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# Perceived stress and coping in undergraduate medical students in different phases of MBBS course - A Comparative Study

[1]Dr. Sunetra Adhikary, Senior Resident, Department of Psychiatry, IQ City Medical College and Hospital, Durgapur, WB.

[2]Dr. Kamala Deka, Professor & HOD, Department of Psychiatry, Jorhat Medical College and Hospital, Jorhat, Assam.

**Corresponding Author:** Dr. Sunetra Adhikary, Senior Resident, Department of Psychiatry, IQ City medical college and hospital, Durgapur, WB.

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**Conflicts of Interest:** Nil

## Abstract

**Background:** Medical education is academically demanding and may adversely affect students' physical health, psychological well-being, and academic performance. Competency-Based Medical Education (CBME) was introduced in India in 2019 to improve undergraduate medical training. However, limited evidence is available regarding perceived stress and coping strategies among Indian medical students across different phases of the CBME curriculum.

**Aim:** To study perceived stress and coping strategies among medical students in different phases of the undergraduate MBBS course.

**Materials and Methods:** A comparative study was conducted in the Department of Psychiatry, Jorhat Medical College and Hospital, Assam, over a period of one year. The study included 220 undergraduate medical students, with 55 students each from Phase I, Phase II, Phase III Part 1, and Phase III Part 2. Participants were selected using systematic random sampling. Data were collected using a sociodemographic proforma, the Perceived Stress Scale-10 (PSS-10), the General Health Questionnaire-12 (GHQ-12), and the Brief COPE-28 questionnaire. Statistical analysis was performed using IBM SPSS version 23.0. Chi-square tests and analysis of variance were used, with $p<0.05$ considered statistically significant.

**Results:** Moderate perceived stress was the most common category across all four phases, affecting 72.73% of Phase I, 70.91% of Phase II, 54.55% of Phase III Part 1, and 61.82% of Phase III Part 2 students. Differences in stress categories and mean PSS scores were not statistically significant ($p=0.083$ and $p=0.1194$, respectively). The highest mean PSS score was observed in Phase III Part 2 ($21.42 \pm 5.91$), followed by Phase I ($21.29 \pm 5.31$). General mental health assessment

revealed that distress was most prevalent in Phase II (61.81%), whereas 54.55% of Phase III Part 2 students demonstrated typical GHQ-12 scores. Problem-focused coping was the predominant strategy across all phases, with the highest mean score in Phase I (2.39 ± 0.52). Differences in emotion-focused coping ($p=0.0128$) and avoidant coping ($p<0.001$) were statistically significant, with both strategies showing their lowest mean scores in Phase III Part 1.

**Conclusion:** Moderate perceived stress was prevalent among undergraduate medical students across all phases of the CBME curriculum, without statistically significant differences in overall stress levels. Problem-focused coping was the predominant coping strategy, while emotion-focused and avoidant coping varied significantly across phases. These findings highlight the importance of strengthening adaptive coping skills and providing appropriate psychological support throughout undergraduate medical training.

**Keywords:** Perceived Stress, Coping Strategies, Medical Students, CBME, PSS-10, GHQ-12, Brief COPE

## Introduction

Stress is a subjective and complex phenomenon that arises from the interaction between an individual and their environment. It occurs when perceived demands exceed an individual's available resources to manage a particular situation. According to Lazarus and Folk man, psychological stress develops when an individual appraises environmental demands as taxing or exceeding their coping abilities [1].

The concept of stress has evolved over time, from its early association with pressure and adversity to its modern understanding as a physiological and psychological response to challenging circumstances[2]. Hans Selye contributed significantly to the understanding of stress through his work on the general adaptation syndrome, describing the alarm, resistance, and exhaustion stages of the body's response to stress[3].

Medical education is widely recognized as a demanding academic programme that requires sustained intellectual effort, emotional resilience, and practical competence. Undergraduate medical students encounter numerous stressors, including extensive academic workloads, frequent examinations, practical assessments, competition among peers, parental expectations, financial concerns, and difficulties balancing personal and academic responsibilities. Studies conducted among medical students have reported considerable variations in the prevalence of perceived stress, indicating that stress is an important concern in undergraduate medical education [4,7]. Research has also demonstrated that psychological stress among medical students may be associated with anxiety, emotional difficulties, reduced well-being, and challenges in academic functioning [8,9].

Perceived stress refers to an individual's subjective assessment of how unpredictable, uncontrollable, or overwhelming their life circumstances appear. It is influenced not only by the intensity of external stressors but also by personality characteristics, previous experiences, available social support, and individual coping abilities [1,2]. Medical students may experience stress differently depending on their stage of training, adaptation to the educational environment, academic expectations, and clinical responsibilities. Understanding these differences is essential for identifying vulnerable groups and developing appropriate support mechanisms.

Coping strategies play an important role in determining how individuals respond to stressful situations. These strategies include cognitive and behavioural efforts used

to manage internal and external demands. Problem-focused coping involves taking active steps to address the source of stress, whereas emotion-focused coping aims to regulate the emotional consequences of stressful experiences. Other strategies may include seeking emotional or instrumental support, positive reframing, acceptance, humour, and religious practices[10,12]. The selection of coping strategies depends on the nature of the stressor, individual characteristics, available resources, and perceived control over the situation.

Adaptive coping strategies, such as active problem-solving, planning, and seeking appropriate support, may help individuals manage stress more effectively. Conversely, maladaptive coping strategies, including behavioural disengagement, excessive self-blame, denial, and substance use, may interfere with effective adjustment when relied upon persistently [13,15]. Identifying the coping mechanisms used by medical students can therefore provide valuable information for developing interventions that promote psychological resilience and improve overall well-being.

In India, the introduction of Competency-Based Medical Education (CBME) in 2019 represented an important change in undergraduate medical training. The curriculum emphasizes competency development, integration of knowledge and skills, formative assessment, and the preparation of graduates for effective clinical practice. However, medical students continue to face academic and psychological challenges throughout their training. Differences in teaching methods, assessment patterns, academic expectations, and clinical exposure may influence perceived stress and coping behaviour across the various phases of the MBBS course.

Although several studies have examined stress and coping among undergraduate medical students, evaluating these factors across different phases of the CBME curriculum may provide additional insight into the psychological experiences of students as they progress through medical education. Comparing perceived stress, general mental health, and coping strategies across these phases can help identify patterns that may guide student support services and stress-management interventions.

Therefore, the present study was undertaken to assess perceived stress and coping strategies among undergraduate medical students in different phases of the MBBS course at Jorhat Medical College and Hospital, Assam. The study also aimed to compare general mental health status across the phases and examine differences in the coping strategies adopted by students. The findings may help inform measures to strengthen adaptive coping, promote psychological well-being, and support a healthier learning environment in undergraduate medical education.

## Materials and Methods

### Study Design

The study was a comparative cross-sectional study conducted to assess perceived stress, general mental health, and coping strategies among undergraduate medical students in different phases of the Competency-Based Medical Education (CBME) curriculum.

### Place of Study

The study was conducted in the Department of Psychiatry, Jorhat Medical College and Hospital (JMCH), Jorhat, Assam.

### Study Duration

The study was conducted over a period of one year, from March 2023 to February 2024.



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**Study Population**

The study population comprised undergraduate MBBS students enrolled in the CBME curriculum at JMCH, belonging to the following four phases:

- Phase I
- Phase II
- Phase III, Part I
- Phase III, Part II

**Sample Size and Sampling Technique**

A total of 220 undergraduate medical students were included from a finite population of 528 students. The sample size was calculated using a prevalence of perceived stress of 29%, a 95% confidence level, and a 5% margin of error, followed by finite population correction and an allowance for 10% non-response.

Systematic random sampling was used to select participants. To ensure equal representation across the four phases, 55 students were included from each phase.

| MBBS phase | Number of students |
|---|---|
| Phase I | 55 |
| Phase II | 55 |
| Phase III, Part I | 55 |
| Phase III, Part II | 55 |
| **Total** | **220** |

**Inclusion Criteria**

1. Undergraduate medical students enrolled in the CBME curriculum.
2. Students who provided informed consent to participate in the study.

**Exclusion Criteria**

1. Students with existing psychiatric co morbidities.
2. Students with comorbid physical illnesses.

**Tools for Data Collection**

Data were collected using a self - administered questionnaire comprising sociodemographic details and three standardized assessment instruments.

**Sociodemographic Proforma**

A semi-structured proforma was used to record demographic information, including age, sex, marital status, religion, education, occupation, socioeconomic status, locality, and family type. Socioeconomic status was assessed using the modified BG Prasad classification for 2022.

**Perceived Stress Scale (PSS-10)**

The 10-item Perceived Stress Scale, developed by Cohen and colleagues, was used to assess the extent to which participants perceived their lives as stressful during the preceding month. Each item was scored from 0 to 4, with appropriate reverse scoring for positively worded items. Total scores ranged from 0 to 40 and were classified as:

- Low perceived stress: 0–13
- Moderate perceived stress: 14–26
- High perceived stress: 27–40

**General Health Questionnaire (GHQ-12)**

The 12-item General Health Questionnaire was used to assess participants' general mental health and screen for psychological distress. The questionnaire used a four-point response scale, with scores ranging from 0 to 3 per item and a total score ranging from 0 to 36. The study classified participants into typical, distress, and severe psychological distress categories according to the scoring criteria specified in the study protocol.

**Brief COPE Inventory (Brief COPE-28)**

The 28-item Brief COPE Inventory, developed by Carver, was used to assess coping strategies adopted by students when dealing with stress. It comprises 14 subscales, each containing two items, with individual



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item scores ranging from 1 to 4. Higher subscale scores indicate greater use of the corresponding coping strategy. The strategies were examined across the four MBBS phases and interpreted in relation to problem-focused, emotion-focused, and avoidant coping patterns.

**Procedure for Data Collection**

After obtaining approval from the Institute Ethics Committee, eligible students were selected using systematic random sampling. Written informed consent was obtained from all participants before data collection. Participants completed the sociodemographic proforma, PSS-10, GHQ-12, and Brief COPE-28 questionnaires.

The collected data were used to compare perceived stress, general mental health status, and coping strategies across the four MBBS phases.

**Statistical Analysis**

The data were analysed using IBM SPSS version 23.0. Microsoft Excel 2021 was used to prepare tables and charts. Categorical variables were compared using the chi-square test, while continuous scores were compared using analysis of variance (ANOVA), as appropriate. Two-way ANOVA was used for comparisons of coping strategies across the study groups, as described in the original study protocol. A p-value of less than 0.05 was considered statistically significant.

**Ethical Considerations**

The study was conducted after approval from the Institute Ethics Committee. Written informed consent was obtained from all participants. Participation was voluntary, and participants were informed of their right to withdraw at any time. Confidentiality was maintained, and the collected information was used exclusively for research purposes.

**Results**

The present study included 220 undergraduate medical students enrolled in different phases of the Competency-Based Medical Education (CBME) curriculum at Jorhat Medical College and Hospital, Assam. A total of 55 students were included from each phase: Phase I, Phase II, Phase III Part 1, and Phase III Part 2. Perceived stress, general mental health, and coping strategies were assessed using the PSS-10, GHQ-12, and Brief COPE-28 scales, respectively. A total of 220 undergraduate MBBS students were included in the study, with 55 students each from Phase I, Phase II, Phase III Part I, and Phase III Part II of the Competency-Based Medical Education (CBME) curriculum. The study assessed sociodemographic characteristics, perceived stress, general mental health, and coping strategies across the four phases. The sociodemographic analysis revealed that most students belonged to the 21–25-year age group. Students aged 21–25 years constituted 65.45% of Phase I, 90.91% of Phase II, 89.09% of Phase III Part I, and 98.18% of Phase III Part II. Male students predominated in Phase II (65.45%) and Phase III Part I (61.82%), whereas Phase I had a nearly equal distribution of male (49.09%) and female (50.91%) students. The majority of participants were unmarried across all four phases, with proportions ranging from 94.55% to 98.18%.

The assessment of perceived stress using the Perceived Stress Scale-10 (PSS-10) demonstrated that moderate stress was the most common category across all four phases. Moderate stress was observed in 72.73% of Phase I students, 70.91% of Phase II students, 54.55% of Phase III Part I students, and 61.82% of Phase III Part II students. The proportion of students experiencing low stress was highest in Phase III Part I (27.27%), whereas high stress was most prevalent in Phase III Part II

(23.63%). The mean PSS-10 score was highest in Phase III Part II (21.42 ± 5.91) and lowest in Phase III Part I (18.24 ± 5.88). However, the differences in mean perceived stress scores across the four phases were not statistically significant ($p$ = 0.1194). Similarly, the difference in the distribution of stress categories was not statistically significant ($\chi^2$ = 11.20, $p$ = 0.083). The assessment of general mental health using the General Health Questionnaire-12 (GHQ-12) revealed differences in the distribution of typical mental health and psychological distress across the study groups. Psychological distress was most frequently observed in Phase II, affecting 61.81% of students, followed by Phase III Part I (49.09%), Phase I (47.27%), and Phase III Part II (34.54%). The proportion of students with typical general mental health was highest in Phase III Part II (54.55%), followed by Phase III Part I (38.18%), Phase I (34.55%), and Phase II (27.27%). Severe psychological distress was observed in 18.18% of Phase I students, 10.91% of Phase II students, 12.73% of Phase III Part I students, and 10.91% of Phase III Part II students. The mean GHQ-12 score decreased from 17.73 ± 4.53 in Phase I to 15.82 ± 3.44 in Phase III Part II. Nevertheless, the differences in mean GHQ-12 scores were not statistically significant ($p$ = 0.1115), and the categorical distribution also showed no statistically significant difference across phases ($\chi^2$ = 11.43, $p$ = 0.076). The analysis of coping strategies using the Brief COPE-28 Inventory showed that problem-focused coping was commonly used by students across all four phases. The mean problem-focused coping score was highest in Phase I (2.39 ± 0.52), followed by Phase II (2.33 ± 0.55), Phase III Part II (2.26 ± 0.48), and Phase III Part I (2.15 ± 0.41). The difference in problem-focused coping scores was not statistically significant ($p$ = 0.0825). Emotion-focused coping scores were highest in Phase I (2.34 ± 0.51), followed by Phase III Part II (2.27 ± 0.48), Phase II (2.12 ± 0.40), and Phase III Part I (2.04 ± 0.28). The differences in emotion-focused coping scores were statistically significant ($p$ = 0.0128). Avoidant coping scores were highest in Phase I (1.91 ± 0.44) and lowest in Phase III Part I (1.55 ± 0.32), with intermediate scores in Phase II (1.85 ± 0.30) and Phase III Part II (1.79 ± 0.45). The differences in avoidant coping scores were also statistically significant ($p < 0.001$).

Overall, the findings demonstrated that moderate perceived stress was prevalent among undergraduate medical students across all four phases of the CBME curriculum. Although mean perceived stress and general mental health scores did not differ significantly across phases, emotion-focused and avoidant coping strategies showed statistically significant differences. Problem-focused coping was commonly reported throughout the undergraduate course, while Phase III Part II students showed the highest proportion of typical general mental health and the lowest mean GHQ-12 score.

Table 1: Sociodemographic Characteristics of the Study Participants

| Sociodemographic variable | Phase I (n=55), n (%) | Phase II (n=55), n (%) | Phase III Part 1 (n=55), n (%) | Phase III Part 2 (n=55), n (%) | p-value |
|---|---|---|---|---|---|
| Age (years) | | | | | <0.001 |
| ≤20 | 19 (34.55) | 3 (5.45) | 0 (0.00) | 0 (0.00) | |



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| Sociodemographic variable | Phase I (n=55), n (%) | Phase II (n=55), n (%) | Phase III Part 1 (n=55), n (%) | Phase III Part 2 (n=55), n (%) | p-value |
|---|---|---|---|---|---|
| >20–25 | 36 (65.45) | 50 (90.91) | 49 (89.09) | 54 (98.18) | |
| >25 | 0 (0.00) | 2 (3.64) | 6 (10.91) | 1 (1.82) | |
| Sex | | | | | 0.268 |
| Male | 27 (49.09) | 36 (65.45) | 34 (61.82) | 29 (52.73) | |
| Female | 28 (50.91) | 19 (34.55) | 21 (38.18) | 26 (47.27) | |
| Socioeconomic status | | | | | 0.515 |
| Class I | 41 (74.54) | 48 (87.27) | 47 (85.45) | 46 (83.64) | |
| Class II | 12 (21.82) | 7 (12.73) | 8 (14.55) | 9 (16.36) | |
| Class III | 1 (1.82) | 0 (0.00) | 0 (0.00) | 0 (0.00) | |
| Class IV | 1 (1.82) | 0 (0.00) | 0 (0.00) | 0 (0.00) | |
| Class V | 0 (0.00) | 0 (0.00) | 0 (0.00) | 0 (0.00) | |
| Marital status | | | | | 0.654 |
| Unmarried | 52 (94.55) | 54 (98.18) | 53 (96.36) | 54 (98.18) | |
| Married | 3 (5.45) | 1 (1.82) | 2 (3.64) | 1 (1.82) | |
| Religion: Hindu | 40 (72.73) | 40 (72.73) | 42 (76.36) | 45 (81.82) | 0.576 |
| Religion: Muslim | 15 (27.27) | 14 (25.45) | 13 (23.64) | 10 (18.18) | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HABITAT | | | | | | | | | |
| Urban | 17 | 30.91 | 34 | 61.82 | 33 | 60.00 | 19 | 34.55 | 0.001* |
| Semi-urban | 27 | 49.09 | 13 | 23.64 | 15 | 27.27 | 17 | 30.90 | |
| Rural | 11 | 20.00 | 8 | 14.54 | 7 | 12.73 | 19 | 34.55 | |
| FAMILY TYPE | | | | | | | | | |
| Joint | 11 | 20.00 | 8 | 14.54 | 16 | 29.09 | 9 | 16.36 | 0.229 |
| Nuclear | 44 | 80.00 | 47 | 85.46 | 39 | 70.91 | 46 | 83.64 | |
| Problem | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

The age distribution differed significantly across the four phases ($p<0.001$). Most participants were aged over 20–25 years. Male students predominated in Phases II and III Part 1, whereas Phase I had a nearly equal

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distribution of males and females. Most participants belonged to socioeconomic Class I and were unmarried. Sex, socioeconomic status, marital status, and religion did not differ significantly across the study phases.

Table 2: Distribution of cases according to PS

| | PSS | | | | | | | | Chi-square | p- value |
|---|---|---|---|---|---|---|---|---|---|---|
| | Phase-I | | Phase-II | | Phase-III (P- 1) | | Phase- III (P-2) | | | |
| | n | % | n | % | n | % | n | % | | |
| Low stress | 4 | 7.27 | 10 | 18.18 | 15 | 27.27 | 8 | 14.55 | 11.20 | 0.083 |
| Moderate stress | 40 | 72.73 | 39 | 70.91 | 30 | 54.55 | 34 | 61.82 | | |
| High stress | 11 | 20.00 | 6 | 10.91 | 10 | 18.18 | 13 | 23.63 | | |

When the PSS scores in the students of individual phases were assessed, it was observed [Table: 2] that across all study groups, almost half of the participants(72.73% in phase I, 70.91% in phase II, 54.55% in phase III part 1, and 61.82% in phase III part 2) had moderate stress. While the highest proportions of highly stressed students were observed in the phase I 72.73% and followed by phase II 70.91%. However, a significant statistical difference could not be determined (p-value 0.083) (Table 2).

Table 3: Distribution of cases according to general mental health (general)

| GHQ-12 | CASES | | | | | | | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|---|
| | Phase-I | | Phase-II | | Phase-III (P- 1) | | Phase- III (P-2) | | | |
| | n | % | n | % | n | % | n | % | | |
| Typical | 19 | 34.55 | 15 | 27.27 | 21 | 38.18 | 30 | 54.55 | 11.43 | 0.076 |
| Distress | 26 | 47.27 | 34 | 61.81 | 27 | 49.09 | 19 | 34.54 | | |
| Severe problem with psychological distress | 10 | 18.18 | 6 | 10.91 | 7 | 12.73 | 6 | 10.91 | | |

The assessment of general (general) mental health problems in different phases of undergraduate medical students was done by GHQ-12 questionnaire, a self-administered questionnaire showed (table3) distress (48.17%) was the most common category of general mental health condition followed by typical and severe problem with psychological distress least. Maximum 61.81% in phase- II, 49.09% in phase III part 1, 47.27% in phase-I and 34.54% in phase III part 2) had distress type of general general mental health condition. A total of 54.55% of students in phase -III part -2 showed typical general mental health.

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Table 4: Different subtype of coping strategy in study group

| Coping strategy | case | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | Phase –I | | Phase -II | | Phase –III(P-1) | | Phase- III(P-2) | | |
| | MEAN ±SD | Range | MEAN ±SD | Range | MEAN ±SD | Range | MEAN ±SD | Range | |
| Active coping | 2.45±0.77 | 1-4 | 2.22±0.62 | 1-3.5 | 2.17±0.67 | 1-4 | 2.26±0.73 | 1-4 | 0.1860 |
| Informational support | 2.41±0.81 | 1-4 | 2.35±0.82 | 1-4 | 2.18±0.66 | 1-4 | 2.29±0.71 | 1-4 | 0.4421 |
| Positive reframing | 2.44±0.81 | 1-4 | 2.44±0.75 | 1-4 | 2.19±0.73 | 1-4 | 2.20±0.71 | 1-4 | 0.1307 |
| planning | 2.51±0.80 | 1-4 | 2.41±0.71 | 1-4 | 2.21±0.81 | 1-4 | 2.39±0.69 | 1-4 | 0.2117 |
| Emotional support | 2.15±0.76 | 1-4 | 2.12±0.61 | 1-4 | 2.04±0.69 | 1-4 | 2.15±0.76 | 1-4 | 0.7936 |
| Venting | 2.34±0.82 | 1-4 | 2.19±0.71 | 1-4 | 2.14±0.63 | 1-4 | 2.15±0.70 | 1-4 | 0.4353 |
| humor | 2.27±0.93 | 1-4 | 2.11±0.62 | 1-3.5 | 2.25±0.74 | 1-4 | 2.11±0.83 | 1-4 | 0.5678 |
| Acceptance | 2.64±0.86 | 1-4 | 2.13± 0.55 | 1-3.5 | 2.14±0.72 | 1-4 | 2.49±0.74 | 1-4 | 0.3787 |
| Religion | 2.25±0.82 | 1-4 | 2.06±0.53 | 1-3.5 | 2.05±0.76 | 1-4 | 2.45±0.86 | 1-4 | 0.0179* |
| Self-blaming | 2.39±0.90 | 1-4 | 2.11±0.57 | 1-4 | 1.64±0.50 | 1-3 | 2.14±0.85 | 1-4 | 0.0000* |
| Selfdestruction | 2.33±0.89 | 1-4 | 1.97±0.54 | 1-3 | 1.95±0.76 | 1-3.5 | 2.08±0.73 | 1-4 | 0.0303* |
| Denial | 1.99±0.78 | 1-4 | 1.84±0.47 | 1-3 | 1.74±0.56 | 1-3.5 | 1.77±0.62 | 1-3 | 0.1449 |
| Substance use | 1.31±0.55 | 1-4 | 1.34±0.43 | 1-2 | 1.25±0.38 | 1-2.5 | 1.45±0.72 | 1-4 | 0.2565 |
| Behavioural disengagement | 2.02±0.85 | 1-4 | 1.45±0.56 | 1-3.5 | 1.27±0.43 | 1-2.5 | 1.83±0.70 | 1-3.5 | 0.0000* |
| p-value | 0.000* | | 0.000* | | 0.000* | | 0.000* | | |



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The assessment of coping style used by medical students of individual phases were done by using Brief COPE-28 scale. Thereafter the comparison of coping styles in individual phases of medical students were done using two-way ANOVA test.

The assessment of Coping strategies adopted by Phase -I medical UGs showed in Table 4 that acceptance (2.64±0.86) was significantly higher and substance use (1.31±0.55) was significantly lower than the rest (p-value 0.000*). Similarly Coping strategies by Phase -II medical UGs showed positive reframing (2.44±0.75) was significantly higher and substance use (1.34±0.43) was significantly lower than the rest (p-value 0.000*) And Phase -III part-1 medical UGs showed humor (2.25±0.74) was significantly higher and substance use (1.25±0.38) was significantly lower than the rest (p-value 0.000*). Phase -III part-2 medical students showed acceptance (2.45±0.86) was significantly higher and substance use (1.45±0.72) was significantly lower than the rest (p-value 0.000*).

Further inter phase comparison revealed statistically significant differences in specific coping strategy subtypes. Religious coping was significantly higher in Phase- III(P-2) {2.45±0.86} and in Phase- I {2.25±0.82} in comparison with Phase -II and Phase -III(P-1) (p value-0.0179*) and Self-blaming was significantly higher in Phase -I {2.39±0.90} (p value-0.0000*) followed by Phase- III part- 2 (2.14±0.85), Phase-II (2.11±0.57) and lowest in Phase-III part-1 (1.64±0.50). Similarly, Self-destruction was significantly higher in Phase- I {2.33±0.89} (p value-0.0303*) followed by Phase- III part- 2 (2.08±0.73), Phase-II (1.97±0.54) and lowest in Phase-III part-1 (1.95±0.76) and Behavioural disengagement was statistically higher in Phase- I {2.02±0.85} (p value- 0.0000*) and lowest in Phase- III part- 1 (1.27±0.43) in comparison with other Phases of medical students (Table 4).

Table 5: Phase wise different type of main coping strategies in study group

| Coping strategy | case | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | Phase -I | | Phase -II | | Phase –III (P-1) | | Phase- III (P-2) | | |
| | MEAN ±SD | Range | MEAN ±SD | Range | MEAN ±SD | Range | MEAN ±SD | Range | |
| PF | 2.39±0.52 | 1.25-3.5 | 2.33±0.55 | 1-3.5 | 2.15±0.41 | 1.38-3.25 | 2.26±0.48 | 1-3.25 | 0.0825 |
| EF | 2.34±0.51 | 1.4-3.75 | 2.12±0.40 | 1.33-3.08 | 2.04±0.28 | 1.25-2.67 | 2.27±0.48 | 1-3.83 | 0.0128* |
| Avoidant | 1.91±0.44 | 1-2.88 | 1.85±0.30 | 1.13-2.25 | 1.55±0.32 | 1-2.5 | 1.79±0.45 | 1-2.75 | 0.0000* |
| p-value | 0.0000* | | 0.0000* | | 0.0000* | | 0.0000* | | |



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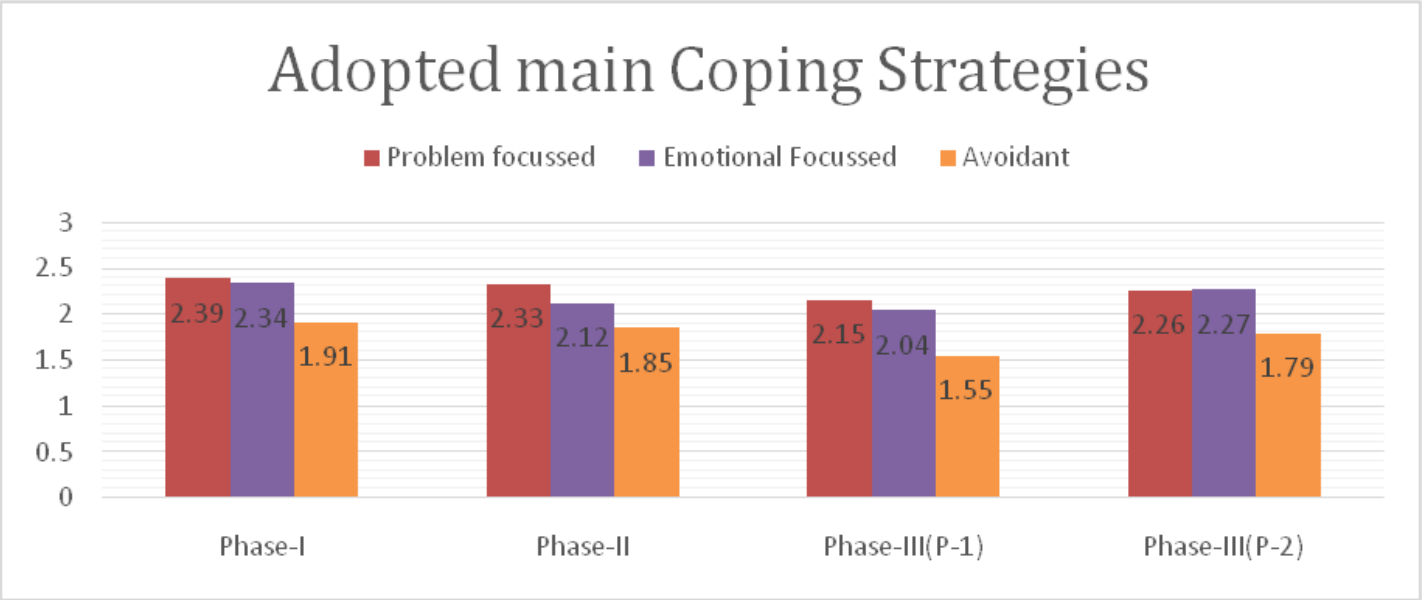
Figure 1: Phase wise comparing the mean of main coping strategies in study groups




The assessment of overall main coping strategies showed in Table 5 and figure 1, we found that in all phases undergraduate medical students predominantly adopted PF-CS. EF-CS was significantly elevated in Phase -I {2.34±0.51} and lowest in Phase III (P-1) {2.04±0.28} (p value-0.0128*) and avoidant type also significantly higher in Phase I {1.91±0.44} and significantly lower in Phase-III(P-1) {1.55±0.32} (p value-0.0000*) in comparison with other different phases of undergraduate medical students.

**Discussion**

Stress is a complex psychological and physiological response that occurs when an individual perceives that environmental demands exceed their available coping resources. Lazarus and Folkman described stress in terms of cognitive appraisal and coping, while Selye explained the physiological response to stressful situations [1,3]. Medical education is associated with multiple academic, personal, and clinical demands that may influence students' psychological well-being and academic performance. Robinson's historical review of stress research also highlights the evolution of the concept of stress and its significance in understanding human adaptation[2]. In the present study, perceived stress and coping strategies were assessed among 220 undergraduate medical students across four phases of the CBME curriculum.

The sociodemographic findings showed that most participants belonged to the 21–25-year age group, with variations in sex distribution across the four phases. These characteristics are important because age, social circumstances, academic experience, and individual coping resources may influence how students perceive and respond to stress. Previous studies have similarly examined perceived stress among medical students and identified academic demands and other psychosocial factors as important contributors to their psychological experiences [4,8]. Chowdhury et al. highlighted the role of academic factors in perceived psychological stress among undergraduate medical students [5]. Likewise, studies by Ossai et al. and Ragab et al. investigated the prevalence and correlates of stress among medical students, demonstrating the importance of evaluating stress within the educational and social context [7,8].



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In the present study, moderate perceived stress was the predominant category in all four MBBS phases. It was observed in 72.73% of Phase I students, 70.91% of Phase II students, 54.55% of Phase III Part I students, and 61.82% of Phase III Part II students. The mean PSS-10 score was highest in Phase III Part II (21.42 ± 5.91) and lowest in Phase III Part I (18.24 ± 5.88). However, the differences in mean stress scores were not statistically significant ($p = 0.1194$). Similarly, the difference in the distribution of stress categories was not statistically significant ($\chi^2 = 11.20$, $p = 0.083$). These findings indicate that moderate stress was common across the curriculum, but the present study did not establish a statistically significant difference in perceived stress between the four phases. Earlier studies, including those by Satpathy et al., Chowdhury et al., and Ragab et al., have also examined the prevalence and contributing factors of stress in medical students [4,5,8]. Differences between studies may reflect variations in educational settings, assessment methods, student populations, and academic environments. The findings of Bramness et al. further emphasise the importance of considering students' stage of medical education when evaluating stress and mental health [9].

The assessment of general mental health using the GHQ-12 revealed that psychological distress was most common in Phase II, affecting 61.81% of students. In contrast, Phase III Part II had the highest proportion of students classified as having typical general mental health (54.55%). The mean GHQ-12 score decreased from 17.73 ± 4.53 in Phase I to 15.82 ± 3.44 in Phase III Part II. Nevertheless, the difference in mean scores was not statistically significant ($p = 0.1115$), and the categorical distribution also showed no statistically significant difference ($\chi^2 = 11.43$, $p = 0.076$). Although these findings suggest variation in mental health status across the four phases, they do not establish a statistically significant improvement with progression through the course. Bramness et al. investigated the relationship between medical school stress and students' mental health during early and late clinical training, supporting the importance of examining psychological well-being at different stages of medical education [9]. Baumann et al. also discussed affect sensitivity and affect regulation, concepts relevant to understanding how individuals respond to positive and negative emotional experiences [10].

Coping strategies are important in determining how individuals manage challenging situations. Lazarus and Folkman's framework distinguishes coping responses according to how individuals appraise and manage stressors [1]. In the present study, problem-focused coping was commonly used across all four phases. The mean problem-focused coping score was highest in Phase I (2.39 ± 0.52) and lowest in Phase III Part I (2.15 ± 0.41), although the difference was not statistically significant ($p = 0.0825$). These findings suggest that problem-focused approaches remained commonly reported throughout undergraduate medical education. Al-Dubai et al. examined stress and coping strategies among medical students in Malaysia, demonstrating the relevance of studying both stress levels and the approaches students use to manage them [11]. The findings also align conceptually with the broader psychological literature, which recognises planning, active coping, and seeking support as possible responses to demanding situations [1,11,12].

Emotion-focused coping differed significantly across the four phases in the present study ($p = 0.0128$). The mean score was highest in Phase I (2.34 ± 0.51), followed by

Phase III Part II (2.27 ± 0.48), Phase II (2.12 ± 0.40), and Phase III Part I (2.04 ± 0.28). Emotion-focused coping includes responses intended to regulate emotional reactions to stress. Baumann et al. examined affect regulation in relation to positive and negative affect, providing a conceptual basis for understanding the role of emotional responses in coping [10]. Weiten et al. also discuss psychological adjustment and coping in everyday life, which are relevant to understanding the different ways students respond to academic and personal challenges [12]. However, the present findings do not establish whether the differences in emotion-focused coping were beneficial or detrimental to students' academic performance or mental health.

Avoidant coping scores were highest in Phase I (1.91 ± 0.44) and lowest in Phase III Part I (1.55 ± 0.32), with a statistically significant difference across the phases ($p < 0.001$). This finding suggests that the use of avoidant coping strategies varied according to the stage of medical education. Some avoidance-based responses may provide temporary relief but may not resolve the underlying stressor. Brown et al. distinguished between adaptive and maladaptive coping strategies following negative work-related events, emphasising that coping responses may differ in their longer-term consequences [15]. Ociskova et al. also investigated coping strategies and their relationship with treatment outcomes in patients with neurotic spectrum disorders, highlighting the importance of examining coping patterns in relation to psychological functioning [13]. Although these studies involved populations or contexts different from undergraduate medical students, their findings provide a conceptual framework for interpreting the coping strategies identified in the present study.

Overall, the findings from the present study indicate that moderate perceived stress was common across all four phases, while problem-focused coping was frequently reported. Emotion-focused and avoidant coping showed statistically significant variation across phases. These findings emphasise the importance of assessing both perceived stress and coping strategies rather than relying on stress scores alone. Previous literature on coping and psychological adjustment similarly supports the need to understand the relationship between stressors, individual responses, and mental health outcomes [1,10,15]. Schiller et al. examined medical students' use of different coping strategies and their relationship with academic performance during preclinical and clinical years [16]. Their work is particularly relevant to the present study because it considers coping across different stages of medical education. In our study, problem-focused coping was commonly reported across all four phases, while emotion-focused and avoidant coping differed significantly. The findings support the importance of examining coping strategies separately across phases rather than assuming that students use the same approaches throughout their training. However, because academic performance was not directly assessed in the present study, the observed coping differences cannot be interpreted as evidence of better or poorer academic achievement.

McEwen et al. discussed the effects of stress on neuronal structure, particularly in the hippocampus, amygdala, and prefrontal cortex [17]. Their review provides a biological perspective on the potential consequences of sustained stress. In the context of medical education, prolonged academic and psychosocial pressures may be relevant to students' emotional regulation and psychological functioning. Nevertheless, the present



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study measured perceived stress and self-reported general mental health rather than neurobiological changes. Therefore, the results cannot establish any direct association between students' stress scores and changes in brain structure.The Perceived Stress Scale developed by Cohen and colleagues provides a standardised method of assessing the extent to which individuals perceive their lives as stressful [18,19]. In the present study, the PSS-10 was used to compare perceived stress across four MBBS phases. Moderate stress was the predominant category in every phase, and the differences in mean scores were not statistically significant. These findings demonstrate the value of using a standardised instrument for comparing stress across student groups. They also indicate that the academic stage alone did not explain statistically significant differences in perceived stress within this sample. Biondi and Picardi reviewed research on psychological stress and neuro endocrine function in humans, highlighting the relationship between psychological experiences and physiological responses [20]. Although this perspective helps explain why stress is relevant to overall health, the present study did not assess hormonal or other physiological markers. Consequently, no conclusions can be drawn regarding neuron endocrine functioning among the participating students. Similarly, Amabile et al. examined creativity under pressure, illustrating how demanding circumstances may influence performance in a work-related setting [21]. While their study was not conducted among medical students, it provides a broader perspective on the potential relationship between pressure and performance. The present study, however, did not directly measure creativity or academic performance.

Henderson et al. investigated the effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life among patients with early-stage breast cancer[22]. Although this population differs from undergraduate medical students, the study is relevant to the broader consideration of approaches intended to manage stress and improve psychological well-being. In the present study, the findings of moderate perceived stress across all four phases and significant differences in emotion-focused and avoidant coping indicate the importance of understanding students' coping patterns. However, because no stress-management intervention was evaluated, the effectiveness of mindfulness or any other intervention cannot be inferred from the current results. Taken together, references 16–22 provide additional perspectives on coping behaviour, the biological effects of stress, stress measurement, performance under pressure, and stress-management interventions.

The present study contributes by comparing perceived stress, general mental health, and coping strategies across four phases of the CBME undergraduate medical curriculum. Its principal findings were the predominance of moderate stress, the absence of statistically significant differences in mean PSS-10 and GHQ-12 scores, and significant differences in emotion-focused and avoidant coping. These findings support the importance of continued attention to medical students' psychological well-being and coping skills throughout undergraduate training.

**Conclusion**

The present study revealed that moderate perceived stress was prevalent among undergraduate medical students across all four phases of the CBME curriculum. No statistically significant differences were observed in



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mean perceived stress or GHQ-12 scores across the phases. Problem-focused coping was commonly reported, whereas emotion-focused and avoidant coping strategies showed statistically significant differences. These findings highlight the importance of promoting effective coping skills, psychological well-being, and stress-management support throughout undergraduate medical education.

**Limitations**

1. The study was conducted at a single medical college with a sample size of 220 students, limiting the generalisability of the findings.
2. The cross-sectional design did not allow assessment of changes in stress and coping within the same students over time.
3. Self-reported questionnaires may have introduced response and reporting bias.
4. Coping strategies before entry into medical education were not assessed, and gender-specific differences in coping were not evaluated.

**References**

1. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer Publishing Company; 1984.
2. Robinson AM. Let's talk about stress: history of stress research. Rev Gen Psychol. 2018;22(3):334-42.
3. Selye H. Stress without distress. In: Serban G, editor. Psychopathology of human adaptation. Boston: Springer; 1976. p. 137-46.
4. Satpathy P, Siddiqui N, Parida D, Sutar R. Prevalence of stress, stressors, and coping strategies among medical undergraduate students in a medical college of Mumbai. J Educ Health Promot. 2021;10:318.
5. Chowdhury R, Mukherjee A, Mitra K, Naskar S, Karmakar PR, Lahiri SK. Perceived psychological stress among undergraduate medical students: role of academic factors. Indian J Public Health. 2017;61(1):55-7.
6. Rafique S, Waseem Z, Sheerin F. Perceived stress among medical students: prevalence, source and severity. Psychol Psychother Res Study. 2019;2(3
7. Ossai EN, Alo AT, Onwe BC, Okoro DO, Ezeagu NE, Ogbonnaya LU. Prevalence and predictors of perceived stress: a study among medical students of Ebonyi State University, Abakaliki, Nigeria. Asian J Adv Res Rep. 2019;3(1):1-9.
8. Ragab EA, Dafallah MA, Salih MH, Osman WN, Osman M, Miskeen E, et al. Stress and its correlates among medical students in six medical colleges: an attempt to understand the current situation. Middle East Curr Psychiatry. 2021;28:75.
9. Bramness JG, Fixdal TC, Vaglum P. Effect of medical school stress on the mental health of medical students in early and late clinical curriculum. Acta Psychiatr Scand. 1991;84(4):340-5.
10. Baumann N, Kaschel R, Kuhl J. Affect sensitivity and affect regulation in dealing with positive and negative affect. J Res Pers. 2007;41(1):239-48.
11. Al-Dubai SAR, Al-Naggar RA, Alshagga MA, Rampal KG. Stress and coping strategies of students in a medical faculty in Malaysia. Malays J Med Sci. 2011;18(3):57-64.
12. Weiten W, Dunn DS, Hammer EY. Psychology applied to modern life: adjustment in the 21st century. 12th ed. Boston: Cengage Learning; 2020.
13. Ociskova M, Prasko J, Kamaradova D, Grambal A, Kasalova P, Sigmundova Z, et al. Coping strategies, hope, and treatment efficacy in pharmacoresistant inpatients with neurotic spectrum disorders. Neuro psychiatr Dis Treat. 2015;11:1191-201.



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14. Kate N, Grover S, Kulhara P, Nehra R. Relationship of caregiver burden with coping strategies, social support, psychological morbidity, and quality of life in the caregivers of schizophrenia. Asian J Psychiatr. 2013;6(5):380-8.

15. Brown SP, Westbrook RA, Challagalla G. Good cope, bad cope: adaptive and maladaptive coping strategies following a critical negative work event. J Appl Psychol. 2005;90(4):792-8.

16. Schiller JH, Stansfield RB, Belmonte DC, Purkiss JA, Reddy RM, House JB, et al. Medical students' use of different coping strategies and relationship with academic performance in preclinical and clinical years. Teach Learn Med. 2018;30(1):15-21.

17. McEwen BS, Nasca C, Gray JD. Stress effects on neuronal structure: hippocampus, amygdala, and prefrontal cortex. Neuro psychopharmacology. 2016;41 (1):3-23.

18. Cohen S, Kamarck T, Mermelstein R. Perceived stress scale. In: Measuring stress: a guide for health and social scientists. Mind Garden Inc.; 1994. p. 235-83.

19. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24(4):385-96.

20. Biondi M, Picardi A. Psychological stress and neuro endocrine function in humans: the last two decades of research. Psychother Psychosom. 1999;68(3):114-50.

21. Amabile TM, Hadley CN, Kramer SJ. Creativity under the gun. Harv Bus Rev. 2002;80:52-63.

**22.** Henderson VP, Clemow L, Massion AO, Hurley TG, Druker S, Hébert JR. The effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life in early-stage breast cancer patients: a randomized trial. Breast Cancer Res Treat. 2012;131:99-109.



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