DEVELOPING A STRESS MANAGEMENT TRAINING MANUAL FOR UNIVERSITY STUDENTS BASED ON CBT

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ABSTRACT

Background: University students experience a lot of stress due to personal, academic, financial, and other issues. Group-based stress management training can help students manage their stress effectively. Therefore, the researchers attempted to develop a stress management training manual for trainers to use with students in group training settings. **Objective:** The aim of this study is to develop a brief cognitive behavior therapy (CBT)-based stress management training manual for use in group settings with university students. **Methodology:** A mixed-methods design was followed. Initially, groundwork was conducted to understand the concept of stress through needs assessment, literature review, and expert interviews. Based on the findings, a primary draft of the manual was developed and evaluated by 12 experts. After compiling their feedback, the supervisor and researcher developed a second draft. A pilot study was then conducted, applying this manual to a group of 12 university students aged 18 to 26 years. In the pilot study, one session was held weekly for four weeks. Pre- and post-test evaluations were conducted using the Perceived Stress Questionnaire, Anxiety Scale, Depression Scale, and Dhaka University Cognitive Distortion Scale. Finally, the stress management training manual was finalized by incorporating all the findings. **Findings:** The manual consists of four sessions, each lasting two hours. The first session covers the concept and model of stress. The second session presents a conceptual model of stress development and introduces stress management techniques. The third session focuses on practicing cognitive distortion identification and cognitive restructuring techniques. The final session is also a practice session and covers time management and problem-solving techniques. **Conclusion:** This manual is a brief CBT-based training resource that can be used as a primary or secondary prevention program for stress management among university students

KEYWORDS: stress management, university students, brief CBT, training manual

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Introduction

Stress can affect individuals' physical and mental health, as well as their level of functionality and productivity in both their workplace and personal life. Stress was first studied as a part of health-related issues. Later, psychological aspects of stress were studied and psychological management of stress was also included for stress management interventions. Stress is the stimuli which is appraised as harmful, threatening, or challenging, and that exceeds the individual's capacity to cope (Lazarus and Folkman, 1984)

Stress sources are generally divided into four main categories: 1) crises or catastrophes, which are unforeseen and unpredictable situations beyond an individual's control; 2) major life events, such as moving to a new place, getting married, or having a child; 3) daily hassles, including traffic, decision-making, and project deadlines; and 4) ambient stressors, which are chronic and long-lasting stressors that can affect a person's life without their conscious awareness, such as air pollution, crowds, and noise. An optimal level of stress can enhance a person's performance more effectively than a stress-free state. When stress is manageable and motivates a person to achieve their goals, it is considered eustress or positive stress. Conversely, when stress is perceived as negative and prolonged, and the person feels they have no control, it can be harmful and impede progress. This type of stress is known as distress.

According to the Stress Appraisal Model developed by Lazarus and Folkman (1986), stress is defined as a psychological response to an event. It suggests that stressors result from an individual's evaluation of an event. This cognitive model revolves around two main concepts: appraisal and coping. Appraisal refers to how a person assesses a situation as positive, negative, or irrelevant to their well-being. People continuously evaluate every situation they encounter. There are two levels of appraisal: primary and secondary. Primary appraisal involves evaluating the event itself, determining whether it is positive, negative, or irrelevant. If an event is deemed negative, the person is more likely to experience stress. Secondary appraisal refers to how a person evaluates their resources and ability to

cope with the event. Coping is the ongoing effort a person makes to manage demands, regardless of whether the effort is successful (Folkman *et al*., 1986)

Enrolling in university affects the psychological well-being of students (Bewick et al., 2010). A recent prevalence study in Bangladesh found that One-third of university students reported stress within the last 12 months (Rois *et al.,* 2021). Stress is more prevalent with moderate to extremely severe range among university students (Asif *et al*. 2020). Sources of stress for university students can be categorized into four domains: interpersonal, intrapersonal, academic, and environmental (Ross *et al.*, 1999; Bulo & Sanchez, 2014). 1) Interpersonal stress arises from relationships and communications with others 2) Intrapersonal stress can result from lifestyle changes, personal values, financial difficulties, perceived lack of time control, self-imposed pressures, new responsibilities, and difficulty accepting situations 3) Academic stress includes deadlines, exams, increased coursework, anticipation of results, evaluation processes, and missed lectures. Students' perceptions of their environment can also affect their academic stress levels (Liu & Lu, 2012) and 4) Environmental stress involves adjustments to new surroundings, waiting in long lines, or being stuck in traffic.

A major source of stress for university students is self-imposed pressures (Hamaideh, 2011). Lack of time and self-discipline are commonly reported as continuous stress factors by students (Campbell *et al.,* 1992). The most commonly used coping activities were found to be talking to family and friends, engaging in leisure activities, and exercising (Pierceall & Keim, 2007). Female students perceive higher level of stress than male and differences in coping strategies between males and females are also evident (Graves *et al.,* 2021). A study in Bangladesh found that problem-focused coping was higher among male students, while emotion-focused coping was more prevalent among female students (Begum & Khatun, 2012).

Cognitive behavior therapy (CBT) is a type of psychotherapy that aims to alter negative thought patterns to influence behavior positively (Compton *et al*, 2004). It is widely utilized for addressing various clinical and non-clinical issues, including general stress management (Granath *et al.*, 2006). A meta-analysis by Varvogli and Darviri (2011) concluded that CBT, along with other methods, is an effective evidence-based approach for managing stress in both healthy individuals and those with health conditions.

Stress management refers to methods used to reduce stress and adopt healthy coping strategies (Hardy et al., 1998). These techniques help individuals appraise situations differently, making them better prepared to change or relate differently to stressful situations. A systematic review and meta-analysis show that interventions for stress management may reduce distress among students (Amanvermez *et al.,* 2023). A meta-analysis conducted by Richardson & Rothstein (2008), which included thirty-six experimental studies, revealed that cognitive-behavioral programs had a larger effect than other types of interventions when no additional treatment components were added. Another meta-analysis of sixty-four studies found that in stress management training, the most positive health outcomes were achieved with a combination of two or more techniques e.g., cognitive-behavioral techniques, biofeedback, relaxation, meditation, etc. (Murphy, 1996). A review of stress management found that relaxation techniques were more effective for physiological outcomes, whereas cognitive techniques were more effective for psychological outcomes like reducing stress, anxiety, and distress (Murphy, 1996). CBT-based group training on stress management for university students can reduce anxiety while enhancing psychological hardiness and self-efficacy (Jafar *et al.*, 2015). CBT based stress management program for university students also found to reduce stress and improve achievement motivations as well (Murad, 2021).

Shimazu *et al.* (2006) conducted a study on a brief CBT-based stress management program for factory workers and concluded that a single 2-hour session was effective in improving coping skills and knowledge about stress. Their results suggested that a single session on stress management could lead to a detectable increase in knowledge and coping skills that persists for eight weeks. Gardner *et al.* (2005) found that cognitive therapy was more effective than behavior therapy in reducing participants' stress. CBT based intervention over six weeks, with weekly 90-minute sessions with classroom teachers (Cecil and Forman, 1990) and biweekly interventions of 50-minute sessions over seven weeks with university students (Murad, 2021) have found to be significantly reduce stress and stress symptoms. All these studies indicate that CBT based group interventions are effective on stress reduction in general.

The higher workload and life transitions of university students make them vulnerable to various mental health problems. Proper stress management can help to cope adaptively with everyday stressors. In Bangladesh, various stress management programs are provided by different mental health professionals. Most of these programs blend different techniques and are usually delivered within a day. The purpose of the present study was to develop a therapist's manual for providing brief CBT-based group stress management training and to conduct a pilot study on university students. This training is intended to serve as a preventive program for stress-related mental health problems among university students. The manual was developed to make stress management training cost-effective and time-efficient.

We conducted the study to develop a brief CBT-based stress management therapist manual for university students, and to assess the impact of this training on the levels of perceived stress, anxiety, depression, and cognitive distortion among university students.

Methods

The process of developing a CBT-based stress management training manual for university students includes the following steps:

Steps of Manual Development

1. Groundwork

This includes all activities completed prior to developing the content for the manual, including:

Understanding the concept of stress: This involved reviewing existing literature on stress, including models of stress, coping strategies, and stress management among university students. Effective stress management techniques and approaches were also reviewed.

Literature review: The existing literature on stress management was reviewed, focusing on both the context of Bangladesh and other countries. This review included studies on stress factors among university students and university programs aimed at stress management. Previous studies on stress and coping among university students in Bangladesh were specifically reviewed, revealing several relevant studies. For the literature review of stress management in the context of Bangladesh, no recognized written format of a stress management program based on cognitive behavior therapy (CBT) for university students was found. However, formats for stress management based on CBT were reviewed. One notable training manual found in Bangla was the "Training module on anger, stress and burn-out management," developed by Save the Children for their staff. This module was based on the CBT format. Another relevant training material from Save the Children was the "Care for Caregivers" module, which included a training module on burnout management for caregivers.

Need assessment: A need assessment was conducted to identify common stressors among university students. This involved reviewing previous studies conducted in Bangladesh on the stressors of university students. Additionally, two focused group discussions were conducted with university students in a semi-structured manner to identify stress-provoking situations. Each discussion lasted 40 minutes and followed a topic guideline. The discussions were recorded and manually analyzed. The two groups comprised 18 students (10 male and 8 female), aged 17 to 26 years, including both residential and non-residential students.

Expert interviews: To develop the manual, interviews were conducted with experts in stress management training. The experts included a total of five psychologists, three of whom were clinical psychologists. All of the experts had conducted multiple stress management workshops at different times and in various contexts.

These steps were followed to gather information for preparing the first draft of the stress management manual.

2. Preparing the First Draft

The content of the manual was prepared based on information gathered during the groundwork phase. This included: Covering all concepts of stress management**,** providing therapist instructions for training and establishing a time frame for each session.

This draft was then submitted for judge evaluation.

3. ***Judge Evaluation***

Judge evaluation involved obtaining feedback from professionals working with students, particularly those providing mental health services to university students and individuals with mental illness. Ten clinical psychologists, one psychiatrist, and one counseling psychologist were selected to evaluate the training manual. The judges were asked to assess the accuracy of the content, the appropriateness of the time frames, the simplicity of the language, and the structure of the sessions.

4. Accumulation of Feedback

The feedback from the judges was collected and used to finalize the first draft of the training manual with the help of a supervisor.

5. Piloting

After finalizing the first draft, the stress management manual was implemented in a pilot phase. This phase aimed to identify necessary changes to the manual and evaluate the impact of the psychoeducational training on participants. Several observations were made during piloting:

- Need for changes in time allocation
- Revisions to homework activities for certain topics
- Identification of topics requiring revision

6. Final Draft

The final draft was developed by incorporating all new information and making necessary adjustments. The manual consists of four sessions.

1) The first session focuses on psychoeducation about stress, types of stress, reactions to stress, the cognitive appraisal model of stress, and maintaining a daily stress log to identify stress-related responses. 2) The second session covers the five-part model of CBT, understanding the relationship between automatic thoughts and emotions, and practicing relaxation techniques such as diaphragmatic breathing and progressive muscular relaxation. 3) The third session is dedicated to understanding cognitive distortions and learning and practicing cognitive restructuring. 4) The final session emphasizes time management and problem-solving techniques, differentiating between urgent and important tasks, planning short-term time management activities, and practicing the five steps of problem-solving individually. Each session lasts two hours and is conducted once a week for four weeks.

The flowchart used for the manual development is given in the figure 1

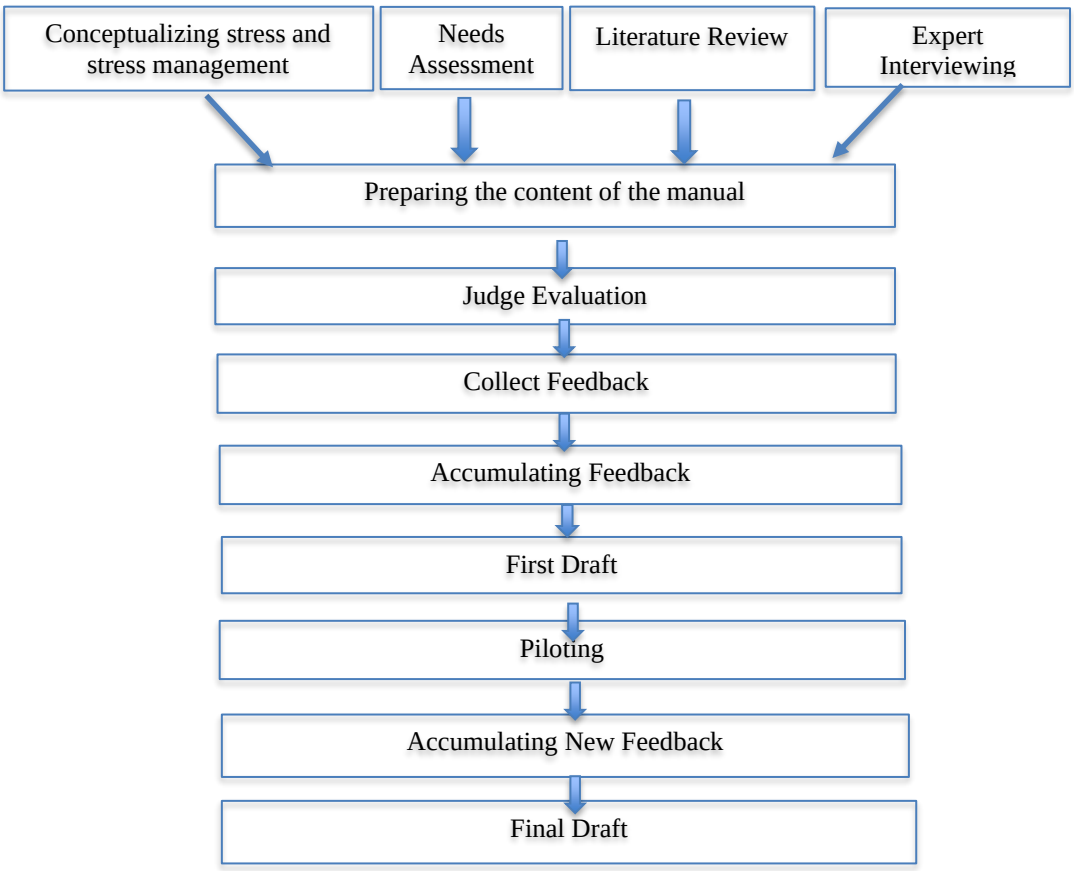

Figure 1. The process of manual development

Participants for piloting

In the present study, university-attending students are defined as individuals between 17 and 26 years of age who are pursuing their Bachelor's or Master's degrees. A purposive sampling technique was used to select 30 university students for this study but due to data attrition, only 12 participants, all unmarried females aged 18 to 24 years, completed the training and provided data. Participants were included if they were university students aged 18 to 26 years with severe scores on the General Health Questionnaire-28 (GHQ-28) and Anxiety Scale. Exclusion criteria were medically confirmed psychotic disorders, chronic illnesses, and participation in individual psychotherapy. The intervention consisted of a brief Cognitive Behavioral Therapy (CBT)-based stress management training, administered according to a manual evaluated by experts. The study utilized a one-group pretest-posttest design for piloting the manual.

Demographic Information questionnaire

A demographic form was included with the set of questionnaires, capturing participants' age, gender, birth order, number of siblings, education level, marital status, and socioeconomic status.

Perceived Stress Questionnaire

The Perceived Stress Questionnaire, developed by Keya (2006) for the Bangladeshi context, consists of 20 items. It uses a 5-point Likert scale ranging from 0 (not at all) to 4 (very much), with items 7, 9, 10, 11, and 12 scored in reverse.

Anxiety Scale

The Anxiety Scale, developed by Deeba & Begum (2004), contains 36 items and employs a 5-point Likert scale ranging from 0 (not at all) to 4 (very much). The scale categorizes scores into mild (0-54), moderate (55-66), severe (67-77), and profound (78 and above) levels of anxiety.

General Health Questionnaire-28 (GHQ-28)

The GHQ-28, developed by Goldberg (1988) and translated by Banoo (2001), includes 28 items with a maximum score of 84. It uses a 4-point Likert scale, with scores ranging from 0 (less than usual) to 3 (much more than usual). Stress levels are classified as low (0-6), moderate (7-13), or severe (14-21), with a cutoff score of 39 indicating significant psychiatric disturbance.

Depression Scale

Developed by Uddin & Rahman (2005) for the Bangladeshi context, this depression scale features 30 items on a 5-point Likert scale ranging from 1 (rarely) to 5 (always). Severity levels are minimal (30-100), mild (101-114), moderate (115-123), and severe (124-150). The scale's split-half reliability ranges from r = 0.57 to 0.83, with a Pearson correlation for construct validity of 0.716 ($\alpha = 0.01$).

Dhaka University Cognitive Distortion Scale

Developed by Siddika and Uddin (2013), this scale includes 39 items on a 5-point Likert scale, with scores ranging from 0 to 4. Severity levels are mild (56-72), moderate (73-91), severe (92-109), and profound (110 and above). The scale has a cutoff point of 56, with 87% sensitivity and 88% specificity.

Checklist

A checklist was developed and evaluated by judges to assess changes in participants learning from pre-test to post-test.

Procedure

Participants were selected through purposive sampling, with screening conducted using the General Health Questionnaire-28 and the Anxiety Scale. Thirty female university students who scored at or above the severe level on these scales were chosen for piloting the stress management training. Exclusion criteria included individuals with diagnosed disorders or those currently engaged in individual psychotherapy or other stress management programs. Informed consent was obtained from participants both in written form and verbally prior to their participation in the training. Screening commenced one week before the training began.

Initially, the study was planned as a quasi-experiment with a wait-list control group. For baseline assessment, pretest questionnaires were administered two days before the training started. Out of the 30 participants who provided consent, 17 attended the pretest assessment. They were briefed about the training process. Due to attrition, the study design was changed to a one-group pretest-posttest design. Of the 17 participants, 15 attended the first training session. Ultimately, 12 participants completed all four training sessions as outlined in the preplanned manual. Each session, lasting 2 hours, was conducted weekly by a therapist and a co-therapist, both trained in cognitive behavior therapy and familiar with the training manual.

Each session began with greetings and an introduction, followed by the establishment of ground rules and ensuring confidentiality. An agenda was set according to the training schedule, and each session concluded with a summary, homework assignments, and feedback collection. Handouts were provided for key learning areas.

The training program consisted of the following sessions:

Session 1: Understanding stress and its effects; Stress appraisal model

Session 2: Five-factor model; Thought-emotion relationship; Relaxation techniques

Session 3: Understanding cognitive distortion and cognitive restructuring

Session 4: Time management and problem-solving

Posttest data was collected two weeks after the final session. A focused group discussion was conducted to gather participants' experiences and learning from the training. Feedback was collected from both participants and facilitators to identify potential improvements for the training program.

Data Analysis

Qualitative data were analyzed manually, while quantitative data were analyzed using SPSS version 20. A paired sample t-test was employed to compare the levels of perceived stress, anxiety, depression, and scores on the Dhaka University Cognitive Distortion Scale before and after the training.

Ethical Considerations

Ethical approval for the study was obtained from the Department of Clinical Psychology. Informed consent was acquired in written form from each participant. Data confidentiality was strictly maintained, and all data was kept anonymous. Any emergency or crisis situations were handled appropriately.

Results

During the focused group discussion for identifying the major stressor, the following stress provoking situations were found.

Table 1. Findings of the Focused Group Discussions.

Stressful situations	Frequencies	Percentage (%)
1. Adjustment in new environment	12	75
2. Inability to overcome from problem	12	75
3. Worry about future (job, marriage, exam result)	11	68.75
4. Lack of proper time management (study load, procrastination)	10	62.5
5. Indecisiveness	10	62.5
6. Lack of perceived control	10	62.5
7. Exam and study overload	9	56.25
8. High expectation from self	9	56.25
9. Deadlines	8	50
10. Communication gap	8	50
11. Financial problems	8	50
12. Low CGPA	7	43.75
13. Argument with friends and family	6	37.5
14. Lack of personal time	5	31.25

Table 1 indicates that the most frequently reported stressful situations were adjusting to a new environment and struggling to overcome problems. These were followed by worries about the future and time management, reported by 12 and 11 individuals, respectively.

Expert Interviews and Literature Review

The literature review and expert interviews revealed that stress management training typically begins with information about stress, including its types, effects, and coping strategies. The second part of the training focuses on identifying stress sources and implementing stress management activities. This involves discussing stress sources such as interpersonal issues, communication gaps, and biological aspects of stress. Some trainers utilize experiential methods, while cognitive restructuring and problem-solving techniques are commonly employed. Additionally, CBT-based practitioners sometimes address participants' core beliefs to aid in stress management.

Judge evaluation

Changes that were made in judge evaluation is given in the table 2.

Table 2. Changes made by judges on the draft manual.

Domains	Feedback of the judges	Accumulation of feedback
1. Time allocation for each session	More time was required to be allocated in each session	Session time was increased
2. Session structure	Included group work, individual work, lecture and discussion method	Mostly participatory lecture method and few individual and group work
3. Language usage	Required simplification of certain content	Simplified description accumulated
4. Concerns about the participants understanding of Cognitive appraisal model	Four judges gave feedback to substitute Cognitive appraisal model with an easier model and to elaborately discuss five factor model	Cognitive appraisal model and Five factor model were kept in different session
5. Addition or removal of content	Three judges gave feedback to add mindfulness and two judges gave feedback on adding communication skills training	These contents were not added due to the limited session training.
6. Summary and feedback session	Summary and feedback session needed more time	Summary and feedback session was elaborated

All findings and feedback were consolidated to develop the finalized manual, which covers the following topics:

First Session: This session provides an overview of stress based on the cognitive appraisal model, including general information about stress and coping strategies, an explanation of Lazarus and Folkman's (1984) cognitive appraisal model, and a daily stress log to help individuals identify their personal sources of stress.

***Second Session*:** This session focuses on understanding the five-factor model, identifying automatic thoughts and their connection to emotions, and practicing relaxation techniques such as diaphragmatic breathing and progressive muscle relaxation.

Third Session This session covers cognitive distortions and cognitive restructuring techniques.

Fourth Session This session addresses time management and problem-solving strategies.

The finalized manual is included in the appendix 1.

Piloting of the manual It was explored whether any changes occur among the participants after participating the training. To to see its impact on the participants mental health wellbeing, the obtained data of the pilot study was analyzed using t-test, frequencies and percentage.

The analysis of paired sample t test is given in the table 3 and table 4.

Table 3. The mean scores and SD of all variables for pre-test and post-test measures.

		Mean	SD
Pair 1	GHQ 28 Pre test	47.33	7.773
Pair 2	PSQ Pre test	44.42	7.902
Pair 3	AS Pre test	77.17	14.665
Pair 4	DS Pre test	95.00	16.717
Pair 5	DUCDS Pre test	84.83	21.767

GHQ= General Health Questionnaire-28, PSQ= Perceived Stress Questionnaire, AS= Anxiety Scale, DS= Depression Scale, DUCDS= Dhaka University Cognitive Distortion Scale

Table 4. Mean difference, t score and significance level for all variables using paired sample t-test for pretest and post-test measures.

		Mean	T	Sig. (2 tail)
Pair 1	GHQ Pre- GHQ Post	21.750	6.721	.000
Pair 2	PSQ Pre – PSQ Post	12.333	6.735	.000
Pair 3	AS Pre – AS Post	30.500	7.663	.000
Pair 4	DS Pre – DS Post	21.250	4.803	.001
Pair 5	DUCDS Pre – DUCDS Post	32.750	4.717	.001

GHQ= General Health Questionnaire-28 PSQ= Perceived Stress Questionnaire AS= Anxiety Scale DS= Depression Scale DUCDS= Dhaka University Cognitive Distortion Scale

A paired sample t-test was conducted to compare the level of perceived stress, level of anxiety, level of depression and the score of Dhaka University cognitive distortion scale of the participants before attending the training and after attending the training.

There was a significant difference in the scores of General Health Questionnaire-28 for pre-test (M=47.33, SD=7.773) and post-test (M=25.58, SD=9.802) conditions; t (11) = 6.721, p=0.00. From the table 4 and 5, it is also found that there was a significant difference in the scores of Perceived Stress Questionnaire for pre-test (M=44.12, SD=7.902) and post-test (M=32.08, SD=8.096) conditions; t (11) = 6.735, p=0.00. The difference in the scores of Anxiety scale for pre-test (M=77.17, SD= 14.665) and post-test (M=46.67, SD= 17.369) condition was also significant; t (11) = 7.663, p=0.00. A significant difference in the scores of Depression scale for pre-test (M=95.00, SD= 16.717) and post-test (M=73.75, SD= 9.631) conditions was found; t (11) = 4.803, p=0.001. Difference in the scores of Dhaka University Cognitive Distortion Scale was also significant for pre-test (M= 84.83, SD= 21.767) and post-test (M= 52.08, SD= 13.166) conditions; t (11)= 4.717, p= 0.001.

Apart from this, the check list that was used to assess the change in the level of knowledge about stress and stress management, showed a general increase in understanding and awareness about stress, stress response and adaptive coping strategy.

Discussion

The purpose of this study was to develop a stress management training manual for university students based on cognitive behavioral therapy and it focused on- a) to prepare a brief CBT based training manual, b) piloting the evaluated draft manual on the students to see if any further changes are required, c) to see whether the training based on the manual have any impact on the level of perceived stress, level of anxiety, level of depression and the level of cognitive distortion of the participants.

In the ground work for development of the manual, the concept of stress and stress management was studied extensively. There are some common patterns for all kind of stress management training. These can be said as the generic aspect of stress management program. This includes, firstly, psychoeducation about stress, its effect and its mechanism is provided in the first part of any stress management training. Secondly, in a standard

stress management training, both emotion focused coping and problem focused coping are incorporated. Thirdly, there usually is a relaxation training or some other kind of bodily focused approach or meditation-based activities are trained to manage the bodily reactions to stress. Finally, in some cases lifestyle changes and skills training are also incorporated into the training program.

While providing training for a specific target group, these basic aspects of stress management is then incorporated with the special need-based training for different target populations. For this present study, the targeted group of people was university students. For this reason, a needs assessment and literature review were conducted to identify the major sources of stress for the university students.

Two focused group discussion were conducted with university students. Two groups comprised of 18 students, 10 male and 8 female students. All of their age range was from 17 to 26 years old. In the discussion, several stressful situations were identified. Mostly reported stress provoking situation are presented in the Table 1. Most frequently reported stress was adjustment in the new environment and inability to overcome problems. This finding was supported by the previous finding of an unpublished study conducted by Shanta & Azad (2014) about perceived stress of medical and non-medical student, where 67.5% responded reported that they perceived disability to overcome form problem as stressful for them. In this study, third and sixth major source of stress was found to be worry about future (68.75%) and lack of perceived control (62.5%). These two aspects are also supported by the findings of Shanta & Azad (2014), where 37.5% non-medical students reported that they were worried about unexpected events and 42.5% respondent said sometimes, "disability to control over everything" was perceived as source of perceived stress for them. If the sources of stress are categorized into four domains, we can see that the interpersonal sources of stress are communication gap, argument with friends and family members. Intrapersonal sources of stress are indecisiveness, lack of perceived control, lack of proper time management, worry etc. Academic sources of stress are deadlines, exams and study overload, low CGPA etc. Main environmental source of stress was found to be adjusting with a new environment. Most of the reported stressful situations arose from intrapersonal sources. This finding is congruent with the finding of Ross *et al.* (1999), where the sample of 100 students were taken from university and it was found that 38% of stressor were intrapersonal, 28% environmental, 19% interpersonal and 15% was academic. This finding suggested that more work needs to be done about skills development for reducing the perceived stress of university students.

From the finding of the groundwork of the manual development, it was decided to include the final topics that are given on the result section, in the stress management training manual. The training material mostly relied on bringing about changes on intrapersonal sources of stress by understanding the stress through appraisal model, understanding cognitive distortions and restructuring faulty thoughts. The first session of this training covered the area of psychoeducation about stress, its effect on a person, coping and the cognitive appraisal model of stress. The second session introduced five factor model, understanding and identifying negative automatic thoughts, and relaxation training. Becoming aware of negative automatic thoughts helps a person to understand the accuracy of their thoughts and also helps to make a link between how thoughts can influence of their emotion and action. Third session introduced cognitive distortions and worked on cognitive restructuring. This part is designed to help the person in understanding the cognitive errors and reducing in self-imposed pressure, and the feeling of incapability of overcoming a problem situation. Knowing about cognitive errors can also help the person to improve their communication with others. Finally, the fourth session is designed to train about time management and problem-solving technique. Time management is included because, this study has found that 62.5% students consider that time management and more than half students said academic overload was a source of stress for them. This report was similar to Britz & Pappas (2010) finding that major sources of stress that was reported by university students were academic workload (88.71%) and time management (83.87%). The other part of this session, skills on real life problem solving, can be helpful to overcome many environmental sources of stress. Self-appraised social problem-solving ability was found to be connected with the way a person perceives and cope with problems that are encountered in everyday life (Chinaveh, M., 2013).

The Table 2 of the result section covers the areas where the judges gave feedback to bring change on the training manual. One major change that was bring in the manual was increase of time for each session from one and a half hour to two hours. The feedback on the structure of the session that was accumulated was to reduce individual activities and taking a participatory lecture method for the training delivery. Another change that was made was adding a summary and feedback session for each session, which was initially absent in the first draft. From the piloting, it was also observed that the knowledge of the previous session is consolidated and clarified more when it was being discussed in the recap of the next session. So, enough time needs to be allocated for recapping of the previous session.

The concern of the judges about complexity of cognitive appraisal model was not supported during the piloting. The participants reported that they could conceptualize the model and moreover it helped them to understand what makes an event stressful for them. Using real life example and cases helped the participants to better understand the concepts. Another observation from the piloting was that the session three and session four may require some more additional time for some group for better understanding of the concepts.

Table 3 and Table 4 summarizes the finding of paired sample t-test for the piloting of this developed manual on a group of university students.

From the Table 3, we can see that there had been a significant change of the scores of Anxiety scale and Cognitive distortion scale. The mean of anxiety scale reduced from 77.17 (severe) to 46.67 (mild) after the training had been provided. This indicates a significant change of the level of general anxiety of the person. The mean score of Dhaka university cognitive distortion scale has also reduced from severe (84.83) to mild level (52.08). This decrease in the level of cognitive distortion may be due to the training on cognitive error and cognitive

restructuring. The post discussion with the participants also conforms with this finding, as they reported that knowing about it helped them to become aware of making false assumptions about different situation. This is also consistent with the core of CBT principles that when a challenge is made to the dysfunctional thoughts, mental health status improves (Beck, 1976; Bond & Dryden, 2002). This may also account for the reduction of the score of depression scale among the participants. The participants also showed a general improvement of their general health status, as their scores reduced to below the cut of point of GHQ-28 and a decrease in their scores of perceived stress.

Implication of the result of the study

This manual is developed for providing a brief CBT based stress management training to university students as a preventive measure of stress related health problems. The manual can be implemented as a primary or secondary prevention program for stress related disorders after doing a field testing. An important finding of the study was that, although the university students faces stressful situations and report that they need to develop their skills on stress management, most of them do not feel that they can take professional help in this regard. This might be due to their perception of lack of time, or due to a mistrust that such programs can be helpful, or simply because of stigma associated with going to take mental health care. So, measures need to taken to improve awareness of the importance of taking mental health care among the university students. Because the students perception about importance of learning about healthy coping mechanism can make such stress management program successful, and at the same time, the students could have a better mental health status with more functional coping ability. Among the limitation of the study was that, the piloting had only a one group pre-test post-test data. For this reason, we cannot be sure of how much of the participants stress reduction was due to the training only. Another limitation of the study is, the sample size was small and all the participants were female. There might be some difference of response style between male and female participants. This difference could not be included into the study. A large sample randomized control study might be helpful to see the effectiveness of this manual in practical setting. A caution should be taken for implementing this manual is before conducting a field testing.

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