Original Article

Prevalence of Stress, Anxiety, and Depression and the Effectiveness of a Mindfulness-Based Life Coaching Intervention among 4th-Year Medical Students: A Pilot Quasi- Experimental Study

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Abstract

Objective: Medical students experience high psychological demands that predispose them to stress, anxiety, and depression. This study aimed to determine the prevalence of stress, anxiety, and depression in 4th-year MBBS students and measure the efficacy of a short-term mindfulness-based life coaching (MBLC) intervention.

Methods: This study consisted of a cross-sectional screening followed by a single-arm pre–post intervention. The study was conducted in two phases: Phase 1 screened 100 students using the DASS-42. Phase 2 enrolled 20 students with mild-to-moderate distress; 15 participants completed a 21-day MBLC program (weekly 1-hour sessions; daily 20-minute practice). Pre- and post-intervention DASS-42 scores were compared using paired t-tests, and effect sizes (Cohen's d) were computed.

Results: Among 100 students screened, 20% had mild-to-moderate stress, 18% had anxiety, and 17% had depression symptoms. Among the participants who completed the study (n = 15), stress scores decreased by 7.4 points (95% CI: 4.8–10.0, P<0.001). Anxiety decreased by 6.0 points (95% CI: 3.5–8.5; P <0.001). Depression decreased by 5.2 (95% CI: 2.7–7.7; P <0.001).

Conclusion: The 21-day MBLC program was feasible, culturally acceptable, and associated with reduced distress.

Keywords: Stress, Psychological, Anxiety, Depression, Students, Medical, Mindfulness, Stress Management.

Introduction

It is universally acknowledged that medical education is one of the most intellectually and emotionally challenging training programs. In addition to the intensive academic schedule, medical students are commonly presented with clinical duties, tests, and hours of studying, on top of the developmental stresses of early adulthood. These stressors, accumulated over years of training, often trigger high rates of psychological distress, most often in the form of stress, anxiety, and depression.[1] Unlike short-term exam stress, such conditions can have lasting effects on the emotional well-being of students, their academic achievements, clinical abilities, and later professional satisfaction. Therefore, the mental health of medical students is not a personal welfare question but a constituent that determines the quality of care or sustainability of health systems.

The literature has repeatedly shown that medical students are more vulnerable to mental health problems than those in the same age group. These data were combined in a meta-analysis and systematic review,[2,] which revealed that 27.2% of medical students met the criteria for depression and 11.1% experienced suicidal thoughts. Similarly, a meta-analysis,[3] regarding anxiety among medical students, revealed that its prevalence was 33.8% worldwide.

Some other recent reviews in the context of the COVID-19 pandemic showed a greater prevalence of anxiety, with one study estimating that more than 40% of medical students around the globe had clinically significant levels of anxiety and depression symptoms during the pandemic years.[4] Such results highlight one of the international trends: the medical education environment puts students under a lot of psychological pressure.

Although distress in medical students is a global problem, the prevalence rates in South Asia are usually higher than the global rates. In a study conducted in India,[5] it was identified that almost 45% of medical students were suffering from moderate to severe depression, and 53% were found to suffer from high levels of stress because of academic overload and the competitive culture of examinations. A study conducted in Pakistan,[6] indicated prevalence rate of depression to be 55% among medical students in Peshawar, with female students being disproportionately affected. Similarly, another study in Pakistan,[7] found high stress, anxiety, and depression levels among both undergraduate and postgraduate medical students, with a strong reinforcement that psychological stress is an ingrained part of the medical education system.

Several factors exacerbate psychological distress in Pakistan, including low faculty-to-student ratios, intense academic competition, sociocultural expectations, and stigma surrounding mental health.

- Mental health: Seeking help for any mental condition is usually discouraged, compelling students to internalise distress.
- Gender disparities: Female students usually have to juggle academic pressure and cultural practices at home.[6]

These factors combined make the situation such that psychological distress is not only prevalent but also under-addressed and under-diagnosed.

The effect of untreated mental health issues among medical students results in poor performance at school and burnout. Burnout is highly associated with depression and anxiety, substance misuse, diminished empathy, and higher turnover in medical training.[1] Moreover, during the training years, psychological distress is a predictor of future physician burnout, with implications for health systems that already experience shortages. Therefore, it is both a moral duty and a health matter to address mental health at an early stage of medical training.

Mindfulness, practiced by intentionally paying attention to the present moment without judgment, is often used to help manage stress, anxiety, and depression. Mindfulness-Based Stress Reduction (MBSR) is commonly applied to support the well-being of different groups, including medical trainees. Mindfulness-Based Stress Reduction (MBSR) programs have demonstrated significant reductions in stress across populations, including medical trainees. For instance, a study conducted a cluster-randomised controlled trial with Dutch clerkship students, 8, found that an eight-week MBSR program improved mental health and life satisfaction, with effects sustained at 20 months. Similarly, another study,[9] reported that mindfulness training significantly improved stress management and mental well-being among Italian medical students. These advantages are also supported by meta-analyses,[10] which revealed that mindfulness programs invariably reduce stress, and a survey,[11] reported that such programs have small-to-moderate effects on anxiety and depression in health profession students.

There is a deficiency of studies on mindfulness and coaching interventions in medical students across Pakistan and South Asia. Although one study piloted an online mindfulness program on Pakistani university students, it was not confined to medical students, and coaching elements were not mentioned in the study.[12,13] Therefore, evidence-based interventions with specific cultural characteristics to support medical students' mental health in Pakistan have a critical evidence gap. Given the distinct stressors faced by medical students, combining mindfulness and life coaching may offer a more holistic and effective intervention.

This study suggests that early intervention may help prevent the progression of moderate stress and anxiety to severe psychiatric morbidity by targeting students with mild-to-moderate distress. It also incorporates world evidence into the study and a culturally sensitive model that fits well within the Pakistani educational environment. Primary Objectives of the study were to estimate the prevalence of stress, anxiety, and depression among 4th-year MBBS students and to evaluate the effectiveness of a 21-day mindfulness-based life coaching intervention in reducing distress.

The 21-day duration was selected as a brief and feasible intervention aligned with the academic schedules and time constraints of medical students. Short-term mindfulness-based interventions have been shown to produce measurable psychological benefits within limited durations, making them more practical and acceptable in educational settings. In addition, the hybrid integration of mindfulness and life coaching was intended to address attention regulation with goal-directed behaviour. This approach can be particularly useful in a country like Pakistan, where longer interventions may be difficult to sustain within the medical education system.

Materials And Methods

A two-phase pilot quasi-experimental (single-arm pre–post) study was conducted using a two-part structured questionnaire consisting of

1. Demographic data (age, gender)
2. DASS-42 consisting of three domains[14]

This study was conducted at HITEC-IMC. All students enrolled in the 4th-year MBBS (representing a census of the target population) program were invited to participate in the study. Although a prior sample size calculation was not performed because of feasibility constraints inherent to this pilot quasi-experimental study, a pragmatic and statistically justifiable approach was adopted. The screening phase included a census of all eligible 4th-year MBBS students (N = 100), ensuring comprehensive coverage of the target population. For the intervention phase, the study was designed as an early-phase pilot aimed at estimating preliminary effect sizes, rather than testing definitive hypotheses. Based on prior literature demonstrating moderate-to-large effect sizes for mindfulness-based interventions (Cohen's d ≈ 0.8–1.5), a minimum sample of 12–15 participants is considered adequate for within-subject (paired) designs to detect meaningful pre–post differences with acceptable statistical power (approximately 80%) at $\alpha = 0.05$. Therefore, the final sample of 15 completers aligns with established methodological recommendations for pilot studies and is sufficient to provide reliable estimates of effect size, feasibility, and intervention acceptability. These estimates are intended to inform future adequately powered randomised controlled trials.

IRB approval was obtained (HITEC-IRB-61-2025), along with written informed consent from all participants prior to data collection after explaining the study objectives, procedures, potential risks, and benefits; confidentiality was maintained along with the participant's right to withdraw at any moment.

DASS-42 with high internal consistency ($\alpha \approx 0.89–0.93$).[14]

Operational Definitions

Depression, Anxiety, Stress

The Depression Anxiety Stress Scales (DASS-42) is a psychometric tool designed to assess negative emotional states of depression, anxiety, and stress. Each of the three subscales contains the following items:

Depression =14 items

Anxiety =14 items

Stress =14 items

Respondents rated the extent to which they had experienced each state over the past week on a 4-point Likert scale ranging from 0 to 3[14].

Cut-Off Scores

DASS-42 provides severity ratings for each subscale, which are interpreted as follows:

Status	Depression Score	Anxiety Score	Stress Score
Normal	0–9	0–7	0–14
Mild	10–13	8–9	15–18
Moderate	14–20	10–14	19–25
Severe	21–27	15–19	26–33
Extremely Severe	28+	20+	34+

Reliability (Cronbach's Alpha)

The Depression Anxiety Stress Scales (DASS-42) has demonstrated high internal consistency across its subscales, as evidenced by the Cronbach's alpha coefficients. Specifically, the Depression, anxiety, and stress subscales had alphas of 0.93, 0.89, and 0.92, respectively. The total scale has an alpha of 0.96, which means that it is a great scale for measuring these emotional states[14].

Inclusion criteria

- All participants with mild-to-moderate disease were included in the study.

Exclusion criteria

- All those coming under the category of normal were excluded from the study
- All those coming under the category of severe and extremely severe were referred to the specialists.

Mindfulness Intervention:

A structured mindfulness-based life coaching program, led by a certified mindfulness coach, was applied to students identified through DASS-42 screening who met the inclusion criteria.

Impact Assessment:

The effect of the mindfulness intervention on stress, anxiety, and depression was evaluated by comparing participants' DASS-42 scores at two time points: baseline (pre-intervention) and immediately post-intervention (day 21).

Duration of study: 6 months

Phase 1: Screening

All students completed the DASS-42. The prevalence of mild-to-moderate distress was computed by domain; students meeting mild-to-moderate cutoffs were eligible for Phase 2, and severe/extremely severe cases were referred for care.

Phase 2: Intervention
Intervention: A 21-day mindfulness-based life coaching (MBLC) program consisting of weekly 1-hour guided sessions in the college facility and a daily 20-minute home-based practice. Each is designed to enhance present-moment focus, self-awareness, and personal growth.
Type: Mindfulness session + coaching exercises
Duration: 21 days
Frequency:
Weekly: 1 hour guided session
Daily Practice: 20 minutes of self-directed home practice
Content: Mindfulness meditation, breath awareness, body scan, reflective journaling, and goal setting
Analysis: Paired-sample t-tests were used to compare the pre- and post-intervention means. The normality of the data was assessed using the Shapiro–Wilk test. Effect sizes were reported as Cohen's d values. As this study design was of a hybrid nature, the screening phase (prevalence estimation) had been aligned with STROBE, and the intervention phase (single-arm pre–post design) had been aligned with TREND guidelines for non-randomized interventions.

Results

There was an overlap among participants experiencing stress, anxiety, and depression. The prevalence estimates calculated for each item of the DASS 42 are as follows. The prevalence of stress, anxiety, and depression was 20%, 18%, and 17%, respectively. As these items were calculated, a partial overlap was found between the participants in all three domains. Some participants met the eligibility criteria for more than one domain. The final sample, therefore, comprised these participants as well as those categorized to be of mild-moderate severity across at least one domain rather than comprising identical individuals across all three domains.
The baseline characteristics of completers and dropouts were not significantly different; however, a detailed comparison was limited due to the small sample size.

Phase 1: Screening Outcomes:
Of the 100 students screened, 80 were excluded because they did not meet the inclusion criteria. Of the 20 eligible participants, 15 completed the intervention, while five dropped out due to non-attendance or scheduling issues. A complete case (per protocol) analysis was performed, which included only participants who completed the intervention and had both baseline and post-intervention data available. Owing to the small sample size, missing data were not imputed. The possibility of attrition bias was recognized and acknowledged. Analysis was conducted using a complete-case analysis.
The prevalence patterns confirm the first study objective—establishing the burden of stress, anxiety, and depression in this cohort of 100 students by reporting prevalence against the fully screened sample, providing a theoretical baseline for evaluating the preventive potential of mindfulness-based life coaching (MBLC). According to the transactional model of stress and coping,[15] these mild-to-moderate prevalence levels highlight a critical 'early intervention window in which coping strategies can prevent escalation to severe psychopathology.

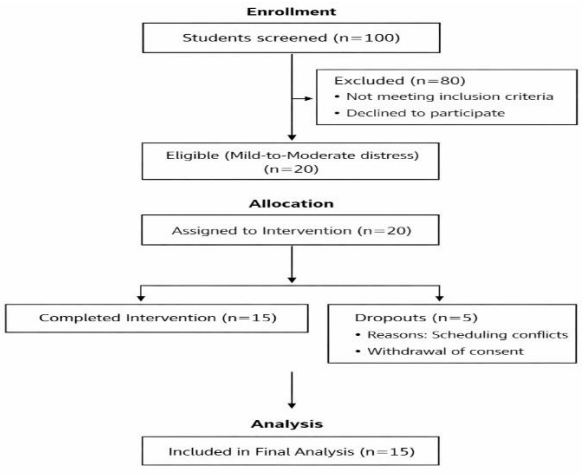

Figure 1: CONSORT-style participant flow

Participant Characteristics
Table 1 presents the demographic characteristics of the Phase 2 completers (n = 15)

Variable	Category	Value
Age (years)	Mean (SD)	21.4 (1.2)
Gender	Male / Female	6 / 9
Year of study	4th Year	100%

The demographic data show that the sample was quite homogenous regarding age and level of academic progression, which reduces the differences related to the developmental factors. The gender figure was relative because there were fewer males (6/15) and more female participants (9/15) than in the other studies, which showed that female medical students tend to experience more psychological distress.

Phase 2: Intervention Outcomes

A mean of differences with a 95% confidence interval was calculated for the outcomes of all three domains. Stress was found to decrease from 22.1 to 14.7 with a mean difference of 7.4 (95% CI of Mean Difference=4.76-10.04, p<0.001), anxiety decreased from 18.9-12.9 by 6 points (95% CI of Mean Difference=3.48-8.52, p<0.001) and depression decreased from 19.3 to 14.1 by 5.2 points (95% CI of Mean Difference= 2.69-7.71, P<0.001), indicating a significant difference and clinically meaningful improvement. Intervention was made in response to common stress factors combined with academics, and not a specific demographic factor. (table:2)

Table 2: Pre- and Post-Intervention DASS-42 scores (n = 15)

DASS-42	Pre Mean (SD)	Post Mean (SD)	Mean Diff	95% CI of Mean Difference	t (14)	p-value	Cohen's d
Stress	22.1 (6.2)	14.7 (5.1)	7.4	(4.76 to 10.04)	6.01	< .001	1.55
Anxiety	18.9 (5.8)	12.9 (5.0)	6.0	(3.48 to 8.52)	5.11	< .001	1.32
Depression	19.3 (6.4)	14.1 (5.6)	5.2	(2.69 to 7.71)	4.44	< .001	1.15

These findings supported H1 (that MBLC can alleviate stress) and H2 (that MBLC can alleviate anxiety and depression).

The impact of such psychological interventions is usually moderate; therefore, significant effect sizes (Cohen's d = 1.15-1.55) should be noted. This scale indicates that mindfulness-based life coaching can have synergistic effects, which is in line with self-determination theory,[16] which focuses on autonomy, competence, and relatedness to maintain well-being. The approach of combining attentional retraining (mindfulness) and systematic accountability (coaching) is likely to have improved emotion control and self-efficacy.

Hypothesis Testing

H1(stress reduction): Supported. The reduction in stress scores was significant, which is in line with international findings on the high responsiveness of stress to mindfulness-based treatment.[10]

H2 (reduction in anxiety and depression): Supported. The effect sizes of both anxiety and depression were reduced, which was in line with previous RCTs on medical students.[8,9]

The findings of this study indicate significant improvement associated with the mindfulness intervention; however, our causal inference is limited due to the lack of a control group. The results support the main hypothesis that mindfulness-based life coaching could be a valid early interventional approach for Pakistani medical students.

Discussion

This study tested a group of 4th -year MBBS students and measured the effect of a brief, intensive mindfulness-based life coaching (MBLC) program. The screening showed that 20% of the students had mild-to-moderate stress, 18% had anxiety, and 17% experienced depression. Although these estimates fall toward the lower end of the ranges typically reported, they nonetheless identify a substantive subset of students at risk of distress, underscoring the need for timely clinical assistance.

Participants showed statistically significant pre- and post-decreases in stress (Cohen d = 1.55), anxiety (d = 1.32), and depression (d = 1.15) following 21 days of the MBLC program, which included weekly 1-hour sessions guided by a professional and 20-minute daily home practices. As international results suggest, the most significant effects were found on the level of stress, and beneficial effects on anxiety and depression were also significant.[10,11] The findings directly correspond to the aims of the study in that (a) they quantify mental health burden by reporting the proportion of students with mild to moderate distress out of the total screened sample (n=100), and (b) they demonstrated the effectiveness of a brief mindfulness-coaching intervention that was adapted to the local context by using familiar language, examples, and stressors relevant to medical students.

Taken together, these findings indicate three general conclusions. First, a significant proportion of fourth-year MBBS students experienced meaningful levels of distress during their academic training. Second, group-based MBLC can generate extensive and rapid symptom improvements while remaining short and inexpensive. Third, it seems suitable to target students with mild-to-moderate symptoms and implement early intervention and secondary prevention, which may prevent the development of severe symptomatology and burnout.

Global syntheses are always characterised by a high level of distress among medical students compared to their peers of similar age. Relative to such international rates, the current cohort rates for mild-to-moderate (17–20%) are small, which may be because of (a) year-specific stressors in one 4th-year cohort, (b) severe cases out of referral

pathways, and (c) local support. However, a positive outcome of screening in one out of five cases is a material institutional issue due to its effects on learning and patient care.[17]

There is an increasing amount of evidence indicating that mindfulness-based interventions (MBIs) are effective with medical trainees. It was described in a cluster-randomised controlled trial,[8] that MBSR was associated with a decrease in distress and an increase in life satisfaction among Dutch clerkship students, and the benefits were seen up to 20 months. Systematic reviews of health-professional and medical students have repeatedly reported stress reductions and small-to-moderate effects on anxiety/depression,[10,11,] but the heterogeneity of dosage and delivery method and comparators makes it difficult to estimate the effect. The current research develops this literature by assessing a short (21-day), blended program where mindfulness-based classic (i.e., breath awareness, body scan, non-judgment) and life-coaching (goal setting, reflection, accountability) elements are combined. Managing these huge effects, especially of stress, is in line with the meta-analytic patterns that stress is the most sensitive outcome of the MBIs.[10]

Although there are fewer research studies involving coaching in undergraduate medical studies, the initial results are positive. It was found that individualized/executive coaching of first-year medical students enhanced their perceived stress and resilience.[12] Among physicians[1] it was found that those professionals who had coaching suffered less from burnout. The current research did not identify coaching-only effects; however, mindfulness (skills to regulate attention and non-reactivity) was coupled with coaching (skills to be an agent, goal direction, and implementation), which probably increased the interest and practice in real life, which partially accounts for the high d values. This synergy deals with a well-identified issue of short-term MBIs, namely, adherence, by combining practice with organised goal accountability, and it is reflected in the international student well-being implementation.[11]

The Pakistani evidence base is expanding, albeit beckoning. A study conducted in Pakistan[13] established the possibility of an online mindfulness intervention among university students with evidence of growth in mental health, but it did not incorporate life-coaching features and did not focus specifically on medical students. Our results, therefore, provide novel context-specific evidence that a short, group-based, coach-facilitated format is acceptable and associated with beneficial outcomes in a Pakistani medical school. Taken together, these findings support culturally sensitive**,** resource-efficient MBIs as realistic additions to South Asian medical curricula.

Theoretical Implications

Stress appraisal and coping

Lazarus and Folkman's (1984)[15] transactional model frames stress as a function of primary (threat) and secondary (coping resources) appraisals. Mindfulness practice modulates appraisal by reducing evaluative reactivity (e.g., "I can't handle this"), increasing tolerance for affective arousal, and enhancing the clarity of internal experience. This aligns with evidence that mindfulness reduces rumination and catastrophising**,** central mechanisms in anxiety/depression[18]. By strengthening attentional control and decentering from distressing thoughts, students may reappraise exams and clinical demands as challenging but manageable rather than overwhelming.

Mindfulness mechanisms

From the perspective of Kabat-Zinn (1990),[19] operationalisations of mindfulness cultivate non-judgmental, present-moment awareness. Mechanistic accounts propose pathways via attention regulation**,** body awareness**,** emotion regulation**,** and change in perspective.[18] Such procedures decrease the automatic nature of stress responses and favour approach-focused coping strategies. The pattern we have seen in terms of the largest change in stress, then anxiety, and then depression, is compatible with the idea that arousal-based symptoms (e.g., stress) can be more easily changed with the introduction of attentional retraining and non-reactivity, but mood dysregulation (depression) can be more slowly altered or requires repetition to be solidified.

Coaching, autonomy, and behavior change

According to the Self-Determination Theory (SDT), autonomy, competence, and relatedness are factors that bring about well-being when they are satisfied.[16] Coaching interventions directly address autonomy and competence through collaborative goal setting, self-checking, and feedback, whereas relatedness is promoted through group formats. Coaching in the MBLC model probably increased the effect of mindfulness by promoting the intention to implement (with specific when-where-how plans), better adherence to daily practice, and the association of skills in attention to personally relevant goals (e.g., exam preparation, sleep routines). This combination of theories is useful in explaining the extent of pre-post change despite a short program.

Implications

1) Curriculum integration and sequencing

• Integrate MBLC as a credit-based course (e.g., 3-4 weeks) in the 3rd and 4th year during workload increases.

• Apply introductory orientation followed by practicum (guided practice, journaling), and finally a capstone reflection to align mindfulness objectives with the future outlook of clinical rotations.

• Liaise with the assessment calendar to prevent busy exams and get the most take-up.

2) Delivery model and staffing

- Facilitators in the form of trained certified mindfulness coaches to increase cultural fit.
- Offer a hybrid model: brief in-person kick-off + weekly group sessions + asynchronous app-interactive practice (5-10 minutes/day) to support online/in-person practice.

3) Stigma-sensitive framing and access

- Frame MBLC as a performance and resilience skill—not therapy—to reduce stigma and widen participation.
- •Ensure anonymity and ensure that participation is voluntary; promote it through academic mentors and not only counselling centres. Provide women-only groups or mixed-gender options as appropriate and consider Urdu/English bilingual delivery.

4) Measurement and quality improvement

- Brief, validated screeners (e.g., DASS-21 short form, GAD-7, PHQ-9) should be used at entry and exit for pragmatic monitoring.
- Introduce well-being dashboards that indicate anonymised aggregates of deans and the quality office to inform policy decisions.

5) Complementary supports

• Instead, create explicit referral channels for students who screen in the severe range–your current procedure has already achieved this by not admitting severe cases and providing referrals, which is morally imperative.

• Hostels/homes with quiet rooms/mindfulness corners to normalise brief practice.

Overall, the current findings support institution-wide implementation of short MBLC modules in the framework of a stepped-care system: universal (psychoeducation), selective (MBLC of at-risk individuals), and indicated (referrals of severe cases).

Strengths and Limitations

Strengths:

- Prevention and scalable support based on early intervention, with an emphasis on mild-to-moderate cases.
- Concise, resource-saving format apt to the Pakistani education system.
- Validated measurement (DASS-42) with strong internal consistency [14]. Group format, reflective journaling, bilingual feasibility, and cultural customising (acceptability) should be promoted.

Limitations.

- This study was not prospectively registered, and transparency may be somewhat limited. This also affects reproducibility, as replicating the methodology will be more challenging and reduces confidence in the generalisability of the findings. Furthermore, the lack of randomisation limited the ability to establish causal inference, as confounding factors could not be fully ruled out.
- As a single-arm pre–post design, the absence of a control group prevents the ruling out of expectancy or placebo effects. In addition, without a concurrent control group, there is an inability to control for confounding variables, regression to the mean, and potential expectancy effects.
- The small sample size (n = 15 completers) limits the precision and generalisability of the results. Therefore, the results might not apply to other groups, centres, and stages of clinical care.
- Durability undefined; anxiety/depression can have greater consolidation.
- Could be affected by social desirability and measurement reactivity.
- There is also a possibility of attrition bias in this study because participants who did not complete the intervention or follow-up were not included in the analysis, which may have affected the final findings.

Future Direction

Registry of similar future studies.

Any future studies, particularly randomised controlled trials, including the evaluation of mindfulness and life coaching, will be registered beforehand in recognised trial registries before participant enrolment

1. **Randomised controlled trials (RCTs).** Relative to the existing state in MBLC compared to active control (e.g., study-skills or stress-education groups) and mindfulness-only arms to isolate the value added from coaching. Additional contamination countermeasures: Cluster randomisation by tutorial/rotation groups to reduce contamination.[8]
2. **Longer follow-up and maintenance.**
   Measure the results after 3, 6 and 12 months, assess booster sessions, and academic outcome measures (e.g. OSCE performance, absenteeism).
3. **Implementation science.**

Assess the reach, adoption, fidelity, and cost (RE-AIM) framework. Do mixed-methods process assessments (facilitator logs, focus groups) to learn about engagement barriers and cultural adaptations?

4. **Mechanisms of change.**

Test putative mediators (mindfulness facets, self-compassion, cognitive reappraisal, behavioral activation) to determine whether there is an enhancement of the effect of mindfulness coaching- guided goal pursuit.

5. **Equity and subgroups.**

Test between moderation by gender, socioeconomic status, hostel or day scholar status, and clinical or pre-clinical status; adapt delivery to that (e.g., women-led group, flexible schedule).

6. **Digital augmentation.**

Micro-practices (3-5 minutes) based on the app, push-notification nudges, and tele- coaching to contact students during rotations, as well as tracking compliance and results. With the answers to these questions, Pakistani medical schools will be capable of developing sustainable, culturally sensitive, evidence-based well-being programs.

Conclusions

Medical education has a serious mental load, and temporary, formal mindfulness-based therapy can positively influence it. The intervention was associated with measurable reductions in distress in students who were screened for mild-to-moderate distress and a 21-day MBLC intervention. In practice, Pakistani medical schools can start with low-cost pilots built into curricula, associated with stepped-care support and quality-improvement cycles. The MBLC can be developed into a serious element of humane, high-performance medical teaching in Pakistan and other similar settings with careful consideration and critical assessment.

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