An Experimental Prospective Study on Effectiveness of Brief Heartfulness-Based Start 'U'p Program on Anxiety and Perceived Stress in Allied Health Students

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Abstract

Keywords
► Beck Anxiety Inventory (BAI)
► Education
► Five Facet Mindfulness Questionnaire (FFMQ)
► heartfulness meditation
► Perceived Stress Scale (PSS)
► Start 'U'p

Aim and Objectives Health care education is an important issue in the development of countries. Stress and anxiety among health care students and workers are an area of increasing concern worldwide. Meditative practices have been shown to improve overall wellness. The aim of this study was to determine the efficacy and feasibility of a brief Heartfulness-Based Start 'U'p program to reduce anxiety and perceived stress in allied health students of Mahatma Gandhi Mission School of Biomedical Sciences (MGMSBS), Mahatma Gandhi Mission Institute of Health Sciences (MGMIHS), Navi Mumbai, Maharashtra, India. The objective of this study was first to study the prevalence of anxiety and perceived stress in allied health students of MGMSBS, MGMIHS, Navi Mumbai, and then to study the effect of heartfulness meditation on measures of said emotional wellness.

Methods Seven sessions of Start 'U'p Heartfulness Meditation of 2-hour duration once in every week was held over the course of 7 weeks. Two hundred and three participants enrolled for the heartfulness intervention. Changes in stress levels, anxiety levels, and mindfulness skills were assessed. Three self-reporting questionnaire tools—Beck Anxiety Inventory (BAI), Perceived Stress Scale (PSS), and Five Facet Mindfulness Questionnaire (FFMQ)—were used to determine the categorical scales (low, medium, and high) for anxiety and stress among students from baseline to post-intervention.

Results Our study revealed an improvement in anxiety and perceived stress post-intervention of brief Heartfulness-Based Start 'U'p Program. Out of 203 students in this study, 75.86% were female and 24.14% were male. Students' BAI scores dropped an average of 2.91 points, whereas PSS scores dropped an average of 1.61 points. The

largest increase in mindfulness was seen for nonjudging, with an average increase of 2.1 points ($p \leq 0.05$) in categorical data from pre- to post-intervention based on the FFMQ tool.

Conclusion Our results indicate that heartfulness meditation practice offers an accessible and efficient method by which students' anxiety and stress can be improved. This may also improve their engagement in learning-oriented approaches and class activities.

Introduction

Students pursuing medical education and training have to commit full-time to long working and study hours, along with sleep deprivation in environments not ideally suited for learning, in order to ensure proper care to patients.[1] This, along with their personal life factors, can lead to increased stress levels that can hamper their physical, mental, and emotional health, compromising their overall quality of life. This can also affect their academic performance.[2] Across the globe, depression and anxiety are common among medical students.[3–5] Anxiety and depression are more prevalent in medical students than in the general population.[6] Even then, the medical students, do not readily seek treatment.[6,7]

According to a report, around 30% of medical students have depression or anxiety in Europe.[8] Similar findings have been reported in India; 39.2% medical students suffer from depression and 34.5% from anxiety, as per a recent systemic review.[9] Doctors, dentists, nurses, ward staff, ancillary staff, as well as allied health/dental students and residents, all come under the umbrella of health care professionals (HCPs). Among these, the majority of the studies conducted to study anxiety, depression, stress, and emotional well-being are focused on doctors/medical students. Some of the challenges faced by medical students include long working hours, sleep deprivation, and suboptimal learning environments. These factors, along with personal issues, can lead to increased stress levels, negatively impacting students' overall health. Factors such as constant contact with the suffering patient and their families and extensive workload can lead to emotional burdens on HCPs which can potentially trigger stress and burnout. Steps taken to identify and address the barriers to mental health care seeking would also help improve the students' mental well-being.[10]

As there is a declining mental health associated with this field, management of mental health in this population is important. Implementation of early preventive measures could be one of the solutions. Since the 1960s, there has been an increase in the use of meditative practices as a complementary way to promote health.[11] Heartfulness meditation is a type of contemplative tradition that involves the transcendence of individual human consciousness by the use of simple heart-based meditative practices.[12] Several studies support the effectiveness of Heartfulness meditation practice in reducing stress.[13,14] Stress reduction may reduce the probability of acquiring a chronic physical or mental abnor-

mality.[15,16] For instance, in a study involving health care professionals, Heartfulness meditation training improved the participants' sleep.[14] In another study, it has been shown that practicing Heartfulness meditation has decreased anxiety and improved emotional well-being.[13] The main research gap that this study tries to address is that while previous studies have focused on the well-being of doctors, nurses, and medical students, there is a scarcity of data related to allied health professionals. Therefore, this research focuses on the prevalence of anxiety and perceived stress levels in allied health students of Mahatma Gandhi Mission School of Biomedical Sciences (MGMSBS), Mahatma Gandhi Mission Institute of Health Sciences (MGMIHS), Navi Mumbai, Maharashtra, India, and the effectiveness of a short Heartfulness-Based Start 'U'p Program on such parameters. Allied health professionals play a critical role in the health care system, working alongside doctors, nurses, and other health care professionals to provide comprehensive patient care and hence their mental health is also important.

Materials and Methods

Study Design and Participants

Participants: Convenience sampling method was used to recruit participants in this study. Undergraduates pursuing allied health courses were included in the study. A total of 308 students of MGMSBS Teaching Hospital met the inclusion criteria of our study; however, only 203 students voluntarily agreed to participate in the study. All 203 participants were from MGMSBS, MGMIHS in Navi Mumbai aged from 17 to 22 years. The volunteers with a history of psychosis, bipolar disorder, major depressive disorder, seizure disorder, mental retardation, autoimmune disorders, immunodeficiency disorders, neurological diseases, pregnant women, and those who were under any treatment for psychiatric problems were excluded from the study. Each of the participants signed the informed consent before enrolling in the study. This study was approved by the Institutional Ethics Committee of MGM Dental College and Hospital (IEC-MGMDCH).

Orientation and Start 'U'p Program Sessions

The first phase of the study began with an introductory session, wherein the students were sensitized about Heartfulness practices. One of the present study authors who is also a Heartfulness-certified trainer and has been accredited

by the International Heartfulness Center, conducted this orientation session. The purpose of this session was to highlight the basic concepts and fundamentals, as well as a short-guided practice of Heartfulness. Information was disseminated to increase awareness as well as inspire the students about Heartfulness practice. Participants were also briefed about expectations during meditation sessions and the contact detail of the trainer was also shared for any further questions. Educational material about essential information regarding Heartfulness meditation practice was also circulated among the students via email.

All students were then given the opportunity to participate in a 7-week program that included guided practice sessions to be held in the college itself. All the students voluntarily agreed to participate. Right after the introductory session, the previously described questionnaires (pre-program) were completed.

Heartfulness intervention: The 7-week Heartfulness-based intervention in this study consisted of six modules along with 3 days introductory session of Heartfulness practices. It was designed to improve emotional awareness, sustained attention, and emotional regulation. It was carried out in 6 sessions of 90 to 120 minutes once a week. Group discussions and exercises were also organized in such a way that covered all cognitive, physiological, emotional, and behavioral factors of the work environment stress. The Start 'U'p program is part of the Heartfulness Enabled Leadership Mastery (HELM), being conducted by the Heartfulness Institute, India. As the name indicates, this program starts with the participants on a journey of self-discovery, and this process of self-discovery gets intensified in the subsequent HELM programs. The modules of this session were as follows:

(1) *Connect*: where participants learned about our peers and our mentors and how to connect with them. They also understood the power of intention and the need for inner guidance.
(2) *Core*: Here the session took them toward outer connections to the inner connections and participants learned about their inner strengths, skills, and values.
(3) *Context*: Participants were made to realize about our world and our place in it and also tried to understand how they can contribute toward the fulfillment of United Nation Goals for Sustainable Development.
(4) *Choices*: Participants were given various practical guidance about the role of peer pressure in decision making and how to take the right decision in most situations.
(5) *Causality*: The participants learned about the cause and effect of our actions.
(6) *Community*: This session emphasized about the various resources available to the participants for deepening their Heartfulness practice.

A certified heartfulness trainer conducted these six sessions with the help of PowerPoint presentations every weekend during the first 7 weeks of the study period on these topics in the following order: benefits of meditation, challenges, and tips to improve meditation practice, learn rejuvenation technique, learn bedtime prayer meditation, heartfulness practice overview, and formal questions and answer sessions. The participants were also recommended to practice Heartfulness home practices from the HeartsApp or website.

Study Instruments

To assess the effectiveness of the overall Heartfulness-Based Start 'U'p program, the same assessment protocol was administered twice; once at the beginning and once at the end of the program. The assessment tool comprised of three validated, self-reporting inventories, namely, the Beck Anxiety Inventory (BAI), Perceived Stress Scale (PSS), and the Five Facet Mindfulness Questionnaire (FFMQ). First, BAI was used for measuring anxiety among allied health students.[17] The BAI questionnaire has been commonly used in clinical research as a measure of generalized anxiety.[18] A four-point Likert scale, that is, 0 (not at all) to 3 (severely), is used to score the responses. A score of 36 and above indicates high anxiety, 22 to 35 moderate anxiety, and 0 to 21 low anxiety.

To measure the level of perceived stress in an individual, the PSS questionnaire tool was used. It evaluates the degree at which each individual perceives situations in their lives as stressful. Here, a 5-point Likert scale, that is, 0 (never) to 4 (very often) is used. High levels of perceived stress is determined by scores in the range from 27 to 40, moderate perceived stress by 14 to 26, and low perceived stress by 0 to 13 scores.[19,20]

Last, the FFMQ, was used to assess student mindfulness, which included various parameters such as observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience.[21] A 5-point Likert scale, that is, from 1 (never or very rarely true) to 5 (very often or always true), was used. All these three questionnaires were sent electronically in the form of Google Forms to all participants pre- and post-intervention, to collect their responses.

Statistical Analysis

Statistical analysis was conducted using IBM-SPSS, version 23.0. We used descriptive statistical procedures for sociodemographic data. Wilcoxon signed rank test and McNemar test was carried out to determine the statistical differences between pre- and post-Heartfulness intervention. *p*-values of < 0.05 were considered significant.

Results

A total of 203 undergraduate students from MGMSBS, MGMIHS, Navi Mumbai, voluntarily participated in this study. The mean age of the participants was 18.70 years (SD 1.19), with a range of 17 to 22 years. One hundred and fifty-four participants were female (75.86%), while 24.14% of participants in this study were male. The majority of participants (95.07%) did not report any level of meditation experience (►**Tables 1–4**).

Table 1 Characteristics of participants in a study to assess the effect of Brief Heartfulness-Based Start 'U'p meditation sessions on stress, anxiety, and mindfulness of allied health college students

Characteristics	
1. Age	
Mean (SD)	18.70 (1.19)
Range	17–22
2. Age groups, n (%)	
< 18	18 (8.87)
18 to < 20	149 (73.40)
20 to < 22	29 (14.28)
≥ 22	7 (3.45)
3. Gender, n (%)	
Male	49 (24.14)
Female	154 (75.86)
4. Meditation experience, n (%)	
Yes	10 (4.93)
No	193 (95.07)
5. Studying hours, n (%)	
< 1	0
1 to < 5	191 (94.09)
5 to < 10	12 (5.91)
> 10	0

Discussion

The working environment of health care professionals makes them prone to stress, anxiety, and depression. Management of such mental health-related issues in this population is of high concern worldwide. The current study is one of the first

Table 2 Mean outcomes of participants in a study to assess the effect of Brief Heartfulness-Based Start 'U'p meditation sessions on stress, anxiety, and mindfulness of allied health college students

Outcome	Baseline mean	7 weeks mean	Difference mean	p-value[a]
Anxiety[b]	32.93	30.02	2.91	< 0.001
Perceived stress[c]	17.89	16.28	1.61	0.006
Mindfulness[d]	115.7	121.38	5.68	0.005

[a]p-values were calculated using the Wilcoxon signed rank test due to non-normal paired data.
[b]As determined by the Beck Anxiety Inventory (BAI).
[c]As determined by the Perceived Stress Scale (PSS).
[d]As determined by the Five Facet Mindfulness Questionnaire (FFMQ Total).

Table 3 Mean outcomes of participants in a study to assess the effect of Brief Heartfulness-based Start 'U'p meditation sessions on different subscales of mindfulness of allied health college students

Outcome	Baseline mean	7 weeks mean	Difference mean	p-value[a]
Observing[b]	26.2	27.58	1.38	0.022
Describing[b]	23.95	25.01	1.06	0.017
Awareness[b]	21.38	21.93	0.55	0.363
Nonjudging[b]	22.88	24.98	2.1	< 0.001
Nonreactivity[b]	21.28	21.87	0.59	0.245

[a]p-values were calculated using the Wilcoxon signed rank test due to nonnormal paired data.
[b]As determined by the Five Facet Mindfulness Questionnaire.

Table 4 Categorical outcomes from baseline to post-baseline among participants in a study to assess the effect of Brief Heartfulness-Based Start 'U'p meditation sessions on stress and anxiety of allied health college students

Outcome	Baseline (n, %)	Seven weeks (n, %)	p-value[a]
Anxiety[b]			0.009
High	76 (37.44)	46 (22.66)	
Moderate	112 (55.17)	131 (64.53)	
Low	15 (7.39)	26 (12.81)	
Perceived stress[c]			0.089
High	19 (9)	10 (5)	
Moderate	135 (67)	127 (63)	
Low	49 (24)	66 (33)	

[a]p-values calculated using the McNemar's exact test for paired data.
[b]As determined by the Beck Anxiety Inventory (BAI).
[c]As determined by the Perceived Stress Scale (PSS).

studies to explore the benefits of Heartfulness meditation among allied health students. The findings aim to create awareness of anxiety and satisfaction with life among health care professionals and inform the wellness leaders to address this issue using self-care interventions. In this study, the effectiveness of a Brief Heartfulness-Based Start 'U'p program on stress and anxiety of allied health college students was determined. Out of 203 participants in this study, 55.17% had moderate anxiety and 37.44% showed findings of high anxiety. These numbers are higher than those obtained from Western countries and closer to the data of Eastern countries. Our findings are similar to studies from the United States.[13,14] In their study, there was a significant reduction in PSS score after carrying out the heartfulness-based stress management program. However, there was no statistically significant change observed in some of the subscales after the posttest and follow-up phases.

The present brief intervention program effectively reduced stress and anxiety in allied health students. This study also showed a slight improvement in mindfulness aspects such as observing, awareness of the present moment, describing, feelings of non-judgmental, and non-reactivity. This intervention will also help the students to improve their behavioral aspects of self-forgiveness, problem-solving skills, acceptance, compassion, etc.

Our study adds to the existing area of literature that encourages the use of Heartfulness meditation practices that shows benefits in the field of relaxation in order to improve overall well-being in terms of sleep patterns, quality of sleep, loneliness, stress, and burnout, as reported by some previous studies.[13,14,22,23] However, the exact mechanism of Heartfulness meditation is still underexplored. Our results attempt to provide a unique perspective to understand how Heartfulness meditation practice can help to reduce stress and thereby improve the quality of life in allied health students. Our qualitative analysis implies that a state of calmness and inner peace has been achieved in our students because of a simple heart-based meditation. This effect has also led to changes in inner attributes such as observing, describing, awareness, non-judging, and non-reactivity in our participants.

Limitations

One of the limitations of our study is the relatively smaller sample size and a single-center study. There was a lack of a control group which makes it difficult to check for the placebo effect. There was also a lack of randomization as participants were self-enrolled in this intervention. There are also chances of unknown bias due to the situations at their personal level, which can affect their mental health, along with their routine work environment. Also, this intervention was carried only once a week for the course of 7 weeks, making a lesser increase in the outcomes.

Conclusion

The current study is one of the first attempts at a Heartfulness meditation intervention to reduce anxiety and perceived stress and thereby improve satisfaction with life among allied health students working in the health care sector. The statistically significant improvements observed in the overall BAI and PSS outcomes suggest that the Start 'U'p Heartfulness meditation program could serve as a potential tool in reducing anxiety and stress. Results also suggested that adopting a Heartfulness practice for as little as once per week may reduce stress and anxiety in college students. Further, a continuation of this practice with engagement in learning-oriented objectives will improve in overall mental health and thereby holistic development of the students. However, larger randomized controlled studies would be recommended.

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