final Year Medical Student	Zainah, et al	2019	<p>Questionnaires used is the Big Five Personality Inventory and 12-Item Personal Health Questionnaire.</p>	<p>In coping with stress, students who have Personality Neuroticism was found to use a mechanism to avoid the problems faced, while students with an Extraversion personality practiced active mechanism in coping with stress. There was a significant difference in the total stress score with the personality traits of each individual ($p < 0.001$; $p < 0.05$). However, Big Five Personality Trait features and levels A student's stress does not show significant results against Academic performance with a P-value</p>



					of 0.359 ($p > 0.05$) and 0.94 ($p > 0.05$).
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DISCUSSION

Coping is a consistent behavioral and cognitive change as an effort to overcome both internal and external demands that exceed the limits of individual abilities. According to Lazarus and Folkman (1984), coping mechanisms can be divided into two types, namely coping that focuses on emotions (emotion focus coping) and coping that focuses on problems (problem focus coping). Each student has different coping strategies depending on the level of stress he or she is experiencing. (Danu, Amalia and Rizki, 2022).

Medical education throughout the world is associated with high levels of psychological stress, a factor shown to correlate with depression and anxiety. Students who are studying medicine more often experience higher levels of anxiety than the general population in the same age group. Moreover, the prevalence of depressive symptoms in college students medicine (Pawlaczyk et al., 2020).

Today's Generation Z medical students are known to be more prone to a sense of not being safe, depression, and anxiety. In addition, their excessive dependence on adults and information technology during their growing years can also affect their ability to overcome challenges in life. In addition, students of all levels were found to have higher scores for adaptive Coping (scores emotion focus coping $28,88 \pm 4,28$ up to 29.72 ± 4.07 ; Problem score Focus coping 17.59 ± 2.46 to 18.42 ± 2.65) were compared for maladaptive Coping (scores from 25.34 ± 3.83 to 26.63 ± 4.03).

Interestingly, Students found more Associate with a coping-focused approach to emotion Than with a coping-focused approach at problem. (Findyartini et al., 2021).

The physical and mental well-being of medical students can be enhanced by the emotional comfort, affection, and warmth that family can provide. A number of studies among college students medicine shows similar results. For example, the high level of family conflict and the low level of family cohesiveness associated with depression. In addition, personal knowledge about depression influences symptom recognition and management, help-seeking patterns, and use of mental health services. (Lian et al., 2023)

Some strategies that are often used do appear but may be less adaptive, for example, the use of self-blame, frequent self-distraction, and pouring out emotions. This can be explained by previous research showing that, although certain coping strategies such as planning, active Coping, and instrumental support consistently provide better health outcomes than dysfunctional strategies, other coping methods are not always stable or predictable. Frequently found examples of the ways in which adaptive coping strategies of medical students go include devoting emotions, which are positively associated with most adaptive coping strategies (e.g., emotional and instrumental support, humor, planning, and acceptance) and not maladaptive strategies that are generally trekant with (e.g., denial, self-



blame, drug use) (Neufeld and Malin, 2021)

CONCLUSION

Medical students face high levels of stress. They have a variety of coping strategies, including a focus on emotions and problems. However, it tends to use a more emotionally focused approach in coping stress. Medical students from Generation Z are more prone to mental well-being issues such as depression and anxiety. Dependence on technology and lack of independence during growth can also affect their ability to face challenges.

Wellness The mentality of students can be influenced by emotional comfort, family support, and harmonious relationships in them. The level of family conflict and family involvement in student problems can affect their mental state.

Some coping strategies, such as pouring out emotions, can be beneficial if used wisely. However, strategy coping with certain like Self-blame or drug use can be maladaptive. There is no single coping strategy that fits everyone. Some adaptive coping strategies provide better health outcomes, but their effectiveness can vary between individuals.

Deep Overall, medical students have high levels of stress, and different coping strategies can provide mixed results in coping with that stress. The importance of the social environment and family support also greatly affects their mental well-being.

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