



Mindfulness and its role in psychological well-being among medical college students

Abstract

Background: Mindfulness is a qualitatively unique way of paying attention: on purpose, in the present moment, and non-judgmentally. Rooted in ancient Buddhist philosophy, there has been a revival of interest in mindfulness as a psychotherapeutic tool in modern psychiatry. Mindfulness-based interventions have been used to treat a wide range of psychological problems successfully and have contributed to what is known as the third wave of psychotherapy. Mindfulness is a naturally occurring trait that varies across individuals. Research has shown mindfulness to be correlated with psychological well-being. **Aims:** We set out to study the variations in levels of mindfulness and explore its facets in a sample of undergraduate medical college students and analyse its association with depression, anxiety, and stress. **Methods:** In a sample of 150 students who provided informed consent, the Five Facet Mindfulness Questionnaire (FFMQ) and the Depression Anxiety Stress Scale (DASS) were administered to assess mindfulness and psychopathology respectively. **Results:** There were individual differences in levels of mindfulness as a trait. Mindfulness was associated with significantly lower levels of depression, anxiety, and stress. Among the facets of mindfulness, acting with awareness and non-judging were associated with significantly lower levels of all forms of psychopathology studied. Describing facet was associated with significantly lower levels of depression. **Conclusion:** Mindfulness is an inherent trait with inter-individual differences. The stressors of medical education that impact on the psychological well-being of students can be buffered by enhancing mindfulness. Research on the impact of integrating mindfulness training in medical education in the Indian context is needed.

Keywords: Depression. Anxiety. Stress.

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INTRODUCTION

Quality of consciousness has been regarded as the essence of well-being in spiritual, philosophical, and psychological traditions for more than two millennia.[1,2] The roots of mindfulness lie in Eastern religious traditions such as Buddhism, that have emphasised the cultivation of one's consciousness actively through meditative practices as a mean to achieve spirituality.[3] This unique presence in the present moment is brought about by techniques that expose the individual to the ever changing experience of his/her thoughts, feelings, and sensations, both bodily and external with awareness and acceptance.[4]

The principles of mindfulness are being increasingly utilised in modern clinical psychology, often in combination with cognitive behavioural interventions. Mindfulness techniques have been successfully incorporated in standard psychotherapeutic interventions, including stress reduction, cognitive therapy, dialectical behaviour therapy, and acceptance and commitment therapy.[5-8] Gotink *et al.*,[9] in a meta-analysis of randomised controlled trials, concluded

that there is evidence to support the use of mindfulness programmes to alleviate symptoms of a variety of mental and physical disorders. Mindfulness training has also been shown to improve a host of general well-being measures.[10]

Other than in yogis and trained meditators, little research has been done on mindfulness as a naturally occurring trait among non-practitioners.[11] Though almost everyone has the capacity to be mindful, it has been shown that individuals differ in their propensity or willingness to be aware and to sustain attention to what is occurring in the present.[12] Thus, the natural state of mindfulness varies between individuals.

Baer *et al.*[13] sought to investigate the factor structure of mindfulness by combining all items from preexisting mindfulness measures into a single questionnaire. Using factor analysis, it was found that mindfulness consisted of five facets, viz. observe, describe, act-aware, non-react, and non-judge.[13]

Studies have found a significant association between mindfulness and psychological well-being, anxiety, depression, alcohol/drug abuse, stress tolerance, and physical well-being

among experienced mediators, general population, clinical (psychiatric) samples, patients with chronic illness, and terminally ill patients.[11,13,14] These studies have concluded that mindfulness as a quality is associated with optimal physical and psychological health.

There are very few studies on mindfulness among medical professionals despite being a profession at high risk of psychological stress. The extreme stress levels inherent in the profession begin during undergraduate years, well before a doctor achieves mastery over a chosen field of specialisation, putting students at risk for both physical and psychological problems. Potential consequences of stress on medical students' lives include alcohol/drug abuse, interpersonal relationship difficulties, depression, anxiety, and suicide which increase as students progress from first to final years of their training.[15,16] Stress in medical students adversely affects not only their personal well-being, but also their humanistic values leading to sub-optimal patient care. Studies on mindfulness-based stress reduction programmes for medical students have reported a reduction in anxiety, psychological distress, depression, fatigue, and an increase in empathy and vigour.[17,18]

The lack of Indian studies on mindfulness especially among the medical profession is striking as mindfulness has its roots in the Indian tradition. The present study is the first step in addressing this lacuna. The aims of this present study are to explore the levels of mindfulness among medical students and to assess the association between various facets of mindfulness and psychological well-being as measured by depression, anxiety, and stress levels.

MATERIALS AND METHODS

A descriptive, cross-sectional, quantitative study design was chosen to address the objectives. The study was approved by the institutional ethics committee. All Bachelor of Medicine, Bachelor of Surgery (MBBS) students who provided written informed consent were part of the study. The following scales were administered:

Five Facet Mindfulness Questionnaire (FFMQ)

The Five Facet Mindfulness Questionnaire (FFMQ) consists of 39 items, all measured on a Likert scale ranging from one (never or very rarely true) to five (very often or always true).[12] The five facets assessed are a) observe, b) describe, c) act with awareness, d) non-react, and e) non-judge. These five facets have been shown to possess good internal consistency (0.72–0.92) with samples of meditators and non-meditators.[13]

Depression Anxiety Stress Scales (DASS)

The Depression Anxiety Stress Scales (DASS) is designed to assess the severity of core symptoms of depression, anxiety, and tension (or stress) over a period of time.[19] It consists of three subscales of seven items each, assessing the severity and frequency of distress. The scores on DASS can be converted into ordinal categories ranging from none to extremely severe based on standardised cut-off scores.[20]

Minitab® statistical package was used for statistical analyses.[21]

RESULTS

One hundred and fifty students consented to participate in the study. None of the students had previous experience in formal mindfulness training or practices. The distribution of students in first, second, third, and final years of MBBS was 28.7%, 21.3%, 23.4%, and 26.6% respectively. Table 1 illustrates the distribution of mindfulness scores on FFMQ for the entire sample. Students scored highest on the acting with awareness (mean 3.35, standard deviation [SD] 0.63) and lowest on non-reactivity (mean 2.78, SD 0.61) dimensions respectively.

The mean scores of depression, anxiety, and stress subscales of DASS were 10.19 (SD 7.87), 11.15 (SD 6.98), and 13.19 (SD 6.55) respectively (Table 2). Spearman's correlation (non-parametric test for non-normal distribution) revealed overall mindfulness scores to be significantly negatively correlated with depression ($\rho=-0.42$, p -value 0.000), anxiety ($\rho=-0.33$, p -value 0.001), and stress ($\rho=-0.26$, p -value 0.010) subscales of DASS (Table 3).

The association of dimensional facets of mindfulness with depression, anxiety, and stress was explored by ordinal logistic regression analysis using the cut-off scores of DASS subscales of depression, anxiety, and stress (none, mild,

Table 1: Distribution of FFMQ scores in the sample (n=150)

N	FFMQ facets	Mean scores*	SD
1	Observing	2.81	0.66
2	Describing	3.12	0.68
3	Acting with awareness	3.35	0.63
4	Non-judging	3.05	0.71
5	Non-reactivity	2.78	0.61
6	Total	3.03	0.29

*Mean scores were arrived by dividing the facet scores by the number of items in that facet FFMQ=The Five Facet Mindfulness Questionnaire, SD=Standard Deviation

Table 2: Distribution of DASS scores of the sample

N	DASS dimensions	Mean	SD
1	Depression	10.19	7.87
2	Anxiety	11.15	6.98
3	Stress	13.19	6.55

DASS=Depression Anxiety Stress Scale, SD=Standard Deviation

Table 3: Correlation between overall mindfulness and DASS subscale scores

N	Variables	Spearman's rho	Overall mindfulness (total FFMQ correlation)	
				p-value
1	DASS subscale scores	Depression	-0.42	0.000*
2		Anxiety	-0.33	0.001*
3		Stress	-0.26	0.010*

*statistically significant DASS=Depression Anxiety Stress Scale, FFMQ=The Five Facet Mindfulness Questionnaire

Table 4: Ordinal logistic regression analysis of the association between depression subscale scores (DASS) and facets of mindfulness (FFMQ)

N	FFMQ	OR	95% CI	p-value
1	Observing	1.26	0.70-2.26	0.449
2	Describing	0.32	0.17-0.61	0.000*
3	Acting with awareness	0.29	0.15-0.57	0.000*
4	Non-judging	0.49	0.28-0.85	0.014*
5	Non-reactivity	0.84	0.45-1.57	0.595
6	Overall mindfulness	0.04	0.01-0.19	0.000*

*statistically significant DASS=Depression Anxiety Stress Scale, FFMQ=The Five Facet Mindfulness Questionnaire, OR=Odds Ratio, CI=Confidence Interval

Table 5: Ordinal logistic regression analysis of the association between anxiety subscale scores (DASS) and facets of mindfulness (FFMQ)

N	FFMQ	OR	95% CI	p-value
1	Observing	1.80	1.02-3.18	0.036*
2	Describing	0.64	0.37-1.10	0.098
3	Acting with awareness	0.47	0.26-0.86	0.011*
4	Non-judging	0.44	0.26-0.76	0.004*
5	Non-reactivity	0.75	0.41-1.35	0.35
6	Overall mindfulness	0.29	0.06-0.73	0.010*

*statistically significant DASS=Depression Anxiety Stress Scale, FFMQ=The Five Facet Mindfulness Questionnaire, OR=Odds Ratio, CI=Confidence Interval

Table 6: Ordinal logistic regression analysis of the association between stress subscale scores (DASS) and mindfulness facets (FFMQ)

N	FFMQ	OR	95% CI	p-value
1	Observing	1.35	0.70-2.61	0.372
2	Describing	0.78	0.41-1.49	0.453
3	Acting with awareness	0.49	0.24-0.98	0.037*
4	Non-judging	0.52	0.28-0.98	0.039*
5	Non-reactivity	0.51	0.25-1.05	0.070
6	Overall mindfulness	0.14	0.03-0.66	0.009*

*statistically significant DASS=Depression Anxiety Stress Scale, FFMQ=The Five Facet Mindfulness Questionnaire, OR=Odds Ratio, CI=Confidence Interval

moderate, severe, and extremely severe) as response variables with the dimensional facets of FFMQ scale (Tables 4 - 6).

The odds of having depression (DASS) was significantly lower in students who had high scores in describing (odds ration [OR] 0.32, 95% confidence interval [CI] 0.17-0.61, $p=0.000$), acting with awareness (OR 0.29, 95% CI 0.15-0.57, $p=0.000$), non-judging (OR 0.49, 95% CI 0.28-0.85, $p=0.014$) facets, and overall mindfulness (OR 0.04, 95% CI 0.01-0.19, $p=0.000$) in FFMQ. The non-reactivity facet did not show a statistically significant reduction in the odds (OR 0.84, 95% CI 0.45-1.57, $p=0.595$). Interestingly, the odds of having depression was significantly higher in students who scored high in observing facet of mindfulness (OR 1.26, CI 0.70-2.26, $p=0.449$) (Table 4).

The odds of experiencing anxiety (DASS) was significantly lower in students who had high scores in acting with awareness (OR 0.47, 95% CI 0.26-0.86, $p=0.011$) and non-judging (OR 0.44, 95% CI 0.26-0.76, $p=0.004$) facets, and overall mindfulness (OR 0.29, 95% CI 0.06-0.73, $p=0.010$) in FFMQ. Describing (OR 0.64, 95% CI 0.37-1.10, $p=0.098$) and non-reactivity (OR 0.75, 95% CI 0.41-1.35, $p=0.35$) facets did not show a statistically significant reduction in odds. As noted with depression, the odds of having greater scores in anxiety was significantly higher in students who scored high in observing facet of mindfulness (OR 1.80, 95% CI 1.02-3.18, $p=0.036$) (Table 5).

The odds of experiencing greater stress (DASS) was significantly lower in students who had high scores in acting with awareness (OR 0.49, 95% CI 0.24-0.98, $p=0.037$) and non-judging (OR 0.52, 95% CI 0.28-0.98, $p=0.037$) facets, and overall mindfulness (OR 0.14, 95% CI 0.03-0.66, $p=0.009$) in FFMQ. Describing (OR 0.78, 95% CI 0.41-1.49, $p=0.453$) and non-reactivity (OR 0.51, 95% CI 0.25-1.05, $p=0.070$) facets did not show a statistically significant reduction in odds. The odds of having high stress scores was greater in students who scored high in observing facet of mindfulness (OR 1.35, 95% CI 0.07-2.61, $p=0.372$), but unlike depression and anxiety they did not reach statistical significance (Table 6).

To summarise, observing facet of mindfulness significantly predicted higher levels of depression and anxiety. Describing facet predicted significantly lower levels of depression. Facets of acting with awareness and non-judgement significantly predicted lower levels of depression, anxiety, and stress in the student sample. Non-reactivity facet predicted lower levels of all psychopathology studied, although the results did not reach statistical significance.

DISCUSSION

The mean FFMQ scores (raw scores obtained by adding scores of all 39 items) of students in our study was 118.07 (SD 11.55). Other studies on student and non-meditating samples have reported FFMQ scores in this range.[22] The main finding of our study was that overall mindfulness negatively correlated with depression, anxiety, and stress among students. Similar to our findings, McKee *et al.*[23] and Bohlmeijer *et al.*[24] have independently reported these associations. This is because being mindful enables one to objectively view thoughts and emotions, and thus take control of these mental phenomena. The alternative to being mindful is to live life on "auto-pilot" mode, i.e. unaware of how habits, immediate sensations, reflexive emotions run our lives. This leaves one a prey to changing life circumstances leading to avoidance, repression, or poor coping skills which in turn adds on to stress.[25] Mindful living is vitally important to the medical student as the ability to cope successfully with the enormous demands of medical education has a direct impact on the future of the developing physician.

Contrary to our expectations, we found that observing facet of mindfulness did not buffer against any form of psychopathology studied. Previous research on this facet also failed to show a protective effect on depression, anxiety, stress, and psychological well-being.[14] Observing internal states with de-centered awareness should, in theory, increase

the capacity to be less attached to negative thoughts, thereby protecting against anxiety.[26,27] One plausible explanation for this finding could be that our sample had low levels of observing coupled with low levels of non-reactivity (Table 1). To elaborate, observing could be counterproductive in the face of low non-reactivity, as it no longer allows for a distanced view of internal states, but rather heightens the cognitive and emotional reaction to distress. This could also explain why non-reactivity facet, which was the lowest at baseline, could not significantly predict any psychopathology examined.

Students who had problems describing internal mental states in our study experienced more depressive symptoms. The inability to describe emotions and feelings (low describing facet), a central problem in alexithymia, leads to externalising these states to significant others, events, or objects, thus preventing exploration of negative states and healing within.[28] Being mindful encourages one to describe internal states without bias leading to greater levels of metacognition and emotional intelligence, thereby serving to buffer negative affective states.[12]

The non-judgemental attitude seemed to emerge as an important facet of mindfulness in our results as it negatively correlated with all forms of psychopathology studied. Previous research has shown that higher non-judging to be related to lower levels of depression, anxiety, and stress.[12,14,29] The relationship between non-judging and depression is consistent with well-validated theories of depression in which self-criticism and negative cognition are hallmarks of the disorder.[30] This ability to refrain from judging one's own cognitions, emotions, and bodily sensations have been shown to buffer the effects of neuroticism, thought suppression, and experiential avoidance, all of which form the core of anxiety disorders and stress.[28]

Acting with awareness also emerged as an important facet of mindfulness in our study as it significantly predicted all three forms of psychopathology studied. Cash and Whittingham[14] postulated that the ability to maintain awareness of ongoing activities would help the person to stay in touch with contextual cues and readily available sources of positive reinforcement in the environment; thus, keeping depressive symptoms at bay.

The non-reactivity facet of mindfulness was negatively associated with depression, anxiety, and stress levels of students, though it did not reach statistical significance. Non-reactivity has been inconsistently related to depressive symptoms, with some studies showing no relationship,[14,31] while others showing either no association[30] or opposite results.[24,32] This discrepancy could be explained by the fact that our sample had the lowest level of non-reactivity compared to the other facets of mindfulness (Table 1).

Strengths and limitations

The strengths of this study lie in assessing mindfulness in the medical profession, especially among students. Our finding that enhanced levels of mindfulness are associated with psychological well-being and lower levels of psychopathology is relevant in the present scenario where medical professionals are working in increasingly stressful situations.

The cross-sectional study design is a limitation as it prevents any directional inference to be made. We can only infer that mindfulness is associated with (not caused) psychological well-being. As the main objective of the study was to investigate the association of mindfulness on psychological well-being, sociocultural factors were not studied (religion, economic status, etc.). However, these factors could have enriched our understanding of cultural influences on mindfulness.

Conclusion

The stressful experiences of medical education negatively impact on the psychological well-being of students. Levels of depression, anxiety, and stress are high in medical school which impairs their optimal performance of future doctors. In this context, mindfulness, a qualitative dimension of conscious awareness, a naturally occurring trait, has been shown to buffer the adverse effects of stress and positively correlated with well-being and quality of life. Overall mindfulness and its facets like describing, acting with awareness, and non-judgement need to be cultivated formally by integrating them in the medical curriculum as mindfulness-based meditations, life skills training, and cognitive behaviour therapy aimed at preventing psychopathology and promoting mental health.

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