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EFFECTIVENESS OF ACCEPTANCE AND COMMITMENT THERAPY IN THE TREATMENT OF GENERALIZED ANXIETY DISORDER: A NON-RANDOMIZED CONTROLLED TRIAL IN PESHAWAR

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ABSTRACT

Objective: This study aimed to examine the effectiveness of Acceptance and Commitment Therapy (ACT) in reducing anxiety symptoms and improving mindfulness and psychological flexibility among patients with GAD in Peshawar.

Methods: A non-randomized controlled trial was conducted among patients aged 19-50 years who had Generalized Anxiety Disorder, as defined by the DSM-5. People in the study were split into two groups: one received Acceptance and Commitment Therapy (eight one-on-one sessions during eight weeks), and the other received psychoeducation. We had all participants complete standard questionnaires about how they felt at the beginning and at the end of their treatment. These questionnaires were the GAD-7 (for Generalized Anxiety Disorder), the PSWQ (Penn State Worry Questionnaire), the CFQ (Cognitive Fusion Questionnaire), and the FFMQ (Five-Facet Mindfulness Questionnaire). We used paired and independent t-tests to analyze the results, and calculated the 'effect size' (using Cohen's d) to show the strength of any changes.

Results: Participants receiving ACT demonstrated significant reductions in GAD-7 and PSWQ scores ($p < 0.001$) and increased mindfulness and psychological flexibility ($p < 0.001$) compared with the control group. Between-group effect sizes ranged from large to very large (Cohen's $d = 0.85–1.20$). No adverse effects were reported.

Conclusion: Acceptance and Commitment Therapy is an effective intervention for treating GAD, producing meaningful improvements in anxiety reduction and mindfulness enhancement among Pakistani patients. Integrating ACT into routine psychological services may improve treatment outcomes and reduce chronic worry patterns prevalent in this population.

KEYWORDS: Acceptance and Commitment Therapy; Generalized Anxiety Disorder; Psychological Flexibility; Mindfulness; Peshawar; Treatment; Behavioral Therapy

INTRODUCTION

Generalized Anxiety Disorder (GAD) is a chronic mental disorder that manifests itself in the form of excessive and pervasive worry in various areas of life, accompanied by somatic and cognitive symptoms such as muscle tension, restlessness, irritability, and sleep disturbance (American Psychiatric Association, 2013).GAD is a major burden on population health, affecting about 36% of the global population (Bandelow and Michaelis, 2015).The condition is often comorbid with depression, substance use, and other anxiety disorders, which leads to high rates of functional impairment and low quality of life (Ruscio et al., 2017).Anxiety disorders are very common in Pakistan, but they are underdiagnosed due to cultural stigma, lack of awareness, and the lack of mental health services in Pakistan.According to a national survey, almost 34 percent of adults exhibit anxiety and depression, with high prevalence among women and urban residents (Mirza and Jenkins, 2004).Pharmacotherapy (e.g., SSRIs, benzodiazepines) is a common treatment of GAD but is usually only partially or temporarily effective, with side effects and high rates of relapse when withdrawn (Baldwin et al., 2022).Acceptance and Commitment Therapy (ACT), by Hayes, Strosahl, and Wilson (1999), is a paradigm shift of traditional cognitive approaches to the creation of psychological flexibility, the ability to be in contact with the present moment and persist in their behavior that aligns with their values, despite the distressing thoughts or feelings.ACT is based on Relational Frame Theory (RFT), which states that human suffering results from language-mediated processes, specifically cognitive fusion and experiential avoidance (Hayes et al., 2012).ACT has six fundamental processes: acceptance, cognitive defusion, present-moment awareness, self-as-context, values clarification, and committed action.Collectively, these processes aim to decrease the preeminence of unhelpful intellectual patterns and promote adaptive, value-driven actions (Hayes et al., 2021).Several studies have proven that ACT is effective in a wide range of psychological disorders, such as depression, chronic pain, anxiety, and others (A-Tjak et al., 2015; Gloster et al., 2020).Cognitive fusion (fixated attachment to thoughts) and experiential avoidance (efforts to suppress internal experience) are the primary maintaining factors in the context of GAD and are what ACT directly

targets.By practicing mindfulness and defusion, clients learn to see anxious thoughts without judgment, which reduces their functional impact.Moreover, ACT focuses on recognizing and acting on personal values, which contrasts with the behavioral constraints and avoidance typical of anxiety disorders (Hayes et al., 2019).Several studies have investigated the theoretical processes of ACT in GAD.In the case of Roemer et al. (2008), the study's results revealed that acceptance and mindfulness were strong predictors of lower levels of worry and anxiety symptoms, even after cognitive reappraisal was taken into account.Hayes-Skelton et al. (2013) similarly showed that increases in psychological flexibility mediated decreases in the severity of GAD following ACT, suggesting that it had a distinct therapeutic pathway compared to CBT.Empirical studies are accumulating in favor of the effectiveness of ACT with anxiety disorders.A meta-analysis by A-Tjak et al. (2015) of 39 randomized trials found that ACT had medium to large effect sizes for reducing anxiety compared with control conditions.In the case of GAD, ACT interventions were found to significantly improve worry, emotion regulation, and quality of life (Arch et al., 2012; Hayes-Skelton et al., 2013).ACT has demonstrated results in clinical settings that are as effective as, or better than,CBT.As an example, Arch et al. (2012) have found that ACT and CBT were equally effective in eliminating the symptoms of anxiety and depression, but the participants in the ACT group reported more psychological flexibility and less avoidance.Moreover, a transdiagnostic emphasis of ACT could be more beneficial to comorbid emotional disorders, which would contribute to the sustainability of treatment, as suggested by a study of Twohig and Levin (2017).Although these are encouraging results, most ACT research studies have been conducted in Western contexts, and little has been done in culturally diverse or resource-constrained settings.Cultural beliefs about emotion expression, spirituality, and collectivism can affect the acceptance and internalization of mindfulness-based concepts in ACT (Karekla and Constantinou, 2010).Hence, regional studies are needed to confirm the relevance and usefulness of ACT among South Asian communities.Given the limited empirical studies assessing the effectiveness of ACT among individuals diagnosed with GAD, this study seeks to fill a critical gap by examining its effectiveness in a real-world clinical setting.The investigation of the feasibility of treatment, cultural responsiveness, and generalizability of the results will be valuable information when conducted in the local healthcare setting.The main aim of the research was to determine the effectiveness of Acceptance and Commitment Therapy in reducing anxiety symptoms among patients with Generalized Anxiety Disorder, and to compare it with a psychoeducation control group.The secondary objectives include evaluating the effect of ACT on worry severity (PSWQ), cognitive fusion (CFQ), and aspects of mindfulness (FFMQ).Test the correlations among changes in psychological flexibility, mindfulness, and anxiety reduction following the intervention.Investigate possible demographic effects (age, gender, socioeconomic status) on treatment results.The current study adds to the growing international literature on ACT by providing empirical evidence from a South Asian setting where cultural practices and healthcare systems differ from those in the West.The implementation of ACT, as an individual intervention, also highlights the therapeutic relationship and personalized pacing, which can enhance adherence and treatment outcomes.Also, a realistic evaluation of the incremental benefit of ACT over conventional supportive interventions typically provided in a clinical context is provided by comparing ACT with a psychoeducation control.

METHODOLOGY

This study employed a non-randomized controlled trial design to evaluate the effectiveness of Acceptance and Commitment Therapy (ACT) compared with a control group who received psychoeducation only in treating patients diagnosed with Generalized Anxiety Disorder (GAD). The intervention lasted 8 weeks and included pre- and post-treatment assessments. Participants were allocated to either the ACT or psychoeducation group based on availability and consent preference. The design allowed for practical feasibility while maintaining group comparability.The study was conducted at the Kabir Medical College, Peshawar. The study lasted eight months (January to August 2024), including participant recruitment, intervention delivery, post-assessment, and data analysis. All therapy sessions were conducted inthe counseling room to ensure confidentiality and minimize distractions. Adults aged 19–50 years who met DSM-5 diagnostic criteria for Generalized Anxiety Disorder, were willing to provide informed consent, and were willing to attend all eight sessions were included in the study. The patients having comorbid psychiatric illnesses such as psychotic disorders, bipolar disorder, or substance dependence, Severe physical illness or neurological impairment, and Concurrent psychological therapy or medication were excluded.The sample size was calculated using an online sample size calculator for clinical studies (OpenEpi version 3.0), assuming a medium effect size (Cohen's $d = 0.6$), a power of 0.80, and an α of 0.05. The calculation yielded a minimum of 36 participants per group. Allowing for a 20% attrition rate, the final sample comprised 45 participants per group (N = 90).Participants were recruited purposively from the outpatient psychiatry units of tertiary hospitals in Peshawar. Patients who met the inclusion criteria were invited to participate and briefed on both interventions. Allocation into groups was non-randomized, based on their consent to receive either ACT or psychoeducation. The questionnaire used for data collection was comprised of the Generalized Anxiety Disorder Scale (GAD-7): A 7-item self-report scale assessing the severity of anxiety over the previous two weeks. Each item is scored 0–3, with total scores ranging from 0 to 21. Scores ≥ 10 indicate clinically significant anxiety (Spitzer et al., 2006). Cronbach's $\alpha = 0.89$. Penn State Worry Questionnaire (PSWQ): A 16-item measure assessing the trait of worry (Meyer et al., 1990). Items are rated on a 5-point Likert scale (1 = not at all typical to 5 = very typical). Higher scores indicate greater pathological worry ($\alpha = 0.93$). Cognitive Fusion

Questionnaire (CFQ):A 7-item instrument measuring the extent to which individuals are entangled with their thoughts (Gillanders et al., 2014). Items are rated 1–7; higher scores indicate greater fusion. Cronbach's α = 0.88. Five Facet Mindfulness Questionnaire (FFMQ): A 15-item short form assessing observing, describing, acting with awareness, nonjudging, and nonreactivity (Baer et al., 2012). Items are scored 1–5, with higher scores reflecting greater mindfulness (Cronbach's α = 0.86).Participants in the experimental group received eight individual-based ACT sessions, each lasting approximately 40-50 minutes, conducted once weekly by a trained clinical psychologist. The intervention followed the six core processes of ACT: acceptance, cognitive defusion, present-moment awareness, self-as-context, values clarification, and committed action (Hayes et al., 2012). The session outline was adapted to be culturally appropriate for Pakistan, using metaphors and examples relevant to local contexts.

Table 1: Eight-Session ACT Protocol

Session	Focus and Key Techniques
1. Orientation and Psychoeducation	Introduction to therapy, building rapport, explaining the concept of GAD, avoidance, and experiential control. Psychoeducation about mindfulness and acceptance. Homework: monitor anxious thoughts.
2. Acceptance and Experiential Avoidance	Discuss avoidance patterns; introduce the "struggle switch" metaphor; practice acceptance exercises and breathing techniques. Homework: note moments of avoidance.
3. Cognitive Defusion	Introduce defusion metaphors ("Leaves on a Stream," "Passengers on the Bus"). Teach distancing from thoughts. Homework: daily mindfulness of thoughts.
4. Self-as-Context and Present-Moment Awareness	Differentiate between the conceptualized self and the observing self. Use mindfulness practices focusing on body and breath. Homework: "Observing Self" journaling.
5. Values Clarification	Identify core life domains (family, career, spirituality). Values card-sorting activity. Homework: reflect on actions aligned with values.
6. Committed Action	Develop behavioral goals consistent with values. Address barriers to action. Homework: implement one valued action.
7. Integration and Psychological Flexibility	Combine acceptance, defusion, mindfulness, and values. Review progress. Homework: record situations demonstrating flexibility.
8. Relapse Prevention and Closure	Review all sessions, discuss maintaining psychological flexibility. Provide printed summary workbook and mindfulness audio files.

The participants were advised to engage in mindfulness practices daily and to take notes on them.Fidelity of intervention therapists was guided by a structured session manual that ensured adherence to the intervention.The individuals in the control group were given two sessions of psychoeducation (between 30 and 40 minutes) over eight weeks.Lessons included: Understanding Anxiety: symptoms, causes, and physiological processes.Stress Management: sleep hygiene, relaxation, and lifestyle change.No therapeutic elements were included based on mindfulness, acceptance, or values.This was to manage therapists' attention and exposure to information.Then, participants were assigned to the ACT and psychoeducation groups according to their consent preferences and scheduling availability.Eight weeks post-intervention, participants were assessed with the same battery of instruments.The confidentiality of data and the anonymity of the participants were ensured.Financial incentives were not given.Data analysis was done using SPSS version 26.0.All demographic and clinical variables were included in descriptive statistics (means, standard deviations, frequencies).The cut-off point for the two-tailed p-value was set to 0.05.This research complied with the principles of ethical research as expressed in the Declaration of Helsinki (2013).The objectives of the study, confidentiality, and the participants' right to withdraw at any time without penalty were explained to all participants.Participation was obtained through written informed consent.The Institutional Review Board of Gandhara University (Ref: GU/IRB/2025/027) gave ethical approval.

RESULTS

One hundred and twenty-two patients were first facilitated to check their eligibility.Twenty-two were not eligible to take part in the study (12 had comorbid depression, 6 had changed their medication in the meantime, and 4 had refused to participate).The remaining 90 participants were enrolled and assigned to two groups: the ACT group (n = 45) received eight individual ACT sessions, and the Control group (n = 45) received only psychoeducation

sessions. During the intervention period, five participants in the act group and seven in the control group discontinued due to personal reasons and irregular attendance. The final analysis included 40 participants of the act group and 38 of the control group. A detailed flow of the participants is presented below.

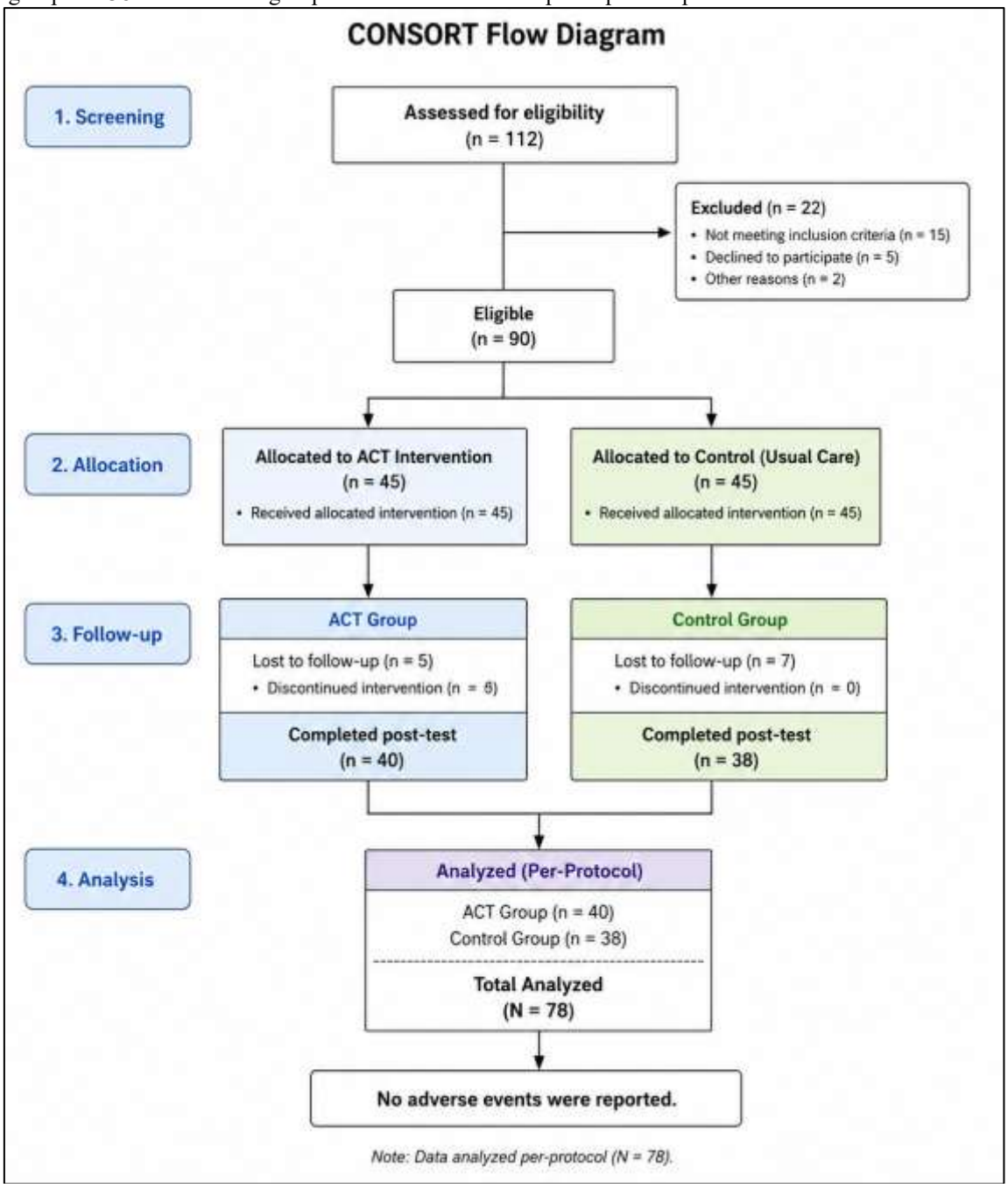

Table 1 presents demographic details of both groups. No statistically significant differences were found between ACT and control participants at baseline on age, gender, education, socioeconomic status, marital status, occupation, or region ($p > 0.05$), confirming group comparability.

Table 1. Demographic Characteristics of Participants (N = 78)

Variable		ACT Group (n=40)	Control Group (n=38)	χ^2 / t	p-value
Age (years, Mean ± SD)		33.9 ± 8.1	32.8 ± 7.6		
Gender	Male	18	17	0.01	0.92
	Female	22	21		
Education	Secondary	14	13	0.00	0.98
	Tertiary	26	25		
Socioeconomic status	Low	12	11	0.12	0.94
	Middle	20	21		

	High	08	06		
Occupation	Employed	14	13	0.15	0.93
	unemployed	07	06		
	Student	09	08		
	Homemaker	10	11		
Marital status	Single	16	15	0.00	0.98
	Married	24	23		
Region	Urban	25	23	0.04	0.84
	Rural	15	15		

At pre-intervention, no significant differences were observed between the ACT and control groups on mean scores of GAD-7, PSWQ, CFQ, or FFMQ (Table 2), indicating baseline equivalence.

Table 2. Baseline Comparison of Clinical Measures Between Groups

Measure	ACT Group (Mean ± SD)	Control Group (Mean ± SD)	t	p-value
GAD-7 (Anxiety Severity)	16.83 ± 2.40	16.45 ± 2.56	0.69	0.49
PSWQ (Worry Severity)	60.25 ± 6.30	59.60 ± 7.00	0.42	0.67
CFQ (Cognitive Fusion)	38.35 ± 4.75	37.90 ± 5.10	0.39	0.70
FFMQ (Mindfulness)	38.20 ± 5.30	37.70 ± 4.95	0.42	0.67

Paired-sample *t*-tests showed that participants receiving ACT demonstrated significant improvements across all measures ($p < 0.001$). GAD-7 and PSWQ scores decreased substantially, while CFQ scores reduced and FFMQ scores increased, reflecting decreased cognitive fusion and enhanced mindfulness.In contrast, the psychoeducation control group exhibited minor, non-significant changes across all outcomes ($p > 0.05$).

Table 3. Within-Group Pre- and Post-Intervention Comparison

Measure	ACT Group (n=40)		t	p	Control Group (n=38)		t	p
	Pre	Post			Pre	Post		
GAD-7	16.83 ± 2.40	8.95 ± 2.85	14.70	<0.001	16.45 ± 2.56	15.60 ± 2.40	1.60	0.12
PSWQ	60.25 ± 6.30	45.20 ± 7.00	11.90	<0.001	59.60 ± 7.00	58.00 ± 6.70	1.25	0.22
CFQ	38.35 ± 4.75	28.10 ± 5.35	10.10	<0.001	37.90 ± 5.10	37.00 ± 4.95	0.95	0.35
FFMQ	38.20 ± 5.30	48.35 ± 6.10	-8.95	<0.001	37.70 ± 4.95	38.15 ± 5.00	-0.55	0.59

Independent-sample *t*-tests revealed significant between-group differences favoring ACT participants on all outcome measures at post-intervention ($p < 0.001$). Cohen's *d* effect sizes ranged from 0.85 to 1.20, indicating large clinical effects.

Table 4. Between-Group Post-Intervention Comparison of Outcomes

Measure	ACT Group (Mean ± SD)	Control Group (Mean ± SD)	t	p-value	Cohen's *d*
GAD-7	8.95 ± 2.85	15.60 ± 2.40	11.50	<0.001	**1.20**
PSWQ	45.20 ± 7.00	58.00 ± 6.70	8.38	<0.001	**1.10**
CFQ	28.10 ± 5.35	37.00 ± 4.95	7.80	<0.001	**0.95**
FFMQ	48.35 ± 6.10	38.15 ± 5.00	7.92	<0.001	**0.90**

Pearson correlation analysis within the ACT group indicated that improvement in psychological flexibility (CFQ reduction) was negatively correlated with anxiety severity reduction ($r = –0.62$, $p < 0.001$) and positively correlated with increases in mindfulness ($r = 0.68$, $p < 0.001$). These findings support ACT's theoretical model linking mindfulness and psychological flexibility to symptom improvement.

Based on Jacobson and Truax's (1991) Reliable Change Index (RCI), 80% of ACT participantsshowed reliable improvement on the GAD-7, and65% met the criterion for clinical recovery(post-score ≤ 8). In contrast, only 10% of control participants demonstrated reliable improvement, and none met the recovery threshold.ACT's substantial clinical as well as statistical effectiveness in reducing pathological worry and anxiety symptoms.

Table 5. Pearson Correlation Matrix Among Key Study Variables (Post-Intervention, ACT Group, N = 40)

Variables	GAD-7	PSWQ	CFQ	FFMQ
GAD-7 (Anxiety Severity)	1	0.72	0.68	–0.65
PSWQ (Worry Severity)		1	0.61	–0.59
CFQ (Cognitive Fusion)			1	–0.66
FFMQ (Mindfulness)				1

$p < 0.001$

Table 6. Multiple Linear Regression Predicting Post-Intervention Anxiety Severity (Dependent Variable: GAD-7, N = 40, ACT Group)

Predictor Variable	Unstandardized Coefficient (B)	SE	Standardized Beta (β)	t	p-value
Constant	3.12	1.25	—	2.49	0.017
PSWQ (Worry Severity)	0.22	0.07	0.36	3.14	0.003
CFQ (Cognitive Fusion)	0.28	0.09	0.39	3.22	0.002
FFMQ (Mindfulness)	–0.26	0.08	–0.34	–3.25	0.002

Note: Model Statistics; $R = 0.81$; $R^2 = 0.66$; Adjusted $R^2 = 0.63$, $F(3,36) = 22.45$, $p < 0.001$

DISCUSSION

This study administered the efficacy of individually administered Acceptance and Commitment Therapy (ACT) in comparison to psychoeducation-only control in patients with Generalized Anxiety Disorder (GAD) in Peshawar, Pakistan.Findings showed that ACT led to a significant reduction in anxiety and worry (GAD-7 and PSWQ scores) and improvements in mindfulness and psychological flexibility (FFMQ and CFQ scores) compared to the control group.The within-group analyses indicated that the pre- and post- effect sizes of all measures were large in the ACT group (Cohen d = 0.851.20) but negligible in the control group.Correlation tests further supported the theoretical foundations of ACT: cognitive fusion reductions were strongly correlated with anxiety and worry reductions, and mindfulness increases.The regression analysis showed that cognitive fusion, worry severity, and mindfulness were all significant in explaining 66% of the variance in post-treatment anxiety, highlighting their importance in therapeutic change.Taken collectively, these results lead to the conclusion that ACT is a useful and culturally flexible intervention in the treatment of GAD in the Pakistani clinical setting, and outperforms psychoeducation alone.The current findings are consistent with those of other international researchers who have indicated the effectiveness of ACT in treating anxiety.Hayes-Skelton et al. (2013) showed that both ACT and applied relaxation reduced GAD symptoms, but ACT produced more significant changes in experiential avoidance and quality of life.In a similar study, Arch et al. (2012) found that ACT and Cognitive Behavioral Therapy (CBT) did not differ in symptom reduction, but participants in the ACT condition reported greater gains in psychological flexibility.The large effect sizes in the current study are similar to those reported in meta-analyses, indicating the superiority of ACT over control and the equivalence of ACT to traditional CBT (A-Tjak et al., 2015; Gloster et al., 2020).

Moreover, the observed worry reduction (PSWQ) is consistent with the findings of Roemer et al. (2008), who also reported that acceptance-based interventions specifically reduce pathological worry by decreasing the efforts to regulate the internal experiences.The negative relationship between mindfulness and anxiety in the current study is consistent with the results of Baer et al. (2012) and Twohig and Levin (2017), who suggest that mindfulness is a transdiagnostic process that mediates emotional regulation.The effects of ACT in this Pakistani sample were much stronger than those reported in other studies of Western populations.This could be indicative of the freshness and familiarity of mindfulness and value-based elements within a society where introspection, acceptance, and spirituality are integral to traditional belief systems.The results of the study align with Karekla and Constantinou (2010), who argued that the philosophical underpinnings of ACT, including its emphasis on acceptance and compassion, may suit collectivistic and religiously oriented cultures well.The findings strongly support the psychological flexibility model of ACT, which states that maladaptive efforts to avoid or to control internal experiences (experiential avoidance) are contributory to psychopathology (Hayes et al., 2012).The substantial changes in cognitive fusion and experiential avoidance, and positive changes in mindfulness, indicate that the patients were taught to approach their anxiety-related thoughts differently, as opposed to trying to suppress them.Regression analysis revealed that cognitive fusion and worry severity were positive predictors of residual anxiety, whereas mindfulness was a negative predictor of anxiety severity.The trend supports the fundamental processes of ACT: Cognitive Defusion. Learning to observe thoughts as transient mental events reduces their emotional impact.Acceptance: Encouraging willingness to experience anxiety without avoidance fostered emotional openness.Mindfulness: Present-moment awareness enabled disengagement from maladaptive rumination.Values and Committed Action: Clarifying values helped patients act purposefully rather than reactively to anxiety.

These mechanisms can account more parsimoniously than symptom-based models do for the observed changes in anxiety severity.Empirical evidence supporting the ACT hypothesis that higher levels of mindfulness and flexibility mediate anxiety reduction is evident in the intercorrelations among CFQ, FFMQ, and GAD-7 in the present data.The present study provides empirical validation of ACT in a South Asian setting and demonstrates its cultural flexibility in treating patients of Pakistani origin.The local spiritual and religious orientations towards acceptance, patience (sabr), and self-reflection (muhasiba) resonated with therapeutic emphasis on mindfulness and values-based living.This innate synchrony probably boosted receptivity and therapy interaction.In addition, the individualized delivery of ACT and discussion of culturally sensitive topics, like family expectations, marital

stress, and socioeconomic pressure, was delivered individually rather than in groups.One-on-one sessions created a good therapeutic relationship that research has always linked to positive results in anxiety treatment (Flückiger et al., 2018).From a service-delivery perspective, ACT has a structured yet flexible framework that enables it to fit within primary and tertiary care mental health settings in Pakistan.Since mental health resources are still limited and pharmacotherapy often prevails, brief ACT interventions could offer a convenient, effective alternative psychological treatment.Moreover, the psychoeducational element incorporated in ACT promotes social mental health literacy, which minimizes the stigma of psychological therapies.The small gains made in the psychoeducation group underscore the limitations of didactic information in the absence of experiential learning or behavior change measures.There is a possibility that psychoeducation can raise awareness, but rarely to emotional regulation and value-congruent action.These excellent results for the ACT group underline the significance of active engagement, mindfulness practices, and experiential activities in promoting long-term cognitive and behavioral change.This analogy is also used to demonstrate that the positive effects of ACT are not solely attributable to the therapist's attention/expectancy effects.Directly implicating the processes of cognitive fusion and avoidance, ACT targets the functional processes of worry rather than mere attempts to reduce symptomatic levels.These results strongly suggest that the ACT mechanism is not only selective but also necessary for the realization of important clinical benefits in GAD.The high percentage of subjects (65) who clinically recovered according to the Reliable Change Index indicates the practical and clinical efficacy of ACT.The patients also reported the main features of GAD, such as a considerable reduction in daily worry and a greater capacity to withstand uncertainty (Dugas et al., 2012).The high positive relationship between reduced fusion and reduced anxiety supports previous mediation studies that also indicated that a change in symptoms was predicted and preceded by a decrease in cognitive defusion (Forman et al., 2012).It is also important to note that not only does mindfulness go hand in hand with anxiety elimination, but it also strengthens anxiety elimination.The bi-directional relationship implies the existence of a synergistic effect: the higher mindfulness, the less people are merged with anxious thoughts, which further boosts mindfulness, the driving force behind the success of ACT.

LIMITATIONS

Despite its strengths, certain limitations should be acknowledged. The absence of random allocation may introduce selection bias, although baseline equivalence mitigated this risk. The study measured outcomes immediately post-intervention; long-term maintenance of gains was not assessed.All instruments were self-administered, which may be subject to response bias or social desirability effects.Participants were primarily urban and treatment-seeking, potentially limiting external validity to rural or non-clinical populations.Future research employing randomized controlled trials with longer follow-up periods, larger samples, and diverse populations would enhance generalizability and clarify causal mechanisms.

CONCLUSION

Acceptance and Commitment Therapy (ACT), in its individual form, is a highly effective psychological intervention for patients with Generalized Anxiety Disorder (GAD) in Peshawar.Compared to psychoeducation-only control, ACT resulted in significant decreases in anxiety and worry, and significant increases in mindfulness and psychological flexibility.These findings support the process-based model of ACT, in which reductions in cognitive fusion and experiential avoidance, and increases in mindfulness, are contributing factors.Also, the significant correlation among mindfulness, cognitive defusion, and anxiety reduction provides further support for the theoretical underpinnings of ACT.Notably, the research confirms that the principles of ACT can be culturally adapted to the Pakistani context and aligned with the values of acceptance, spirituality, and resilience that already exist there.The introduction of metaphors and experiential exercises applicable to local cultural contexts will make ACT a viable intervention in mental health care across both urban and semi-urban clinical settings.

REFERENCES

1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 5th ed. Washington, DC: APA; 2013.
2. Arch JJ, Eifert GH, Davies C, Vilardaga JCP, Rose RD, Craske MG. Randomized clinical trial of Acceptance and Commitment Therapy and Cognitive Behavioral Therapy for anxiety and depression. *Behav Res Ther.* 2012;50(8):469–78.
3. A-Tjak JGL, Davis ML, Morina N, Powers MB, Smits JAJ, Emmelkamp PMG. A meta-analysis of the efficacy of Acceptance and Commitment Therapy for anxiety and depression. *PsychotherPsychosom.* 2015;84(1):30–6.
4. Baer RA, Carmody J, Hunsinger M. Weekly change in mindfulness and perceived stress in a mindfulness-based stress reduction program. *J Clin Psychol.* 2012;68(7):755–65.
5. Baldwin DS, Stein DJ, Dolberg OT, Bandelow B. How effective are current drug treatments for generalized anxiety disorder? *Int J Neuropsychopharmacol.* 2022;25(4):245–57.
6. Bandelow B, Michaelis S. Epidemiology of anxiety disorders in the 21st century. *Dialogues Clin Neurosci.* 2015;17(3):327–35.

7. Borkovec TD, Alcaine OM, Behar E. Avoidance theory of worry and generalized anxiety disorder. In: Heimberg RG, Turk CL, Mennin DS, editors. *Generalized Anxiety Disorder: Advances in Research and Practice.* New York: Guilford Press; 2004. p. 77–108.
8. Dugas MJ, Laugesen N, Bukowski WM. Intolerance of uncertainty, fear of anxiety, and adolescent worry. *J Abnorm Child Psychol.* 2012;40(6):863–70.
9. Flückiger C, Del Re AC, Wampold BE, Horvath AO. The alliance in adult psychotherapy: A meta-analytic synthesis. *Psychother.* 2018;55(4):316–40.
10. Forman EM, Herbert JD, Moitra E, Yeomans PD, Geller PA. A randomized controlled effectiveness trial of Acceptance and Commitment Therapy and Cognitive Therapy for anxiety and depression. *BehavModif.* 2012;36(6):403–24.
11. Gloster AT, Walder N, Levin ME, Twohig MP, Karekla M. The empirical status of Acceptance and Commitment Therapy: a review of meta-analyses. *J Context Behav Sci.*2020;18:181–92.
12. Hayes SC, Hofmann SG. The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry.* 2021;20(3):363–73.
13. Hayes SC, Levin ME, Plumb-Vilardaga J, Villatte JL, Pistorello J. Acceptance and Commitment Therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. *BehavTher.* 2019;50(4):864–82.
14. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: An Experiential Approach to Behavior Change.* New York: Guilford Press; 1999.
15. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and Commitment Therapy: The Process and Practice of Mindful Change.* 2nd ed. New York: Guilford Press; 2012.
16. Hayes-Skelton SA, Roemer L, Orsillo SM. A randomized clinical trial comparing acceptance-based behavior therapy and applied relaxation for generalized anxiety disorder. *J Consult Clin Psychol.* 2013;81(5):761–73.
17. Hofmann SG, Asnaani A, Vonk IJJ, Sawyer AT, Fang A. The efficacy of cognitive behavioral therapy: a review of meta-analyses. *CognTher Res.* 2012;36(5):427–40.
18. Hunot V, Churchill R, Teixeira V, Silva de Lima M. Psychological therapies for generalized anxiety disorder. *Cochrane Database Syst Rev.* 2007;1:CD001848.
19. Karekla M, Constantinou M. Religious coping and cancer: proposing an Acceptance and Commitment Therapy approach. *CognBehavPract.* 2010;17(4):371–81.
20. Khan MN, Ahmed F, Malik S. Mental health burden in Khyber Pakhtunkhwa: a situational analysis. *J Postgrad Med Inst.* 2019;33(3):215–21.
21. Mirza I, Jenkins R. Risk factors, prevalence, and treatment of anxiety and depressive disorders in Pakistan: systematic review. *BMJ.* 2004;328(7443):794–8.
22. Roemer L, Salters K, Raffa SD, Orsillo SM. Fear and avoidance of internal experiences in GAD: preliminary tests of a conceptual model. *CognTher Res.* 2008;32(5):620–38.
23. Ruscio AM, Hallion LS, Lim CCW, Aguilar-Gaxiola S, Al-Hamzawi A, Alonso J, et al. Cross-sectional comparison of the epidemiology of DSM-5 generalized anxiety disorder across the globe. *Psychol Med.* 2017;47(12):2261–72.
24. Twohig MP, Levin ME. Acceptance and Commitment Therapy as a treatment for anxiety and depression: a review. *PsychiatrClin North Am.* 2017;40(4):751–70.