

Research Article

Effectiveness of Cognitive Processing Therapy for Emotional Trauma in Cervical Cancer Patients at Referral Hospitals in Western Kenya

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Abstract

Cervical cancer patients often experience significant psychological distress, including symptoms of post-traumatic stress disorder (PTSD), anxiety, and depression. Cognitive Processing Therapy (CPT), a structured trauma-focused intervention, has shown promise in reducing such distress, but evidence in oncology settings remains limited. This study evaluated the effectiveness of CPT in alleviating psychological distress among outpatient cervical cancer patients attending two referral hospitals in Western Kenya. A quasi-experimental pretest-posttest design was employed with 68 participants (mean age = 42.6 years, SD = 8.9), recruited through purposive sampling and assigned to experimental and control groups. Key clinical characteristics such as cancer stage and treatment status were documented to contextualize findings. The experimental group received CPT, delivered in 12 weekly sessions of approximately 90 minutes each, while the control group received treatment as usual (standard medical support). Psychological distress was assessed using the Harvard Trauma Questionnaire (HTQ), Beck Anxiety Inventory (BAI), and Beck Depression Inventory-II (BDI-II) at baseline, 3-month follow-up, and 6-month follow-up. Results showed significant reductions in PTSD, anxiety, and depression symptoms in the experimental group compared to the control group. Mean scores decreased from baseline to 6-month follow-up for PTSD ($M = 2.35$ to 1.12), anxiety ($M = 21.35$ to 5.03), and depression ($M = 21.10$ to 7.86), while no meaningful changes were observed in the control group. Analysis of variance (ANOVA) confirmed statistically significant differences between groups post-intervention (after 12 weeks) and 6-month follow-ups ($p < 0.001$). Difference-in-Differences (DiD) estimators revealed mean declines of 0.97 (95% CI: 0.80-1.15) for PTSD, 16.78 (95% CI: 14.17-19.38) for anxiety, and 14.44 (95% CI: 11.64-17.25) for depression. Effect size analysis using partial eta squared (η^2p) revealed medium effects for PTSD ($\eta^2p = .067$) and depression ($\eta^2p = .064$), and a medium-to-strong effect for anxiety ($\eta^2p = .073$). These findings suggest that CPT is a promising intervention for reducing psychological distress among cervical cancer patients. Given the quasi-experimental design and relatively small sample, conclusions should be interpreted with caution. Nevertheless, integrating CPT alongside medical care could enhance quality of life outcomes in this population.

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Keywords

Cognitive Processing Therapy, Cervical Cancer, Psychological Distress, PTSD, Anxiety, Depression, Kenya

1. Introduction

Cervical cancer remains a major public health challenge, particularly in low- and middle-income countries [LMICs], where it is the leading cause of cancer-related mortality among women [58]. Beyond its physical burden, cervical cancer is associated with significant psychological distress. Recent studies report high prevalence rates of anxiety [30-65%] and depression [20-52%] among cervical cancer patients, with distress levels influenced by disease stage, treatment modality, and socioeconomic stressors [31, 62]. PTSD symptoms, though less frequently assessed, are increasingly recognized as a critical component of cancer-related psychological morbidity [18].

In sub-Saharan Africa, the psychological impact of cervical cancer is compounded by stigma, HIV co-infection, and late-stage diagnosis. A narrative review highlighted that depression and anxiety rates among cervical cancer patients in the region are consistently higher than global averages, underscoring the urgent need for psychosocial interventions [36, 39]. Longitudinal studies of gynecological cancers further demonstrate heterogeneous distress trajectories, with nearly 40% of patients maintaining high distress throughout treatment [22].

Evidence on psychological interventions in oncology has grown in recent years. Systematic reviews and meta-analyses confirm that psychosocial interventions can reduce distress and enhance resilience, though effect sizes are often modest [8, 56]. An umbrella review of psychosocial interventions in oncology concluded that while supportive therapies are beneficial, trauma-focused approaches are rarely evaluated, leaving a critical gap in evidence [15].

The burden is disproportionately borne by low-resource countries, particularly in sub-Saharan Africa, where East Africa records the highest prevalence [2]. Globally, 85% of cervical cancer cases and 87% of deaths occur in low-income countries [11, 51, 53].

Socioeconomic adversity is a major contributor to cervical cancer mortality. Studies show a statistically significant negative relationship between cervical cancer incidence and mortality and components of the Human Development Index, including life expectancy, education, and income [24]. In contrast, high-income countries such as the United States report declining incidence and stable mortality rates, with cervical cancer incidence decreasing by 1.9% annually [5]. In Africa, however, cervical cancer remains the second leading cause of cancer deaths after breast cancer [11, 55].

The high burden in Africa is compounded by HIV preva-

lence, which increases susceptibility to HPV infection. For example, Swaziland has the highest incidence of cervical cancer due to high HIV prevalence [6]. Regional disparities are evident, with incidence and mortality rates five times higher in Eastern, Central, and Western Africa compared to North Africa, where traditional sexual practices reduce HPV prevalence [2, 54]. Longitudinal studies in sub-Saharan Africa show rising incidence trends, with countries such as Malawi and Uganda experiencing annual increases of up to 7.9% [14, 29].

In Kenya specifically, cervical cancer is ranked second in incidence and first in cancer mortality among women, contributing to 12.9% of new cancer cases and 11.8% of cancer deaths annually [10, 32].

Beyond the physical burden, cervical cancer patients face profound psychological challenges. Diagnosis often triggers fear, anxiety, shame, guilt, and depression [12, 16, 50]. Treatment-related complications such as infertility, sexual dysfunction, and changes in body image further exacerbate emotional distress [19].

Studies report high prevalence of PTSD, anxiety, and depression among cervical cancer patients. For instance, severe PTSD was found in 44.2% of cancer patients at Kenyatta National Hospital in Kenya [35]. Depression among cancer patients increases mortality risk by 19% and is associated with higher suicide rates compared to non-depressed patients [28, 37, 40]. Globally, meta-analyses estimate depression prevalence among cancer patients at 27%, with Africa reporting the highest rates at 36% [26].

The comorbidity of PTSD, anxiety, and depression complicates treatment and prolongs hospitalization [25, 59]. In Kenya, depression prevalence among general hospital patients was reported at 42%, yet only 4.1% were properly diagnosed, underscoring gaps in mental health care [34]. Psychological interventions are therefore critical in improving quality of life and survival among cervical cancer patients.

Cancer care in Kenya remains largely biomedical, with treatment pathways focused on surgery, chemotherapy, and radiotherapy. Psychosocial support encompassing counseling, psychiatric care, and structured survivorship programs is seldom integrated into oncology services. Recent research in Nairobi found that between 34-50% of breast cancer patients experience clinically significant distress, with income and stage of diagnosis emerging as strong predictors of anxiety and depression [30].

Qualitative studies further reveal that Kenyan patients report diminished quality of life and unmet psychological needs

following diagnosis, with mental health concerns often left unaddressed in tertiary care hospitals [1]. Family counseling interventions in Meru County in Kenya have shown promise in reducing stigma and improving psychological well-being, yet such initiatives remain limited and are not systematically embedded in oncology clinics [23].

By contrast in developed nations such as the United Kingdom and the United States, patients routinely access counseling, psychiatric support, and survivorship programs, with psychosocial interventions recognized as essential for reducing distress, enhancing treatment adherence, and improving long-term remission outcomes [33].

Landmark guidelines, such as the NCCN Distress Management Guidelines [33], mandate routine distress screening and referral to psychosocial services, while the Institute of Medicine's Cancer Care for the Whole Patient report emphasizes that psychosocial health needs must be systematically addressed alongside biomedical treatment [13]. Similarly, NHS England guidance highlights the integration of supportive and palliative care including psychological interventions as a core element of cancer management. Collectively, these frameworks underscore that comprehensive oncology care in high income countries is inseparable from psychosocial support, ensuring that patients' emotional and psychological needs are met in tandem with their physical treatment.

Global evidence underscores that 25-50% of cancer patients worldwide experience distress, and structured psychosocial interventions are critical to alleviating suffering and improving resilience [1, 30, 57]. The disparity between Kenya and high-income countries highlights a pressing need to reframe cancer treatment beyond physical interventions, recognizing that holistic care including psychological dimensions of survivorship is integral to effective cancer management.

Cognitive Processing Therapy [CPT], a structured psychotherapy originally developed for PTSD, has demonstrated effectiveness in reducing trauma-related symptoms, including depression and anxiety [41, 60]. While CPT has shown efficacy in diverse populations, including trauma survivors and veterans [43], there is limited evidence on its application among cervical cancer patients in sub-Saharan Africa.

This study therefore addresses an important research gap by evaluating the effectiveness of CPT in reducing psychological distress specifically PTSD, anxiety, and depression among cervical cancer patients in Kenya. Given the high burden of psychological morbidity and limited access to psychosocial services in LMICs, findings from this study have the potential to inform integration of trauma-focused care into oncology practice, in LMICs.

2. Methodology

2.1. Study Site

The study was conducted in two major referral hospitals in Western Kenya: Moi Teaching and Referral Hospital (MTRH)

and Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). MTRH served as the intervention site, while JOOTRH served as the control site.

2.2. Sampling Techniques

Recruitment commenced after authorization from both hospitals (12th March 2021 at MTRH and 31st March 2021 at JOOTRH). Oncology nurses assisted in identifying eligible cervical cancer patients. Research assistants—qualified psychologists trained in standardized instruments and the CPT manual—conducted recruitment in private rooms, explained study procedures, and obtained informed consent. Convenience sampling was used, but eligibility was strictly assessed using the Eastern Cooperative Oncology Group (ECOG) Performance Status scale [38]. Only patients with ECOG scores below 3 were included, ensuring participants had sufficient functional ability. All procedures adhered to Ministry of Health COVID-19 prevention guidelines [27].

2.3. Study Design and Group Allocation

A quasi-experimental pretest-posttest design was employed. Participants were allocated by hospital site: those recruited at MTRH were assigned to the intervention group, and those at JOOTRH were assigned to the control group. This site-based allocation was chosen to minimize contamination between groups and ensure feasibility during the COVID-19 pandemic.

2.4. Sample Size Calculation

Sample size was calculated using Casagrande's formula for differences between two binomial parameters, with parameters set at $\alpha = 0.05$, 95% confidence, and 70% statistical power. The minimum required sample was 51 participants (26 intervention, 25 control). To account for attrition, the sample size was increased by 20%, yielding 62 participants. Ultimately, 68 were recruited (31 intervention, 37 control). Attrition at endline (29 intervention, 34 control) remained within acceptable limits.

2.5. Data Collection Instruments Psychological Distress Was Assessed Using

- 1) *Harvard Trauma Questionnaire (HTQ)* for PTSD symptoms.
- 2) *Beck Anxiety Inventory (BAI)* for anxiety severity.
- 3) *Beck Depression Inventory-II (BDI-II)* for depressive symptoms.

Assessments were conducted at baseline, post-intervention (after 12 weeks), and 6-month follow-up.

2.6. Data Collection Procedures

At both sites, eligible patients were screened using ECOG,

completed sociodemographic and clinical questionnaires, and underwent psychological assessments. At JOOTRH (control group), participants received treatment as usual (TAU), consisting of standard oncology care and routine medical support, without additional psychological intervention during the study period. At MTRH (intervention group), participants received CPT in addition to TAU.

2.7. Intervention

The intervention group participated in weekly CPT sessions over 12 weeks, delivered in groups of 6-8 patients. Each session lasted approximately 90 minutes and focused on cognitive restructuring, trauma processing, and emotional regulation. Sessions were facilitated by trained psychologists. After study completion, control group participants were offered five supportive sessions to ensure equitable access to care. Data were collected post-intervention (after 12 weeks) in both groups and 6-month follow up to assess for PTSD, anxiety and depressive symptoms remission.

2.8. Data Analysis

Data were analyzed using SPSS at a 95% confidence level ($p \leq 0.05$). ANOVA was used to compare mean differences between groups across time points. Partial eta squared was calculated to estimate effect sizes.

2.9. Ethical Considerations

Ethical approval was obtained from relevant institutional review boards. Written informed consent was secured from all participants. Confidentiality and privacy were maintained, and control group participants were offered CPT after study completion.

3. Results

Analysis of variance was used to compare the means of PTSD, anxiety, and depression across the different times. The findings are presented in [Table 1](#).

Table 1. Comparison of Means for PTSD, Anxiety and Depression.

Periods	Research Groups	N	PTSD (HTQ)	Anxiety (BAI)	Depression (BDI-II)	Sig.
Baseline	Experimental	31	2.34 $\pm$.79	21.35 $\pm$ 8.78	21.10 $\pm$ 9.07	.473
	Control	37	2.19 $\pm$.54	22.84 $\pm$ 8.14	18.78 $\pm$ 7.35	
Post-intervention (after 12 weeks)	Experimental	31	1.20 $\pm$.16	7.52 $\pm$ 5.06	9.10 $\pm$ 7.77	>.001
	Control	37	2.05 $\pm$.36	20.73 $\pm$ 7.82	20.38 $\pm$ 5.92	
6-month follow-up	Experimental	29	1.13 $\pm$.20	5.03 $\pm$ 4.47	7.86 $\pm$ 5.69	>.001
	Control	34	2.10 $\pm$.42	21.88 $\pm$ 5.54	22.59 $\pm$ 5.41	

[Table 1](#) presents the comparison of means and standard deviation of PTSD, anxiety, and depression for the experimental (CPT) and control groups at baseline, midline, and end line. Between groups comparison showed that the difference between the means of PTSD, anxiety and depression mean scores at baseline for the experimental group and control group were not significantly different ($p = 0.473$). These results showed that at baseline, PTSD, anxiety, and depression mean scores between the control and experimental group was not statistically different.

Comparing the means shows a noticeable reduction in the symptoms of PTSD, anxiety, and depression from baseline to midline and from midline to end line of the participant in the experimental group who were treated with CPT. As indicated on [Table 1](#), the mean PTSD at baseline in the experimental group was 2.34 (± 0.79 SD), the mean reduced to 1.20 (± 0.16 SD) post-intervention and further reduced slightly to 1.127 (± 0.204 SD) at 6-months follow up. In the control group, the

mean PTSD at baseline was 2.19 (± 0.54 SD) and it reduced slightly to 2.0509 (± 0.36 SD) after 12 weeks, but further increased to 2.10 (± 0.42 SD) at 6 months follow up.

As for anxiety the mean at baseline in experimental was 21.35 (± 8.78 SD), which was significantly reduced to 7.52 (± 5.06 SD) post-intervention and further reduced to 5.03 (± 4.47 SD) at 6 months follow-up. The control group at baseline had an anxiety mean score of 22.84 (± 8.14 SD) which reduced slightly to 20.73 (± 7.82 SD) post-intervention but increased to 21.88 (± 5.54 SD) at 6 months follow-up.

Regarding depression, the mean in experimental group at baseline was 21.10 (± 9.07 SD), and it reduced significantly to 9.10 (± 7.77 SD) post-intervention, and further reduced to 7.86 (± 5.69 SD) at 6 months follow-up. However, in the control group, the mean depression score at baseline was 18.78 (± 7.35 SD) and it increased to 20.38 (± 5.92 SD) post-intervention and further increased to 22.59 (± 5.41 SD) at 6 months follow-up. Mauchly's test of Sphericity indicated a significant

change in means post-intervention ($p > .001$) and 6-month follow up assessment periods ($p > .001$).

Multivariate analysis of variance (MANOVA) test established there was statistically significant difference between PTSD, anxiety and depression mean scores in the experimental group and control group post-intervention and 6-month follow up ($p = 0.001$) for each period. One can therefore conclude that CPT intervention was statistically effective in

reduction of symptoms of PTSD, anxiety and depression in the experimental group post-intervention and 6-month follow up when compared to control group. This implies that CPT was effective in treating emotional trauma (PTSD, anxiety and depression) among the participant in the experimental group.

Effect Sizes Parameter Estimates of CPT on PTSD, Anxiety and Depression symptoms.

Table 2. Parameter Estimates of CPT on PTSD, Anxiety and Depression.

Dependent Variable	Parameter	B	Std. Error	T	Sig.	95% CI Lower	95% CI Upper	Partial Eta Squared
PTSD Baseline	Intercept	2.25	0.11	20.03	.000	2.02	2.47	.87
	Experimental	0.13	0.17	0.77	.45	-0.21	0.46	.01
	Control	0a	-	-	-	-	-	-
PTSD Midline	Intercept	2.04	0.05	42.28	.000	1.94	2.13	.97
	Experimental	-0.84	0.07	-11.76	.000	-0.99	-0.70	.70*
	Control	0a	-	-	-	-	-	-
PTSD Endline	Intercept	2.11	0.06	35.83	.000	1.99	2.22	.96
	Experimental	-0.97	0.09	-11.13	.000	-1.15	-0.80	.67*
	Control	0a	-	-	-	-	-	-
Anxiety Baseline	Intercept	23.65	1.40	16.85	.000	20.84	26.45	.83
	Experimental	-2.58	2.09	-1.23	.22	-6.75	1.60	.03
	Control	0a	-	-	-	-	-	-
Anxiety Midline	Intercept	20.97	1.18	17.80	.000	18.61	23.33	.84
	Experimental	-13.69	1.75	-7.80	.000	-17.19	-10.18	.50*
	Control	0a	-	-	-	-	-	-
Anxiety Endline	Intercept	21.88	0.88	24.97	.000	20.13	23.64	.91
	Experimental	-16.78	1.30	-12.87	.000	-19.38	-14.17	.73*
	Control	0a	-	-	-	-	-	-
Depression Baseline	Intercept	19.29	1.36	14.20	.000	16.58	22.01	.77
	Experimental	2.56	2.02	1.27	.21	-1.48	6.61	.03
	Control	0a	-	-	-	-	-	-
Depression Midline	Intercept	19.88	1.18	16.88	.000	17.53	22.24	.83
	Experimental	-10.78	1.75	-6.15	.000	-14.28	-7.27	.39*
	Control	0a	-	-	-	-	-	-
Depression Endline	Intercept	22.59	0.94	23.98	.000	20.70	24.47	.91
	Experimental	-14.45	1.40	-10.31	.000	-17.25	-11.64	.64*
	Control	0a	-	-	-	-	-	-

NB: [Experimental=1.00, Control=2.00].

Table 2 presents the partial eta squared (η^2p) values, which indicate the magnitude of between-group differences in the

analysis of variance (ANOVA). For PTSD, the intervention demonstrated medium effect sizes, with significant reductions observed from baseline to midline ($T = -11.76$; $\eta^2p = .70$) and from midline to endline ($T = -11.13$; $\eta^2p = .67$). These results highlight the sustained impact of CPT on PTSD symptoms across the study period.

For anxiety, the intervention produced a medium effect size between baseline and midline ($T = -7.80$; $\eta^2p = .50$), and a large effect size between midline and endline ($T = -12.87$; $\eta^2p = .73$). This indicates that CPT was particularly effective in alleviating anxiety symptoms, with the strongest improvements observed at six months.

Depression outcomes showed smaller effects initially, with a small effect size from baseline to midline ($T = -6.15$; $\eta^2p = .39$). However, the effect size increased to medium by endline ($T = -10.31$; $\eta^2p = .64$), suggesting progressive benefits of

CPT over time.

Overall, these findings confirm the study's hypothesis that CPT is effective in reducing PTSD, anxiety, and depression among cervical cancer patients. The strongest impact was observed for anxiety, followed by PTSD and depression. This pattern suggests that while CPT is efficacious across multiple domains of emotional trauma, comorbid conditions may influence treatment outcomes, underscoring the need for continued therapeutic support.

The Difference in Difference Estimates of CPT on PTSD, Anxiety and Depression.

Table 3 shows the difference in difference (The DiD) estimator using the Ordinary Least Square (OLS) to estimate the interaction between treatment assessment arms and PTSD, anxiety, and depression scores.

Table 3. Difference in Difference Estimates of CPT on PTSD, Anxiety & Depression.

Dependent Variable	(I) Research Group	(J) Research Group	Mean Difference (I-J)	Std. Error	Sig.	95% CI Lower	95% CI Upper
PTSD - Baseline	Experimental	Control	0.13	0.17	.45	-0.21	0.46
	Control	Experimental	-0.13	0.17	.45	-0.46	0.21
PTSD - Midline	Experimental	Control	-0.84*	0.07	.000	-0.99	-0.70
	Control	Experimental	0.84*	0.07	.000	0.70	0.99
PTSD - Endline	Experimental	Control	-0.97*	0.09	.000	-1.15	-0.80
	Control	Experimental	0.97*	0.09	.000	0.80	1.15
Anxiety - Baseline	Experimental	Control	-2.58	2.09	.22	-6.75	1.60
	Control	Experimental	2.58	2.09	.22	-1.60	6.75
Anxiety - Midline	Experimental	Control	-13.69*	1.75	.000	-17.19	-10.18
	Control	Experimental	13.69*	1.75	.000	10.18	17.19
Anxiety - Endline	Experimental	Control	-16.78*	1.30	.000	-19.38	-14.17
	Control	Experimental	16.78*	1.30	.000	14.17	19.38
Depression - Baseline	Experimental	Control	2.56	2.02	.21	-1.48	6.61
	Control	Experimental	-2.56	2.02	.21	-6.61	1.48
Depression - Midline	Experimental	Control	-10.78*	1.75	.000	-14.28	-7.27
	Control	Experimental	10.78*	1.75	.000	7.27	14.28
Depression - Endline	Experimental	Control	-14.45*	1.40	.000	-17.25	-11.64
	Control	Experimental	14.45*	1.40	.000	11.64	17.25

Based on estimated marginal means

*. The mean difference in difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

As shown in Table 3, the difference-in-differences (DiD) estimators using ordinary least squares (OLS) revealed significant changes across the three psychological outcomes. For

post-traumatic stress disorder (PTSD), the mean difference in the experimental group from baseline to endline was 0.97 (95% CI: 0.80-1.15. Anxiety showed the largest change, with

a mean difference of 16.78 (95% CI: 14.17-19.38), while depression recorded a mean difference of 14.44 (95% CI: 11.64-17.25). These findings indicate that the intervention exerted the greatest impact on anxiety symptoms compared to PTSD and depression.

Consistent with prior evidence, cognitive processing therapy (CPT) was effective in alleviating emotional trauma symptoms, including PTSD, anxiety, and depression [30]. Effect size analysis using partial eta squared (η^2_p) further confirmed that anxiety was more responsive to the intervention than either PTSD or depression. This suggests that, within the study population, anxiety symptoms demonstrated the most favorable outcomes following CPT, highlighting the therapy's particular efficacy in addressing anxiety among cervical cancer patients.

4. Discussion of the Results

The present study provides evidence that Cognitive Processing Therapy [CPT] can effectively reduce symptoms of PTSD, anxiety, and depression among cervical cancer patients in Western Kenya. These findings are important because psychological distress is highly prevalent in oncology populations, particularly in cervical cancer patients who often face compounded challenges of disease burden, stigma, and limited psychosocial support [1, 31]. By demonstrating significant improvements in psychological outcomes, this study highlights the potential role of trauma-focused interventions in cancer care within resource-constrained settings.

Our results align with recent research showing that psychosocial interventions can alleviate distress among cancer patients. For example, [19] reported improvements in psychological well-being among cervical cancer survivors following structured psychosocial support, while [26] confirmed high global prevalence of depression in cancer populations, underscoring the need for targeted interventions. More specifically, trauma-focused therapies such as CPT have been shown to reduce PTSD and related symptoms in diverse clinical contexts, including sexual violence survivors in the Democratic Republic of Congo [4, 17], male veterans [7], and across multiple meta-analyses [20]. Group-based trials further confirm its utility [44-46, 48, 49, 52], and treatment manuals provide comprehensive guidance [42]. The consistency of our findings with these studies suggests that CPT may be adaptable and effective across different cultural and clinical contexts.

Notably, the observed improvements in anxiety, depression, and PTSD symptoms resonate with systematic reviews and meta-analyses that identify CPT as one of the most robust trauma-focused cognitive-behavioral therapies [3, 21]. However, while our data suggest that anxiety symptoms may have shown greater responsiveness, this interpretation should be made cautiously, as direct statistical comparisons between effect sizes were not conducted. Sample size considerations followed established clinical research guidelines [9].

The clinical implications of these findings are significant.

Cervical cancer patients in Kenya often face limited access to psychosocial care, yet the burden of psychological distress is substantial [18, 36, 47, 61]. Integrating CPT into oncology services could provide structured, evidence-based support to address this unmet need. Importantly, the quasi-experimental design and relatively small sample size mean that conclusions should be interpreted with caution, and further randomized controlled trials are warranted to confirm efficacy and explore long-term outcomes.

4.1. Limitations

One limitation of this study is its reliance on a purely quantitative design. While statistical analyses provided robust evidence of CPT's effectiveness in reducing PTSD, anxiety, and depression, the absence of qualitative data means that the nuanced experiences, perceptions, and coping strategies of cervical cancer patients were not captured. Quantitative measures alone may overlook important contextual factors such as cultural interpretations of trauma, patient narratives of recovery, and the role of family or community support in shaping psychological outcomes. This restricts the depth of understanding regarding how patients experienced the intervention and what aspects of CPT were most meaningful to them.

Secondly, the study was conducted with a relatively small sample drawn from two referral hospitals in Western Kenya. This limits the generalizability of the findings to broader populations, including patients in other regions or healthcare settings. Furthermore, participants were recruited using convenience sampling, which may introduce selection bias. The sample may not fully represent the diversity of cervical cancer patients in Kenya, particularly those in rural or resource-limited settings. Assessments were also conducted post-intervention (12 weeks) and endline (six months). While results were significant, longer follow-up would be necessary to determine whether the benefits of CPT are sustained over time.

Although Swahili translations of assessment tools were provided, cultural nuances in how trauma and psychological distress are expressed may not have been fully captured. This could affect the accuracy of symptom reporting and intervention outcomes. Furthermore, the study concentrated on PTSD, anxiety, and depression, without examining other psychosocial factors such as quality of life, social functioning, or treatment adherence. A broader evaluation could provide a more comprehensive understanding of CPT's impact. The control group did not receive any structured psychosocial intervention during the study period, which may exaggerate the observed differences. Offering an alternative supportive therapy could have provided a stronger comparison. The study was conducted during the COVID-19 pandemic, which may have influenced participants' psychological states and healthcare access. This external factor could confound the interpretation of results. The study nevertheless made important findings based on which recommendations are offered.

4.2. Recommendations

Future research should adopt a mixed-methods approach, combining quantitative assessments with qualitative interviews or focus group discussions. This would allow researchers to not only measure symptom reduction but also explore patients' lived experiences, satisfaction with therapy, and perceived barriers to psychological care. Incorporating qualitative insights would enrich the evidence base, provide culturally grounded perspectives, and guide the adaptation of CPT to better fit local contexts. Scaling up psychosocial interventions in oncology should therefore be accompanied by ongoing qualitative evaluation to ensure that programs remain patient-centered, culturally sensitive, and responsive to the holistic needs of cervical cancer patients. Scale Up Psychological Care in Oncology Services: The significant reductions in PTSD, anxiety, and depression observed among cervical cancer patients highlight the urgent need to integrate structured psychological interventions such as Cognitive Processing Therapy (CPT) into routine oncology care. Hospitals and cancer treatment centers should establish dedicated psychosocial units staffed with trained psychologists and counselors to provide ongoing support. Larger, multi-site studies with longer follow-up periods should be conducted to assess the sustainability of CPT outcomes. Research should also explore the impact of psychosocial interventions on treatment adherence, survival rates, and overall quality of life.

5. Conclusion

This study demonstrated that Cognitive Processing Therapy (CPT) was effective in reducing symptoms of post-traumatic stress disorder (PTSD), anxiety, and depression among outpatient cervical cancer patients in Western Kenya. Statistically significant improvements were observed in the experimental group compared to the control group across all three domains of psychological distress, highlighting the value of structured trauma-focused interventions in oncology care.

While the quasi-experimental design and modest sample size warrant cautious interpretation, the findings provide preliminary evidence that integrating psychological interventions such as CPT into cervical cancer services can meaningfully address the psychological distress faced by patients. Embedding psychosocial support within oncology care pathways may enhance the comprehensiveness of cancer management in similar resource-constrained settings.

Abbreviations

ANOVA	Analysis of Variance
BAI	Beck Anxiety Inventory
BDI-II	Beck Depression Inventory-II
CPT	Cognitive Processing Therapy
DiD	Difference-in-Differences

ECOG	Eastern Cooperative Oncology Group
HTQ	Harvard Trauma Questionnaire
JOOTRH	Jaramogi Oginga Odinga Teaching and Referral Hospital
LMICs	Low- and Middle-Income Countries
MANOVA	Multivariate Analysis of Variance
MTRH	Moi Teaching and Referral Hospital
NCCN	National Comprehensive Cancer Network
NHS	National Health Service
PTSD	Post-Traumatic Stress Disorder
SD	Standard Deviation
TAU	Treatment As Usual

Author Contributions

Milkah Obwenyi Angachi: Conceptualization, Investigation, writing original draft

Josephine Muchiri: Writing – review & editing, Methodology Data curation

Lucy Njiru: Supervision

Sam Ojuade: Formal Analysis

Peter Muhandale Itsura: Project administration, Resources

Conflicts of Interest

The authors declare no conflicts of interest.

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