

Association Between Cognitive Behavioral Therapy-Related Knowledge, Attitude, Practice, and Anxiety Severity Among Adults: A Cross-sectional Study.

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Abstract

Background: Anxiety disorders are among the most prevalent mental health conditions. Cognitive Behavioral Therapy (CBT) is one of the effective non-pharmacological interventions for anxiety management. **Objective:** The present study aimed to evaluate the association between Cognitive Behavioral Therapy-related Knowledge, Attitude, and Practice (KAP) components and anxiety severity among adults. **Methods:** A cross-sectional observational study was conducted among 426 participants residing in urban and rural areas of District Rampur. The severity of Anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale, while CBT-related KAP was evaluated using a validated self-structured questionnaire. **Results:** Among the participants, 78.4% were categorized as anxious, whereas 21.6% were non-anxious. Mild anxiety was the most prevalent category (43.7%), followed by moderate anxiety (26.3%) and severe anxiety (8.4%). Significant associations were observed between knowledge level and GAD severity ($\chi^2 = 15.10$, $p = 0.020$), attitude level and GAD severity ($\chi^2 = 54.43$, $p < 0.001$), and practice level and GAD severity ($\chi^2 = 27.19$, $p < 0.001$). Pearson correlation analysis demonstrated weak but significant negative correlations between knowledge score and GAD score ($r = -0.181$, $p < 0.001$), attitude score and GAD score ($r = -0.125$, $p = 0.010$), and practice score and GAD score ($r = -0.268$, $p < 0.001$). **Conclusion:** The findings indicate that improved CBT-related knowledge, positive attitudes, and healthy behavioral practices are significantly associated with reduced anxiety severity among adults. Strengthening mental health awareness and promoting CBT-based educational and behavioral interventions may help reduce anxiety burden in the community.

Keywords: Anxiety, Cognitive Behavioral Therapy, Knowledge, Attitude, Practice, GAD-7, Mental Health, Cross-sectional Study...

INTRODUCTION

Because of their chronic nature, high morbidity, and significant impact on quality of life, anxiety disorders are among the most common mental illnesses in the world and represent a significant public health concern. Excessive fear, anxiety, ongoing concern, emotional instability, and behavioral abnormalities that affect social, professional, and psychological functioning are the hallmarks of anxiety. According to recent epidemiological data, anxiety disorders are linked to poor mental health, sleep disruptions, decreased productivity, and bad interpersonal connections. They also appear to be a major contributor to the worldwide burden of disease^{1,2}.

The World Health Organization reports that growing urbanization, pressure from academics, stress at work, financial instability, and psychosocial lifestyle variables have all contributed to a significant rise in the prevalence of anxiety disorders in recent years. Anxiety severity and mental health outcomes are highly influenced by demographic factors such as gender, educational status, work status, and residential background. Due to low mental health knowledge, restricted access to healthcare, and the social stigma attached to psychiatric diseases, anxiety levels are frequently higher among women, jobless people, and rural populations³.

Cognitive Behavioral Therapy (CBT) is considered one of the most effective evidence-based psychotherapeutic approaches for anxiety disorders. CBT primarily focuses on identifying maladaptive thoughts, restructuring dysfunctional cognitive patterns, improving emotional regulation, and encouraging healthy behavioral coping mechanisms. The cognitive-behavioral model proposes that emotions and behaviors are strongly influenced by

cognitive interpretations; therefore, modifying distorted thought patterns and maladaptive behaviors can significantly reduce anxiety symptoms and improve psychological functioning^{4,9}.

Several recent systematic reviews and meta-analyses have demonstrated the effectiveness of CBT in reducing symptoms of generalized anxiety disorder, panic disorder, social anxiety disorder, and stress-related psychiatric conditions. Carpenter et al. reported that CBT significantly improves anxiety symptoms and psychosocial functioning compared to control interventions⁵. Similarly, Cuijpers et al. emphasized that CBT remains a first-line psychological intervention because of its structured, goal-oriented, and skill-based therapeutic approach for anxiety and related disorders⁶.

Recent advancements in CBT-based interventions have also incorporated mindfulness-based CBT, technologically assisted CBT, and exposure-based behavioral therapies for improving anxiety outcomes. Evidence suggests that these approaches help reduce fear perception, improve adaptive coping strategies, and enhance emotional regulation among anxious individuals⁸.

CBT-oriented psychological interventions significantly improve anxiety symptoms and coping behavior among adults with anxiety-related disorders⁸. Behavioral modification techniques and cognitive retraining strategies improve adaptive responses and reduce anxiety-related distress among psychologically vulnerable populations⁷. Despite the established efficacy of CBT, awareness and understanding regarding anxiety disorders and CBT-related coping strategies remain inadequate in many populations, particularly in developing countries such as India^{10,18}. Poor mental health literacy, misconceptions regarding psychiatric therapies, negative attitudes toward psychotherapy, and inadequate behavioral coping practices can contribute to increased anxiety severity and delayed treatment-seeking behavior. Public attitudes toward mental illness strongly influence healthcare utilization, psychological adaptation, and acceptance of therapeutic interventions^{14,15}.

The Knowledge, Attitude, and Practice (KAP) model is widely utilized in healthcare and behavioral research to evaluate awareness, beliefs, perceptions, and behavioral responses toward diseases and therapeutic interventions. KAP assessment provides valuable insight into cognitive understanding, psychological attitudes, and behavioral adaptation among community populations. In the context of anxiety disorders, assessment of CBT-related KAP components may help identify deficiencies in mental health awareness, negative attitudes toward psychotherapy, and maladaptive coping behaviors contributing to increased anxiety severity^{11,16,17}.

Although several studies have investigated anxiety prevalence and therapeutic efficacy of CBT, limited literature is available regarding the association between CBT-related knowledge, attitude, and practice components and anxiety severity among adults, particularly in rural and urban populations of India. Furthermore, comparatively fewer studies have explored the collective influence of psychological awareness, attitudes, and behavioral coping practices on anxiety outcomes using standardized assessment tools such as the Generalized Anxiety Disorder-7 (GAD-7) scale¹².

Therefore, the present study was conducted to evaluate the association between Cognitive Behavioral Therapy-related knowledge, attitude, and practice (KAP) components and anxiety severity among adults residing in rural and urban areas of District Rampur. The study also aimed to assess anxiety severity using the GAD-7 scale and determine the relationship between KAP levels and anxiety outcomes among anxious and non-anxious individuals. The findings of this study may contribute to the development of community-based mental health awareness programs and CBT-oriented educational interventions for reducing anxiety burden and improving psychological well-being.

METHODOLOGY

2.1 Study Design and Area

This study was conducted to evaluate the association between Cognitive Behavioral Therapy (CBT)-related Knowledge, Attitude, and Practice (KAP) components and anxiety severity among adults residing in rural and urban areas of District Rampur, Uttar Pradesh, India. The study was performed in selected rural and urban regions of District Rampur, Uttar Pradesh. Participants from both residential settings were included to assess variations in anxiety severity and CBT-related KAP components across different sociodemographic backgrounds.

2.2 Study Population and Sample Size

Participants were recruited from selected rural and urban areas of District Rampur using a community-based convenience sampling approach. Eligible adults aged 20 years and above who met the inclusion criteria were

invited to participate. Although probability sampling was not feasible because of logistical constraints, efforts were made to include participants from diverse demographic backgrounds to improve representativeness.

The minimum required sample size was estimated using Cochran's formula for cross-sectional studies:

$$n = Z^2P(1-P)/d^2$$

Assuming a 50% prevalence of anxiety ($P = 0.50$), a 95% confidence level ($Z = 1.96$), and a margin of error of 5% ($d = 0.05$), the minimum sample size was calculated as 384 participants. To compensate for possible incomplete responses and non-response, additional participants were recruited, resulting in a final sample size of 426 participants.

2.3 Inclusion Criteria

Participants aged 20 years and above, Participants residing in rural or urban areas of District Rampur, Individuals able to understand and respond to the questionnaire, and Participants willing to provide informed consent are included in the study.

2.4 Exclusion Criteria

Participants have severe psychiatric illness or cognitive impairment, are unable to comprehend the questionnaire, are unwilling to participate in the study, and Incomplete or improperly filled questionnaires are excluded from the study.

2.5 Study Instrument

Data were collected using a structured questionnaire consisting of three sections:

2.5.1 Sociodemographic Characteristics

This section included demographic details, including age, gender, educational qualification, occupation, marital status, and residential area.

2.5.2 Assessment of Anxiety Severity

Severity of Anxiety was assessed using the Generalized Anxiety Disorder-7 (GAD-7) scale developed by Spitzer et al¹². The GAD-7 is a validated self-report questionnaire comprising seven items scored on a 4-point Likert scale ranging from 0 ("not at all") to 3 ("nearly every day"). Total scores range from 0 to 21 and were categorized as: Minimal anxiety (0–4), Mild anxiety (5–9), Moderate anxiety (10–14) and Severe anxiety (15–21).

Participants with GAD-7 scores ≥ 5 were categorized as anxious, whereas those with scores < 5 were considered non-anxious¹³.

2.5.3 CBT-Related Knowledge, Attitude, and Practice Questionnaire

CBT-related KAP was assessed using a validated self-structured questionnaire developed based on a literature review and expert recommendations. The questionnaire included 34 items assessing awareness regarding anxiety and CBT, perceptions toward psychotherapy, and behavioral coping practices adopted by participants. Content validity of the questionnaire was evaluated using Item-Level Content Validity Index (I-CVI) and Scale-Level Content Validity Index (S-CVI). Reliability analysis demonstrated good internal consistency with a Cronbach's alpha value of 0.8849. Pilot study was conducted before the main study to report the feasibility, clarity, and comprehensibility of the questionnaire^{14,15,18}.

2.6 Data Collection Procedure

Eligible participants were approached personally during the study period. Data were collected using face-to-face interviews and self-administered questionnaires depending on participant literacy and convenience.

2.7 Statistical Analysis

Independent-samples t-tests and one-way analysis of variance (ANOVA) were used to compare mean GAD-7 scores across demographic categories. Pearson correlation analysis was performed to examine relationships between CBT-related knowledge, attitude, practice scores, and anxiety severity. Statistical significance was established at a two-tailed p-value of < 0.05 with a 95% confidence interval. Results were presented in tabular and graphical formats to facilitate interpretation¹⁸.

RESULTS

3.1 Sociodemographic Characteristics of Participants

A total of 426 participants were included in the present study. Among them, the majority of participants belonged to the age group of 26–35 years, followed by 18–25 years (Table 1). Female participants constituted a slightly higher proportion compared to males. Most participants were married and had completed secondary or higher

secondary education. Based on residential distribution, participants from both rural and urban areas were included in the study population.

Table 1: Sociodemographic Characteristics of the participants

AGE	FREQUENCY	PERCENTAGE
20-25	88	20.65
25-30	38	8.92
30-35	64	15
35-40	122	28.6
40-45	82	19.24
45-50	32	7.51
GENDER		
male	228	53.5
female	198	46.5
EDUCATION LEVEL		
high school	48	11.26
intermediate	126	29.57
bachelors	114	26.76
masters	94	22.06
no education	44	10.32
EMPLOYMENT FACTOR		
employed	126	29.57
unemployed	124	29.1
self employed	104	24.41
home maker	72	16.9
RESIDENT		
rural areas	202	47.4
urban areas	224	52.6

3.2 Distribution of Anxiety Severity and number of anxious and non-anxious Participants

Table 2 presents the distribution of anxiety severity among study participants according to GAD-7 classification. Of the 426 participants, 186 (43.7%) exhibited mild anxiety, 112 (26.3%) moderate anxiety, and 36 (8.4%) severe anxiety, whereas 92 (21.6%) reported minimal anxiety symptoms. Overall, 334 participants (78.4%) were classified as anxious (GAD-7 ≥ 5), while 92 participants (21.6%) were categorized as non-anxious.

Table 2. Distribution of Anxiety level and Anxiety Status Among Participants (N = 426)

Variable	Category	Number of participants	percentage
Anxiety Severity (GAD-7)	Minimal (0–4)	92	21.6
	Mild (5–9)	186	43.7
	Moderate (10–14)	112	26.3
	Severe (15–21)	36	8.4
Anxiety Status	Non-anxious (GAD-7 < 5)	92	21.6
	Anxious (GAD-7 ≥ 5)	334	78.4
Total	Participants	426	100.0

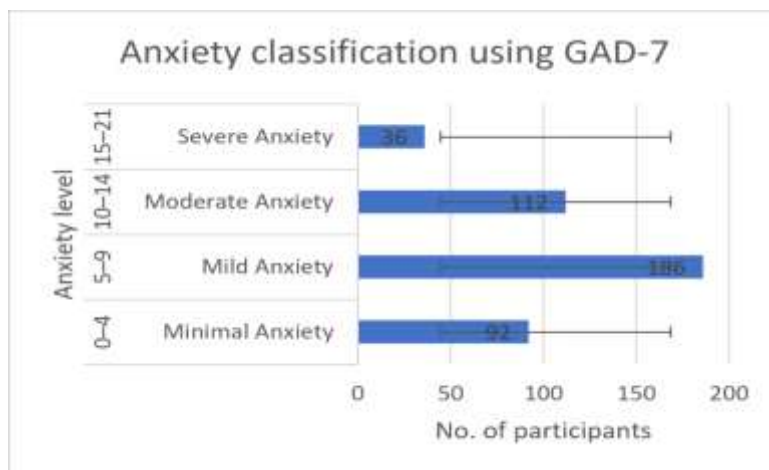


Figure 1: Anxiety Severity Distribution

3.3 Association Between Knowledge, Attitude, and Practice Level and GAD Level

Chi-square analysis demonstrated a statistically significant association between knowledge level and GAD level ($\chi^2 = 15.10$, $p = 0.020$). Participants with poor knowledge levels exhibited comparatively higher proportions of moderate and severe anxiety, whereas participants with good knowledge levels predominantly demonstrated minimal and mild anxiety, as shown in Table 4 and Figure 3. Table 3 also shows highly significant association was observed between attitude level and GAD level ($\chi^2 = 54.43$, $p < 0.001$). Participants with highly positive attitudes predominantly demonstrated minimal and mild anxiety levels, while participants with low positive attitudes showed comparatively higher levels of moderate and severe anxiety (Figure 4). Table 4 also shows a highly significant association between practice level and GAD level ($\chi^2 = 27.19$, $p < 0.001$). Participants with good practice levels predominantly exhibited minimal and mild anxiety, whereas participants with moderate practice levels showed higher proportions of moderate and severe anxiety (Figure 5).

Table 3: Association Between KAP Level and GAD Level

Knowledge Level	Minimal (%)	n	Mild (%)	n	Moderate (%)	n	Severe (%)	n	Total	χ^2 Value	p-value
Good Level	24 (35.3)		30 (44.1)		12 (17.6)		2 (2.9)		68	15.10	0.020*
Moderate Level	20 (20.4)		48 (49.0)		22 (22.4)		8 (8.2)		98		
Poor Level	48 (18.5)		108 (41.5)		78 (30.0)		26 (10.0)		260		
Total	92		186		112		36		426		
Attitude Level	Minimal (%)	n	Mild (%)	n	Moderate (%)	n	Severe (%)	n	Total	χ^2 Value	p-value
Highly Positive	22 (39.3)		24 (42.9)		8 (14.3)		2 (3.5)		56	54.43	<0.001*
Moderately Positive	10 (14.7)		40 (58.8)		12 (17.7)		6 (8.8)		68		
Low Positive	52 (17.7)		122 (41.5)		92 (31.3)		28 (9.5)		294		
Negative	8 (100)		0		0		0		8		
Total	92		186		112		36		426		
Practice Level	Minimal (%)	n	Mild (%)	n	Moderate (%)	n	Severe (%)	n	Total	χ^2 Value	p-value
Good Practice	30 (41.7)		30 (41.7)		10 (13.9)		2 (2.7)		72	27.19	<0.001*
Moderate Practice	62 (17.6)		154 (43.8)		102 (29.0)		34 (9.6)		352		
Poor Practice	0		2 (100)		0		0		2		
Total	92		186		112		36		426		

Data are presented as frequency (n) and percentage (%). Percentages were calculated within each KAP category. Associations between demographic variables and knowledge level were assessed using the Chi-square (χ^2) test. A p-value < 0.05 was considered statistically significant. *Statistically significant at $p < 0.05$

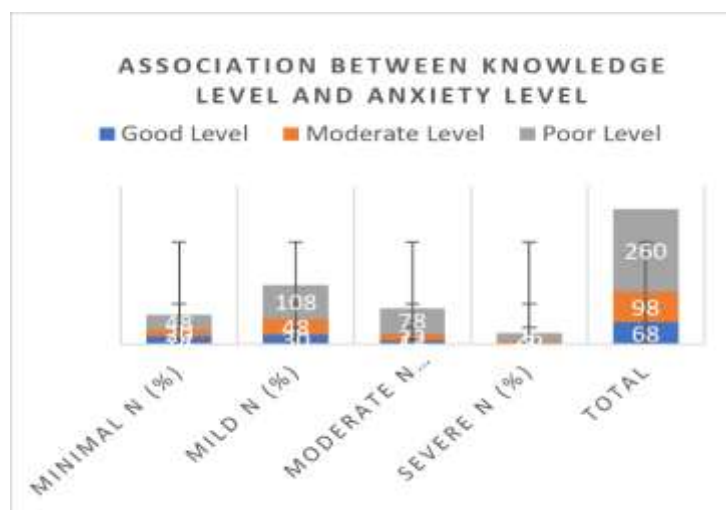


Figure 2: Association Between Knowledge Level and GAD Level

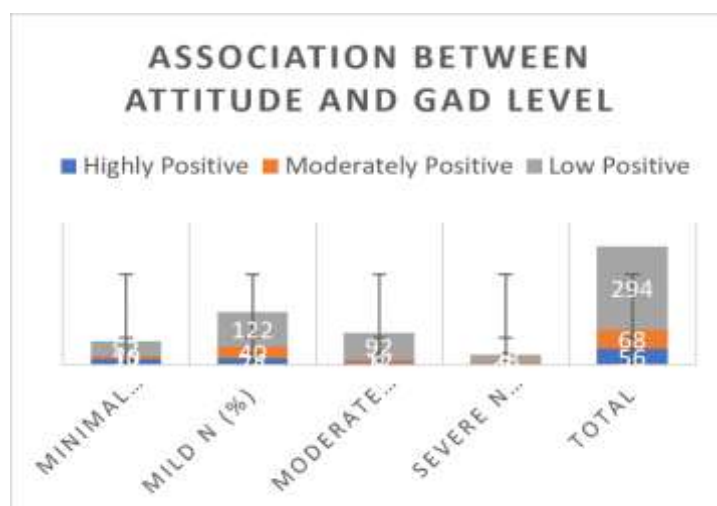
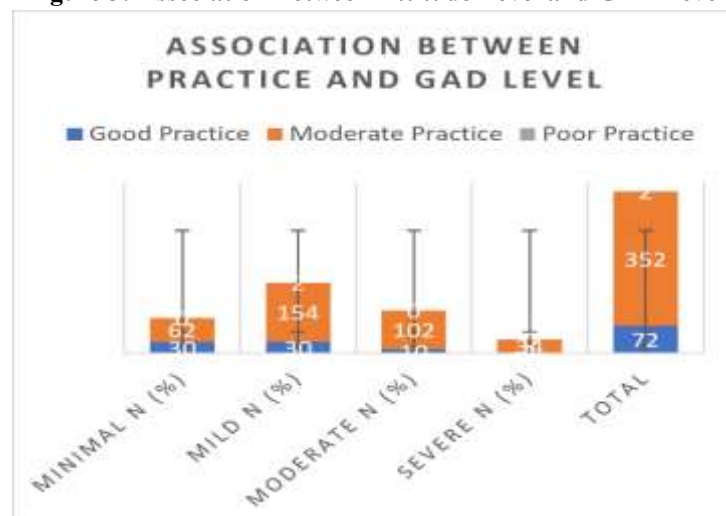


Figure 3: Association Between Attitude Level and GAD Level



(4)

Figure 4: Association Between Practice Level and GAD Level

3.4 Correlation Between KAP Scores and Anxiety Severity

Table 5 revealed a Pearson correlation analysis, which was performed to determine the relationship between CBT-related KAP scores and anxiety severity. Knowledge score demonstrated a weak negative correlation with GAD-7 score ($r = -0.181$, $p < 0.001$), indicating that increased knowledge was associated with reduced anxiety severity. Attitude score also showed a weak negative correlation with anxiety severity ($r = -0.125$, $p = 0.010$). Practice score demonstrated the strongest negative correlation with GAD-7 score ($r = -0.268$, $p < 0.001$), suggesting that healthy behavioral practices and coping strategies were significantly associated with lower anxiety severity (Figure 6).

Table 4: Correlation Between KAP Scores and Anxiety

Variables	Correlation Coefficient (r)	p-value	Interpretation
Knowledge Score vs GAD Score	-0.181	<0.001*	Weak negative correlation
Attitude Score vs GAD Score	-0.125	0.010*	Weak negative correlation
Practice Score vs GAD Score	-0.268	<0.001*	Weak negative correlation

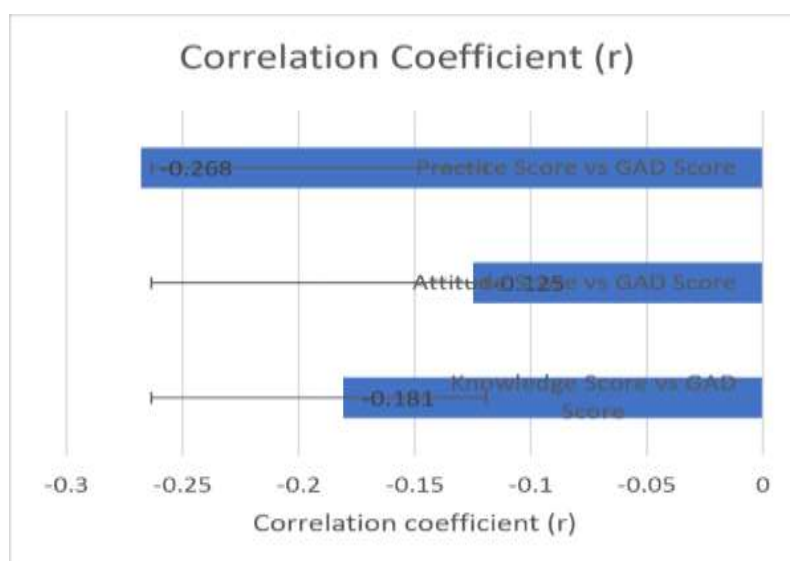


Figure 5: Correlation Between KAP Scores and Anxiety Severity

3.5 Mean KAP and GAD-7 scores and Their Association

The mean Knowledge, Attitude, and Practice scores varied according to anxiety severity categories. Participants with severe anxiety demonstrated comparatively lower KAP scores than participants with minimal or mild anxiety. Similarly, mean GAD-7 scores increased progressively among participants with poor knowledge, negative attitudes, and inadequate behavioral practices, indicating an inverse relationship between CBT-related KAP components and anxiety severity (Table 6). Descriptive statistical analysis demonstrated that the mean knowledge score among participants was 5.84 ± 2.31 , indicating moderate overall awareness regarding anxiety and Cognitive Behavioral Therapy-related concepts. The mean attitude score was 7.42 ± 2.64 , reflecting generally positive attitudes toward anxiety management and mental health awareness. The mean practice score was 6.88 ± 1.53 , suggesting moderate implementation of healthy behavioral practices related to anxiety management. Additionally, the mean GAD-7 score was 8.67 ± 4.42 , indicating the presence of mild to moderate anxiety symptoms among the study population overall.

Table 5: Mean KAP and GAD-7 scores and its Association

Demographic Variable	Category	Mean GAD Score $\pm$ SD	Test Statistic	p-value
Gender	Male	6.84 ± 3.21	$t = 2.16$	0.031*
	Female	7.62 ± 3.58		

Residence	Rural	8.14 ± 3.74	t = 4.52	<0.001*
	Urban	6.21 ± 3.05		
Age Group	20–25 years	5.92 ± 2.84	F = 7.84	<0.001*
	25–30 years	6.38 ± 3.01		
	30–35 years	7.02 ± 3.24		
	35–40 years	7.68 ± 3.45		
	40–45 years	8.11 ± 3.66		
	45–50 years	8.74 ± 3.92		
Educational Level	No Education	8.96 ± 3.88	F = 9.42	<0.001*
	High School	8.15 ± 3.61		
	Intermediate	7.24 ± 3.26		
	Bachelors	6.42 ± 2.98		
	Masters	5.94 ± 2.76		
Employment Status	Employed	6.18 ± 2.95	F = 6.27	0.002*
	Unemployed	8.04 ± 3.67		
	Self employed	6.88 ± 3.14		
	Home maker	7.52 ± 4.42		
Variable	Mean	± SD	Minimum Score	Maximum Score
Knowledge Score	5.84	2.31	1	12
Attitude Score	7.42	2.64	1	12
Practice Score	6.88	1.53	1	10
GAD-7 score	8.67	4.42	0	21

DISCUSSION

The present study evaluated the association between Cognitive Behavioral Therapy (CBT)-related knowledge, attitudes, and practices (KAP) and anxiety severity among adults residing in rural and urban communities of District Rampur, Uttar Pradesh. The findings revealed a high prevalence of anxiety symptoms, with 78.4% of participants classified as anxious. Mild anxiety was the most common category (43.7%), followed by moderate (26.3%) and severe anxiety (8.4%). This high prevalence may be attributed to increasing psychosocial stressors, occupational burden, financial insecurity, and limited mental health awareness within the community. Similar studies have identified anxiety disorders as among the most common mental health conditions worldwide, significantly affecting quality of life and daily functioning^{1,2}.

A statistically significant association was observed between knowledge level and anxiety severity ($\chi^2 = 15.10$, $p = 0.020$). Participants with better knowledge regarding anxiety and CBT generally reported lower anxiety severity than those with poor knowledge levels. Greater awareness of anxiety symptoms, treatment options, and coping strategies may facilitate early recognition of psychological distress and encourage appropriate help-seeking behavior. These findings are consistent with previous studies demonstrating that mental health literacy is associated with improved psychological outcomes and healthcare utilization^{14,15,18}.

Attitude toward mental health and psychological treatment was also significantly associated with anxiety severity ($\chi^2 = 54.43$, $p < 0.001$). Participants with more positive attitudes exhibited lower anxiety levels compared with those holding negative attitudes. Negative perceptions and stigma surrounding mental illness may discourage individuals from seeking professional support, thereby increasing psychological distress. Similar observations have been reported in previous studies highlighting the influence of attitudes on mental health service utilization and treatment outcomes^{10,16,17}.

Among all KAP domains, practice demonstrated the strongest association with anxiety severity ($\chi^2 = 27.19$, $p < 0.001$). Participants reporting adaptive coping behaviors and healthy stress-management practices had significantly lower anxiety levels. Furthermore, Pearson correlation analysis showed that practice score demonstrated the strongest inverse correlation with GAD-7 score ($r = -0.268$, $p < 0.001$), followed by knowledge score ($r = -0.181$, $p < 0.001$) and attitude score ($r = -0.125$, $p = 0.010$). These findings indicate that higher levels

of CBT-related knowledge, more positive attitudes, and healthier behavioral practices were associated with lower anxiety severity. The relatively stronger correlation observed for practice suggests that adaptive behavioral strategies may have a particularly important relationship with anxiety symptoms. These findings are consistent with the theoretical principles of CBT, which emphasize the interaction between cognitive processes, emotional responses, and behavioral patterns in psychological well-being⁴⁻⁶.

The study's strengths include the use of a validated KAP questionnaire with good internal consistency (Cronbach's $\alpha = 0.8849$), assessment of both rural and urban populations, and utilization of the standardized GAD-7 scale. However, the cross-sectional design limits causal inference, and convenience sampling may restrict generalizability. Additionally, self-reported responses may be subject to recall and social desirability biases. Overall, the findings indicate that higher levels of CBT-related knowledge, positive attitudes, and adaptive coping practices are significantly associated with lower anxiety severity, highlighting the importance of community-based mental health education and awareness initiatives.

CONCLUSION

The present study demonstrated a significant association between Cognitive Behavioral Therapy-related Knowledge, Attitude, and Practice (KAP) components and anxiety severity among adults. Participants with better knowledge, positive attitudes, and healthy behavioral practices were associated with comparatively lower anxiety severity. Behavioral practice showed the strongest inverse relationship with anxiety levels, highlighting the importance of adaptive coping strategies in anxiety management. The findings emphasize the need for community-based mental health awareness programs and CBT-oriented educational interventions to improve psychological well-being and reduce anxiety burden, particularly among vulnerable and rural populations.

DECLARATIONS

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Conflicts of Interest

The authors affirm that no known competing financial interests or personal relationships influenced the work described in this publication.

Ethical Approval

The study received ethical approval from RA MXL Hospital in Rampur, Uttar Pradesh, India (Reference No. RA/2024/50; Dated: August 29, 2024).

Consent to Take Part

Before data collection, each individual participant in the study gave their informed consent.

Consent to Publish

Each participant permitted for anonymized data to be used for publication and study.

Data and Material Availability

Upon reasonable request, the corresponding author will provide the datasets created and/or analyzed during the current work.

Code Availability

Not applicable.

Authors' Contributions

Saman Moin: Conceptualization, methodology, data collection, analysis, and manuscript drafting. Neelanchal Trivedi: Supervision, validation, and critical revision of the manuscript..

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