Effectiveness Of Cognitive Behavioral Therapy (CBT) For Managing Academic Worry Among Third Year Medical Students: A Feasibility Study

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Abstract

Background: Academic performance and success are crucial components of a student's life, as they often shape future opportunities and accomplishments. As a result, students must have effective ways of dealing with academic worry, increasing academic self-efficacy, and resolving study-relationships conflicts. **Objective**: This study examines the effect of cognitive behavior therapy (CBT) on academic worry, academic self-efficacy, and study-relationships conflicts among medical college students. **Methods**: The study utilizes a small n pre-post research design. Five students were selected through a convenience sampling technique by a study advertisement on social media. Student Worry Questionnaire-30 (SWQ), Academic Self-Efficacy Scale (ASES), and Study-Relationships Conflict Scale (SRCS) scales were utilized. **Findings**: The results of the study, following the intervention, supported the study hypothesis that cognitive behavior therapy (CBT) reduces medical students' academic worry. A decrease in students' academic worry improves their academic self-efficacy and resolves their study-related conflicts. This study has some limitations, which are also discussed, and recommendations for future research are also shared.

Introduction

Worry is an excessive thinking or anxious rumination about situations and outcomes (Joubert et al., 2022). Often, it is associated with catastrophizing thought processes, which exacerbate distress. It is a common emotion that people experience in response to various stressors in life (Stade & Ruscio, 2023). Worry and anxiety are distinct. Worry affects cognitive functioning, manifesting as adverse beliefs of unpleasant future likelihoods (Saulsman et al., 2015). Anxiety, on the other hand, is the result of uncontrollable worrying encompassing cognitive, emotional, and behavioral dimensions (Armitage, 2025). Worry can be the reason for anxiety via a specific mechanism: worry impacts emotions as well as behaviors, causing apprehension and resulting in unproductive activity associated with preparedness for worst outcomes (Wadi et al., 2022).

Worry is an important feature of most psychological disorders, specifically generalized anxiety disorder (GAD). Similarly, it is closely associated with other anxiety and mood-related disorders, such as

phobias, obsessive-compulsive disorder, panic attacks, and personality disorders (Vîslă et al., 2022). Academic worry, on the other hand, refers to excessive concern about academic performance and its consequences. Academic worry can be particularly challenging because it can disturb a student's ability to concentrate, retain information, and perform well academically (Davey et al., 2022). It can also lead to physical symptoms such as headaches, fatigue, and difficulty sleeping. Since academic worry is the prime reason for academic anxiety, it is essential to address it to effectively reduce students' academic anxiety (MacLeod et al., 1991).

Worrying is intrinsic to human experience, and students are no exception (Wells, 2002). In their academic lives, students are mostly concerned with performing well in exams, quizzes, and assignments to achieve and maintain competitive grades. Worry related to academic expectations can cause students to experience dread and stress in academic settings and tasks. Navigating academic pressures and the demands of the healthcare sector requires perseverance, rigorous scholarship, and effective time management (Farrer et al., 2016). Unsurprisingly, these expectations can take a toll on a student's mental and physical health. A meta-analysis demonstrated that compared to the general population, medical students experience more anxiety and related symptoms, with an occurrence rate of one in three medical students reporting such symptoms(Quek et al., 2019). Academic worry among medical students may be caused by different reasons, including academic contexts or tasks, which may include exams, assignments, and courses, social pressures connected with education, or anxiousness associated with studying and working in groups. Medical schools are academically challenging as require students to attain a vast quantity of complex information quickly. This can cause stress and worry. Medical training includes hefty academic loads, hectic schedules, and rigorous evaluation processes, all leading to higher chances of mental health problems (Almutairi et al., 2024).

Pervasive and sustained academic worry and ineffective stress management cause low academic self-efficacy among medical students. Academic self-efficacy is a person's or student's ability to determine how well he/she can cope with academic challenges. This means that students with higher self-efficacy can better regulate their academic worry and overcome any negative effects it may have on their performance (Anthonysamy & Singh, 2023). Academic self-efficacy, or the belief in one's ability to perform well academically, is a crucial factor in academic success (Hulukati et al., 2022; Uzun & Karataş, 2020). In addition, a study by (Rahmania, 2023) revealed that individuals with higher levels of self-efficacy are more likely to adopt effective coping strategies when faced with academic stress, further demonstrating the importance of self-efficacy in academic success. Multitasking itself is a stressor that contributes to worry. Students need to multitask to keep the balance between their academic and personal lives. They face numerous challenges, and this juggling may arise in a study-relations conflict (SRC).

One effective approach to address academic worry and anxiety in medical students is CBT (Curtiss et al., 2021). Studies have shown that CBT can be effective in reducing worry, one of the central symptoms of anxiety, and hence prevents the onset of anxiety disorders in a variety of populations, including medical students (Batebi et al., 2020). CBT can effectively address academic worries and prevent its progression into anxiety-related disorders (Newman et al., 2020). CBT is a goal-oriented, evidence-based approach to therapy that focuses on identifying, challenging, and changing negative and unhelpful patterns of thoughts and behaviors. In the context of academic worry, CBT can help medical students identify and challenge negative beliefs and thought patterns contributing to their academic worry. CBT can also teach students practical coping skills to manage stress and worry, such as relaxation techniques, problem-solving strategies, and time-management skills. According to Neil & Christensen (2009), cognitive behavioral therapy can be utilized as an early intervention for medical students who are at risk of developing GAD due to academic anxiety and worry. Fortunately, several interventions are effective in improving academic self-efficacy, including CBT (Meo et al., 2021). According to the CBT approach, which is aimed at modifying uncontrolled emotions, behaviors, and cognitions through skills and strategies, improvements in academic

self-efficacy can be achieved by changing negative thought patterns that may be holding individuals back (Sa'adah et al., 2021).

Present Study

The purpose of the study includes helping students to overcome their excessive patterns of worry and teaching them effective coping mechanisms through CBT. Excessive worry can cause emotional and somatic concerns. It can impact students' academic and occupational growth, well-being, and lead to functional disability. The purpose of this study is to identify students with academic worry, offer timely CBT, and prevent the development of anxiety and mood-related disorders. Additionally, cognitive behavioral therapy can positively impact psycho-social functioning, self-efficacy, and quality of life. CBT is an evidence-based treatment for a variety of disorders with worrying as a core feature, and therefore, by addressing academic worry and equipping students with effective coping strategies, it can be an effective treatment. Based on prior literature, the following hypotheses have been formulated:

1. Academic worry would likely be reduced among third-year medical students post-intervention compared to pre-intervention.
2. Academic self-efficacy would likely be increased among third-year medical students' post-intervention as compared to pre-intervention
3. Study-relationship conflicts would likely improve and be resolved among third-year medical students at post-intervention compared to pre-intervention.

Methodology

Research Design

This current study employed a "small n" research design, also known as a postpositivist paradigm or ABA research design.

Participants

The participants in this research were comprised of third-year medical students. A combined number of 5 medical students were selected from Rawalpindi Medical University. All participants are women ranging from age 20 to 23, described as young adults by the World Health Organization. The sampling technique utilized in this study was non-probability convenience sampling. The participants voluntarily enrolled in the study. Recruitment was done through medical school outreach via online and printed advertisements. Interested applicants contacted the researcher. The interested applicants and participants were finalized based on the results of the screening tool, along with inclusion and exclusion criteria.

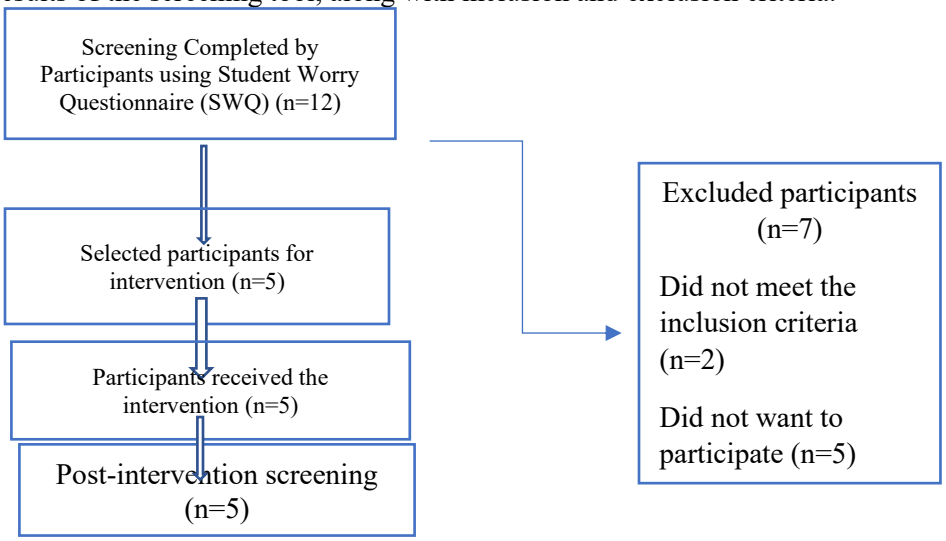

Figure 1: Participants Screening Process

Inclusion Criteria

- Third-year medical college students were selected who were doing clinical rotations because they were tasked with clinical work while managing their studies both practically and theoretically.
- Participants with a moderate level of academic worry, as measured by the Student Worry Questionnaire-30 (SWQ), were included. A moderate level of academic worry is defined as a score of 40 or more, as per SWQ.
- Participants who provided consent for participation in the study.

Exclusion Criteria

- Students who are in their junior years of medical college or who were not doing clinical rotations.
- Students with medical and mental illnesses were excluded.
- Students with a score lower than 40 on the Student Worry Questionnaire-30 (SWQ) were excluded.

Measures

Student Worry Questionnaire-30 (SWQ)

The students' worrying was measured using the SWQ scale developed by (Osman et al., 2001). SWQ is a self-report survey containing thirty statements that aim to identify worries about academic life associated with several circumstances. Every statement is categorized into six realms: worrisome thoughts, academia-related worries, spouse's wellness, social competence apprehensions, economic apprehensions, and general anxiety symptoms. Participants respond to each statement on a 5-point Likert scale; scores range from 0 to 4, indicating almost never, rarely, sometimes, often, and almost always, respectively. The overall score is calculated by adding points from each item. The overall score indicates the participant's level of worry. A high score on SWQ indicates a high amount of worry. Screening through SWQ-30 was done twice: once before the intervention and then after the intervention. Internal consistency of SWQ-30 was measured by Cronbach's alpha, a value of .713 at the post-test and .937 at the post-test was calculated, which suggests the aptness of the scale's items.

Academic Self-Efficacy Scale (ASES)

The academic self-efficacy scale, originally designed by Byrne et al. (2014), and adapted by Sachitra & Bandara (2017). The present study used the adapted scale. The participants were requested to mark their responses on a 20-item self-administered scale using a 5-point Likert scale (1 being strongly disagree to 5 strongly agree). The value of Cronbach's alpha was .886 on the pre-test and .944 when measured on the post-test, suggesting the aptness of the scale's items.

Study-Relationships Conflicts Scale (SRCS)

The SRCS developed by Loscalzo & Giannini (2019) was used. It is a nine-item self-administered tool which is designed to measure students' quarrels at school (QS), relationship impairment (RI), along with the family and friends' complaints (FFC). Responders have to select their answers on a five-point Likert scale, which ranges from 1=Strongly Disagree to 5=Strongly Agree. The scale's internal reliability was checked by determining the alpha values, which were .639 at the post-test and .793 at the pre-test, showing the aptness of the scale's items.

Procedure

A research advertisement was circulated to the students at a medical college via printed and online mediums. The research title, variables of the study, time, and mode of therapy being used in the research were mentioned in the advertisement. The researcher's contact information was provided, and interested participants were asked to contact the researcher. Overall, 12 medical students contacted the investigator. Of these 12, 10 medical students with scores of 40 or more on the screening questionnaire, Student Worry

Questionnaire-30, were shortlisted for therapy. Out of these 10, only 5 students gave consent for therapy. The final 5 students were sent an email including the details of the procedure, number, and duration of the sessions (4 sessions in total, one session per week, approximately 45 to 60 minutes), and details regarding the content of the session. Students were given printed handouts at the end of each session so they could perform practice exercises at home to generalize the content of the session outside the session setting. The following table consists of the session plans for CBT.

Table 1: Session Plan for Cognitive Behavior Therapy

Session	Objectives of the session	Brief Description
Session 1	Psychoeducation Identifying beliefs and negative automatic thoughts (NATs)	This session provided an overview of the therapy. Worry-related thoughts and feelings were identified. Psychoeducation regarding academic worry and the A-B-C model was provided. Lastly, goal setting was completed.
Session 2	Identifying beliefs and NATs, cognitive restructuring was done via cognitive techniques	While exploring NATs and beliefs maintaining academic worry, a CBT technique, "Evidence for and Evidence Against," was utilized to address academic worry.
Session 3	Cognitive restructuring was done via behavioral techniques	Following behavioral techniques to address academic worry were employed: "Worry postponement, Mindfulness-based attention training, Problem-solving, helpful thinking diary, and accepting uncertainty with a mantra."
Session 4	Enhancing the psychological well-being of participants while experiencing worrisome	Participants were empowered to identify and utilize resources to promote self-efficacy, generalize treatment, prevent relapse, and prepare for therapy termination.

Statistical Analysis

SPSS version 25.0 was used for analysis. Descriptive statistics are used to analyze the frequencies of demographic variables. A Wilcoxon-signed rank test was run to assess the impact of pre- and post-intervention.

Ethical Consideration

Informed consent was obtained from participants after they were given details about the research. Strict confidentiality of research materials, including data, was maintained. The study participants were not subjected to any form of emotional, psychological, or physical harm. Research findings were shared with the participants.

Results

The purpose of this research was to analyze the effects of CBT interventions on the academic worry, relationship conflicts, and academic self-efficacy of medical students. This research was an ABA design that intended to find the efficacy of CBT interventions for third-year medical students. Academic worry, relationship conflict, and academic self-efficacy were studied at baseline, that is, before the intervention was administered, and then again post-intervention.

Descriptive statistics were calculated for demographic variables. Reliability analysis was also done for the main variables. For hypothesis testing, the Wilcoxon Signed-Rank test was applied to determine the difference in the levels of academic worry, relationship conflicts, and academic self-efficacy among third-year medical students, along with the graphical representation of the pre- and post-scores of the variables. Moreover, the effect size of the Wilcoxon Signed-Rank test has been calculated through an online calculator https://www.psychometrica.de/effect_size.html

Table 2 represents characteristics of demographic variables.

Table 2: Descriptive characteristics of the Demographic Variables (N =5)

Variables	***f*(%)**	**M (SD)**
Age Range		
20y	1 (20)	21 (0.71)
21y	3 (60)	
22y	1 (20)	
Gender		
Female	5 (100)	
Education		
3rd Year Medical Students	5 (100)	
Family Type		
Nuclear	3 (60)	
Joint	1(20)	
Single Parent	1 (20)	
Time spent studying, excluding college hours		
Less than 5 hours	2 (40)	6.4 (1.34)
More than 5 hours	3 (60)	
Note: f= Frequency. %= Percentage; M= Mean; SD=Standard Deviation		

Reliability analysis indicated that all scales used in the study are reliable, and the Cronbach's alpha coefficients are in acceptable ranges.

Table 3: Descriptive statistics and Reliability analysis for SWQ-30, SRC, and ASE

Scales		**K**	**M**	**SD**	**Range**		**α**
					Actual	Potential	
Student Worry	Pre	30	67.80	12.54	80-48	0-120	.713
	Post		39.20	3.70	44-35	0-120	.937
Study-Relationships	Pre	9	35.00	2.00	37-32	9-45	.639
conflict	**Post**		17.00	3.54	22-12	9-45	.793

		Pre		59.80	4.09	63-53	26-130	.886
Academic Efficacy	Self-	**Post**	26	107.40	3.36	112-103	26-130	.944

Note: K=Item number, M= Mean, SD= Standard Deviation, α=Cronbach alpha value

A Wilcoxon signed-rank test showed that the Cognitive Behavioral Therapy for third-year medical students resulted in a statistically significant change in reducing academic worry (Z = -2.023, p = 0.05) with M (SD) at pretest 67.80 (12.54) to 39.20 (3.70) at posttest, and study relationship conflict (Z = -2.060, p = 0.05) with M (SD) at pretest 35 (2.00) to 17.00 (3.54) at post-test, consequently improving Academic self-efficacy (Z = -2.032, p = 0.05) with M (SD) at pretest 59.80 (4.09) to 107.40 (3.36)

Table 4: Wilcoxon Signed Rank test comparing Student Worry, Study-Relationships Conflict, and Academic Self-Efficacy in Pretest and Post-Test (N=5)

Scales	**Pre-Intervention**		**Post-Intervention**		**Z**	**p**	**η^2**
	M	**SD**	**M**	**SD**			
Student Worry	67.80	12.54	39.20	3.70	-2.023	.043	14.91
Study-Relationships Conflict	35.00	2.00	17.00	3.54	-2.060	.039	14.95
Academic Self-Efficacy	59.80	4.09	107.40	3.36	2.032	.042	14.92

Note: M=Mean, SD=Standard Deviation, t=Paired Sample t-test, p=Significance

Graphical representation of the participants' scores in levels of Academic Worry, Study-Relationships Conflict, and Academic Worry throughout the study in Figure 2.

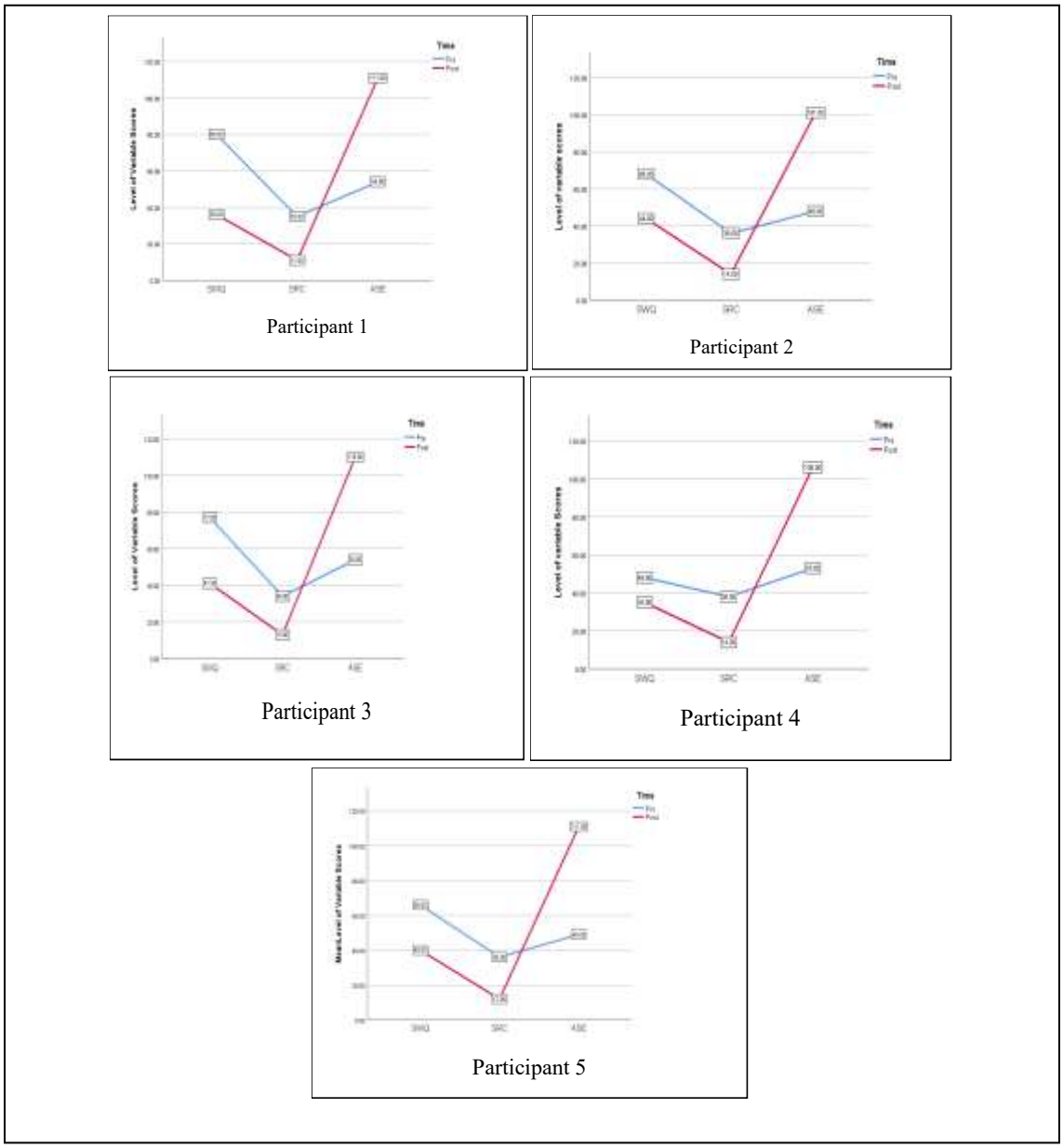

Figure 2: Graphical representation of participants' scores on the study variable before and after CBT intervention

Discussion

This study utilizes CBT based on the Saulsman et al. (2015) module as an individual therapeutic intervention for high academic worry levels in third-year medical students. Experiencing frequent worry, e.g., academic worry by medical students, without having the skills to regulate and cope with it, can turn this worry into more pathological worry, eventually leading to clinical anxiety disorders, mainly generalized anxiety disorder. Previous studies had shown that Pakistani medical students experience high levels of worry and stress. Anxiety and depression experienced by female medical students because of academic pressure, with other associated environmental and social factors, were reported at rates of 43.7% and 19.5%, respectively (Rab et al., 2008; Azim et al., 2022). Research led by Shahab et al. (2022) examined the levels

of anxiety faced by students enrolled in medical colleges. Students experiencing mild levels of anxiety were noted to be the highest at 50.0%, followed by severe anxiety at 26.6%, and the rate reported for moderate anxiety was 23.4%. Data from similar studies conducted in the past highlight the importance of addressing academic worry with early interventions.

Recognizing the prevalence of academic worry and anxiety disorders experienced by medical students, a CBT-informed approach was designed to address academic worry. The findings of the current study indicated that CBT-based individual intervention reduces the level of academic worry experienced by third-year medical students. This finding aligns with previous research that indicated the efficacy of CBT in addressing cognitive and emotional distress associated with academic performance and workload (Bani et al., 2022;Sahranavard et al., 2019). The intervention helped students to recognize and modify maladaptive thought patterns that contribute to excessive anxiety, hence promoting the cultivation of more adaptive coping methods. The academic pressure faced by medical students is generally heightened due to the demanding nature of their education, competitive atmosphere, and the requirement for outstanding performance, which can negatively impact their mental health and academic results (Borza, 2017). Cognitive Behavioral Therapy (CBT) improves students' capacity to manage stressors by addressing cognitive distortions and fostering self-regulation abilities.

Consequently, therapy results in increased academic self-efficacy and improved study relationship conflicts. These findings also concur with previous studies (Zeidi et al., 2020; Khurshid et al., 2025). Students who experience academic anxiety typically have low self-esteem and doubt their capacity to manage their academic obligations effectively. Given that CBT addresses maladaptive thought patterns and promotes cognitive restructuring, it is likely that the students were able to reframe academic obstacles as challenges to be overcome rather than as things to be feared, resulting in academic achievements (Kebebe, 2020). Students begin to believe that they are capable enough to achieve the required goals, which is a cognitive shift that promotes the development of a more positive impression of academic self-efficacy (Hayat et al., 2021).

Furthermore, the stress in academic life is often transferred into the personal lives of students, and it causes tension in social and intimate relationships. The emotional regulation and problem-solving skills that the intervention addressed could have assisted the subjects in achieving a balance between academic and personal interaction, and thus, eliminating the study-relationship conflict. Cognitive restructuring, behavioral activation, and stress management training methods are CBT techniques that enable students to be better prepared to handle the competing demands through the provision of practical tools (Hearn & Stocker, 2022). Students can have been thus exposed to better interpersonal communication, even less irritability, and enhanced emotional stability, which leads to healthier relational interactions.

Limitations

One of the major limitations of this study is the small sample size, which led to the ABA research design. The small sample size limits the generalizability of the findings. Furthermore, the study was limited to the neighboring cities of Islamabad and Rawalpindi. For the future, it will be important to study the effectiveness of CBT for academic functioning in other populations and settings, especially cities and towns that are less industrialized. Another limitation of the study is that all participants were women. Regarding socio-economic factors, all participants belonged to the middle or upper socio-economic class

Recommendations

Future researchers should study CBT-based interventions as delineated by Saulsman et al. (2015) on a bigger sample to assess whether these findings are generalizable or not. This research study included only female third-year medical student participants from Rawalpindi and Islamabad. Studying the impact of CBT-based interventions on other demographic groups (including gender, age, socio-economic factors, and

location) and also other student populations will generate interesting findings. Furthermore, this study used academic worry as the primary variable to assess CBT's effectiveness. Students with pre-existing mental illness and psychological challenges were excluded. It will be important to include those students in future studies. As the literature suggests, worry is a core feature of anxiety disorders, so worry as it relates to other facets of a student's life in addition to academics should also be considered and studied. This research study was limited to medical students; however, studying the impact of CBT-based interventions, in individual and group-based settings, for children and adolescents attending school will establish their role in early intervention and prevention.

Although the results of this study have shown a significant decrease in the academic worry of students, follow-up sessions should be incorporated into future research to determine the long-term effects of CBT-based interventions. A one, three, and/or six-month follow-up interval is recommended to study the durability of the strategies learned.

Implications

This research study establishes the role of CBT as an effective approach for reducing academic worry. Addressing worry early on, including academic worry, can prevent the development of anxiety-related disorders. Decreasing academic worry, increasing academic self-efficacy, and resolving study relationship conflicts can enhance academic functioning, improve academic and occupational outcomes, and provide students with strategies to address future life stressors. The techniques used in this research study included identifying and challenging beliefs, the worry postponement technique, mundane task focusing, meditation, up and down worrying, problem-solving, accepting uncertainty with a mantra, a helpful thinking diary, and developing a self-management plan. These techniques can be used for other facets of life, too.

CBT-based interventions also improved students' academic self-efficacy and resolved the conflict in study relationships. Given the competitive nature of student life, especially in medical schools, students can feel demoralized and lose motivation, which can negatively impact their academic resilience. With CBT-based interventions, students will have a more realistic appraisal of their aptitude and skills, and they will be able to address stress with effective coping strategies.

Conclusion

This research study explored the effectiveness of CBT in reducing academic worry among third-year medical students. Based on prior literature, it was hypothesized that CBT-informed approaches would decrease academic worry, promote academic self-efficacy, and enhance study relationships in third-year medical students. Similar findings were noted through this research study. CBT-based approaches resulted in a reduction in academic worry, increased academic self-efficacy, and led to the resolution of conflicts in study relationships. In summary, the research study establishes the effectiveness of CBT in promoting academic functioning.

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