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PSYCHOLOGY

EFFECTIVENESS OF MINDFULNESS-BASED COGNITIVE THERAPY IN THE TREATMENT OF DEPRESSION AMONG CAREGIVERS OF CANCER PATIENTS IN NAIROBI COUNTY, KENYA

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ABSTRACT

Purpose of the study: The purpose of this study was to evaluate the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT) in treating depressive symptoms among caregivers of cancer patients in Nairobi County, Kenya.

Methodology: A quasi-experimental design with 69 caregivers from two cancer centers compared the MBCT intervention against treatment as usual, with depression assessed using BDI-II at baseline, midline, and endline. Data analysis used SPSS with descriptive statistics, inferential tests, and Cohen's d effect sizes to evaluate intervention effectiveness.

Findings: The experimental group showed a steady decline in the mean scores of depression ($M = 12.97$, $SD = 3.68$), while the control group's scores increased ($M = 21.42$, $SD = 5.90$). This trend continued at endline, with the experimental group's scores declining further ($M = 10.58$, $SD = 4.01$), contrasted by persistently elevated scores in the control group ($M = 20.19$, $SD = 7.85$). The difference between groups at endline was statistically significant ($p < .001$), with large effect sizes observed at both midline (Cohen's $d = -1.713$) and endline (Cohen's $d = -1.513$), indicating robust clinical relevance. The findings demonstrate that MBCT is a highly effective intervention for treating depressive symptoms among caregivers of cancer patients.

Conclusion: The study concludes that MBCT effectively reduced depression among cancer caregivers in Nairobi County.

Recommendations: The study recommends implementing routine mental health screening for caregivers in oncology settings. The study recommends developing culturally adapted MBCT materials accessible to caregivers with varying literacy levels.

Keywords: *Mindfulness-Based Cognitive Therapy, Depression, Caregivers, Cancer Patients, Nairobi County, Kenya*

INTRODUCTION AND BACKGROUND TO THE STUDY

Mindfulness-Based Cognitive Therapy (MBCT) falls under the third-wave CBT that integrates mindfulness, awareness, and acceptance into the traditional cognitive and behavioural therapies to offer supportive care to individuals (Hong et al., 2018; Wood et al., 2016). This intervention fosters a more adaptive and nonjudgmental relationship with human thoughts and feelings (Segal et al., 2018). The other modalities that fall under the third wave are Acceptance and Commitment Therapy (ACT), Mindfulness-Based Stress treatment (MBSR), Mindfulness Self-Compassion (MSC), Metacognitive Therapy (MCT), Cognitive Behavioural Analysis System of Psychotherapy (CBASP), Functionality Analytic Psychotherapy (FAP), Integrative Behavioural Couple Therapy (IBCT), and Dialectical Behavioural Therapy (DBT) (Hong et al., 2023). Of importance to note is that MBCT is grounded in MBSR, an intervention effective for pain, anxiety, and stress treatment related to medical conditions.

MBCT was developed as a relapse prevention program to help individuals at high risk of depressive recurrence learn skills to maintain long-term wellness (Segal et al., 2018; Tickell et al., 2019). It is typically delivered in a group format over eight weekly sessions and incorporates techniques such as breathing exercises, body scan, sitting meditation, and mindful movement. Yoga and sensory-focused practices help participants reconnect with bodily sensations, which are often disrupted in depressive states (Wood et al., 2016b). MBCT has been adapted for specific populations, including caregivers of cancer survivors.

Wood, Gonzalez, and Barden (2016) proposed a tailored MBCT framework that addresses the unique psychological burdens of caregiving, such as anticipatory grief, chronic stress, and emotional exhaustion. Their adaptation emphasizes helping caregivers develop a nonjudgmental awareness of distressing thoughts and emotions, fostering resilience and emotional regulation. Although their work is conceptual rather than empirical, it offers valuable

implementation guidance and supports the relevance of MBCT in psychosocial oncology. This aligns with broader efforts to contextualize third-wave therapies for caregiver populations, particularly in settings where emotional labor and relational strain are prominent.

This intervention helps to break the thought-emotion vicious circle and prevents consequent negative assessments and intellectual pondering. It also teaches individuals how to maintain focus, encouraging them to stay in the present moment, be impartial, and be responsive. It prevents the augmentation of the thought-emotion vicious circle and establishes a positive feedback loop between negative emotion and negative thought patterns (Norouzi, 2015; Segal et al., 2018). The goal is to reduce depressive symptoms.

According to Hong et al. (2022), over the past two decades, third-wave psychotherapy has gained significant attention for cancer patients and their caregivers, and the primary focus has been on depression. This approach, which combines meditation and mindfulness, has supplanted traditional methods. Randomized controlled trials and carefully planned studies are required to determine appropriate interventions and establish the effectiveness of this therapy in treating cancer patients. Previously, before the third wave came into the picture, the majority of the interventions in the treatment of depression among caregivers had been CBT (Sanna, 2022). According to the cognitive model, the meaning given to the situation determines the emotional response. The effects depend on adaptive or maladaptive thinking that shapes behaviour.

During CBT, the patient gains both cognitive and behavioural skills that help in coping with dysfunctional thoughts and strategies, which in effect increase the ability to deal with stressful situations. Waiyaki (2016) did a study on the caregivers of kidney patients using CBT, and the results indicated that the intervention was a success. Other psychotherapies that have been offered to caregivers include psychoeducation (Gabriel et al., 2022; Leow et al., 2015), MBSR, and MSC (Ranjbar Noei et al., 2023), etc.

The advantage that MBCT has over all these modalities is that one can use them outside of the therapy session. Additionally, in developing MBIs for caregiving populations, structural and delivery modifications are often necessary to enhance feasibility without compromising therapeutic integrity. For example, Kor et al. (2019) adapted the MBCT protocol for dementia caregivers by reducing session duration, spacing later sessions bi-weekly, and integrating remote supports such as audio recordings and telephone follow-up. These modifications were

validated through expert consultation and shown to maintain therapeutic effectiveness, highlighting that MBCT can be successfully tailored to caregiver contexts.

Similarly, Chacko et al. (2022), in their systematic review of MBCT for family carers of people with dementia, reported consistent evidence that modifications to delivery formats, session length, and content adaptation increased both accessibility and engagement. In several reviewed studies, hybrid or fully online delivery formats were adopted to accommodate caregivers' limited availability. Psychoeducational elements were also adapted to address stressors unique to caregiving, such as managing behavioral symptoms, while informal mindfulness tools were included to support continued practice outside structured sessions. These findings suggest that modifications are not merely logistical adjustments but strategic enhancements that respond to the nuanced demands of caregivers while preserving core therapeutic principles.

METHODOLOGY

A nonequivalent control quasi-experimental research design with an experimental (Texas Cancer Centre) and control group (Coptic Hospital) was conducted in Nairobi County, Kenya. The two facilities were chosen for reasons that they share similar characteristics, as they are both private and provide treatment for cancer patients. They also offer both inpatient and outpatient services. Similarly, the two centers were selected because they have a wide range of clientele that is cosmopolitan. Moreover, it is culturally diverse, thus making it good for generalization. Additionally, the two facilities have good accessibility, strategic geographical positions, and a specialized focus on cancer care services such as diagnosis, chemotherapy, and palliative care. Private centers were selected because they are expected to have higher attrition rates than public hospitals. For the inclusion criteria, based on previous studies (National Cancer Institute, 2011; Ranjbar Noei et al., 2023; Seritan et al., 2022) participants were required to have been caregivers to a cancer patient for at least six months.

The study included caregivers aged 18+ who were literate in English and Swahili, related to cancer patients as family members or close relatives, and provided informed consent. Depression was measured using the Beck Depression Inventory-II (BDI-II), a validated 21-item questionnaire created by Dr. Aaron Beck in 1961 that assesses various depression symptoms including mood, energy, sleep, appetite, and suicidal thoughts, administered at baseline, midline (8 weeks), and endline (14 weeks) to both experimental and control groups. The respondents rated on a scale from zero to three according to their experiences during the

previous two weeks. The overall score represents the degree of depression severity from mild to severe. According to the BDI, scores from 0-9 represent minimal depressive symptoms, 10-16 indicate moderate depression, 17 to 28 indicate moderate depression, and 29 to 63 indicate severe depression.

BDI-II is known for its high internal consistency, which indicates that the items consistently measure the same underlying constructs of depression. The Cronbach's alpha for the BDI-II generally ranges from 0.85 to 0.90, showing strong reliability. The BDI-II psychometric properties, including test-retest reliability, have demonstrated good internal consistency. However, studies indicate slight variability depending on the population (typically between 0.73 and 0.96) (Beck et al., 1996; Beck & Steer, 1993; Wang & Gorenstein, 2013).

In terms of validity, the BDI-II has shown strong convergent validity with other depression measures, such as the Hamilton Depression Rating Scale, meaning it closely aligns with other established tools assessing depression. A number of studies have found the BDI-II to be a valid and reliable screening tool (Ediz et al., 2017; Mehranfar et al., 2012). Kenya has accepted this test for use, and it has been translated into Kiswahili. Assessments were carried out at baseline, eight weeks, as customary under the MBCT interventions (Segal et al., 2002, 2018; Wood et al., 2016). Modification was made to have a follow-up six weeks later, and this was supported by previous studies (Foroughi et al., 2020; Wachira, 2023; Wood et al., 2016; Yan et al., 2024). Data collected from the respondents were analyzed using the Statistical Package for the Social Sciences program, version 27. Descriptive statistics of frequencies, percentages, and inferential statistics, specifically independent sample T-test and ANOVA, and Effect Size Metrics, Cohen's d, were used to establish whether the MBCT intervention had an effect on the participants or not.

The study was conducted ethically, and this was done by taking into consideration the ethical principles highlighted by the American Psychological Association (Gravetter & Forzano, 2012). The researcher ensured that participants were not harmed in any way, and everything was done to benefit the participants. First, the researcher sought approval from the Daystar University School of Applied Human Sciences (SAHS). The researcher also sought ethical clearance from the Daystar University Institutional Scientific Research Committee (DU-ISERC). Thereafter, approval was sought from the National Commission for Science, Technology, and Innovation (NACOSTI). The researcher proceeded to seek approval to conduct the study at the two cancer centers. Once these approvals were obtained, the researcher

embarked on observing the ethical considerations. Study participants possessing the inclusion criteria requirements signed informed consent forms before participation. Participants were assured of confidentiality, and any personal information that would identify them was excluded from the questionnaire for anonymity.

RESULTS

The BDI-II was administered at three time points to assess depression, with descriptive statistics used to analyze changes in depression scores between experimental and control groups over the intervention period.

Table 1: The Means of Depression Across the Three Timelines in the Control and Experimental Groups.

Timeline	Group	N	Mean	Std. D.	Std. Error Mean
Baseline	Experimental	36	17.83	5.30	.97
	Control	33	17.26	4.34	.78
		69	17.54	4.80	.62
Midline	Experimental	30	12.97	3.68	.67
	Control	31	21.42	5.90	1.06
		61	17.26	6.49	.83
Endline	Experimental	24	10.58	4.01	.82
	Control	27	20.19	7.85	1.51
		51	15.67	7.93	1.11

The study demonstrated clear and progressive differences in depression outcomes between the experimental and control groups over the intervention period. At baseline, depression scores were comparable between the experimental group (M = 17.83, SD = 5.30) and the control group (M = 17.26, SD = 4.34), suggesting no initial group differences. By midline, the experimental group showed a marked reduction in depression (M = 12.97, SD = 3.68), while the control group's scores increased (M = 21.42, SD = 5.90). This divergence indicates a potential intervention effect emerging during the study period. At endline, the experimental group's depression scores continued to decline (M = 10.58, SD = 4.01), whereas the control group remained elevated (M = 20.19, SD = 7.85). The sustained improvement in the experimental group suggests a robust and lasting impact of the intervention, with depression scores decreasing by over 40% from baseline to endline while the control group's scores remained stable or worsened.

To evaluate the statistical significance of these observed differences, an independent samples t-test was conducted to compare depression scores between experimental and control groups at the three time points. This statistical procedure determines whether there is a significant difference between the means of two unrelated groups, making it appropriate for

assessing whether the observed differences in depression scores were statistically meaningful rather than due to chance. The test assumes that the two groups are independent, that the data are normally distributed, and that the variances are approximately equal. The largest group difference appeared at endline, with a mean gap of approximately 10 points, indicating strong practical significance beyond the statistical findings. This analytical approach allowed the researchers to evaluate the effectiveness of the MBCT intervention in altering psychological outcomes across groups, providing robust evidence for the intervention's impact. The independent samples test is shown in Table 2.

Table 2: The Independent Samples Test for differences between the Experimental and Control Group Depression Means Across Baseline, Midline, and Endline

Levene's Test for Equality of Variances			t-test for Equality of Means						
Equal variances assumption	F	p	t	df	p	Mean Difference	Std. Error Difference	95% CI LB	95% CI UB
Baseline									
Yes	1.71	.196	.464	59	.644	.58	1.24	-1.90	3.05
No			.463	56.06	.645	.58	1.24	-1.91	3.06
Midline									
Yes	4.10	.047	-6.69	59	< .001	-8.45	1.26	-10.98	-5.92
No			-6.74	50.54	< .001	-8.45	1.25	-10.97	-5.93
Endline									
Yes	14.20	< .001	-5.39	49	< .001	-9.60	1.78	-13.18	-6.02
No			-5.59	39.63	< .001	-9.60	1.72	-13.08	-6.13

Independent Samples Effect Sizes			
	Cohen's d	95% CI Lower	95% CI Upper
Baseline	.119	-.384	.621
Midline	-1.713	-2.297	-1.119
Endline	-1.513	-2.133	-.881

The experimental group and control group did not differ significantly at baseline, t (59) = 0.464, p = .644. The mean difference was negligible (M = 0.58, SE = 1.24), and effect sizes were minimal (Cohen's d = 0.119, 95% CI [−0.384, 0.621]). This suggests that both groups began the study with comparable levels of depression. At mid-point, the experimental group reported significantly lower depression scores than the control group, t (59) = −6.69, p < .001. The mean difference was −8.45 (SE = 1.26), with a large effect size (Cohen's d = −1.713, 95% CI [−2.297, −1.119]). This indicates a substantial reduction in depression among participants in experimental conditions. By study end, t (49) = −5.39, p < .001, mean difference was −9.60

(SE = 1.78), with a large effect size (Cohen's d = −1.513, 95% CI [−2.133, −0.881]). These results suggest a sustained and clinically meaningful benefit for the experimental group. The findings demonstrate a clear and progressive divergence in depression outcomes between the experimental and control groups. While both groups began with comparable baseline scores, the experimental group showed a marked reduction in depression by mid-point, which was sustained through study completion. The large effect sizes at both mid-point (d = −1.713) and endpoint (d = −1.513) underscore the practical significance of the intervention.

DISCUSSION

The results indicated that at baseline, depression scores were comparable between the experimental group (M = 17.83, SD = 5.30) and the control group (M = 17.26, SD = 4.34), suggesting no initial group differences. By midline, the experimental group showed a marked reduction in depression (M = 12.97, SD = 3.68), while the control group's scores increased (M = 21.42, SD = 5.90). This divergence indicates a potential intervention effect emerging during the study period. At endline, the experimental group's depression scores continued to decline (M = 10.58, SD = 4.01), whereas the control group remained elevated (p<.001) (M = 20.19, SD = 7.85). The sustained reduction in depression scores within the experimental group reflects a robust and lasting impact of the MBCT intervention. From baseline to endline, depression scores in this group declined by over 40%, while scores in the control group remained stable or worsened. This divergence underscores the intervention's effectiveness. Notably, the largest group difference emerged at endline, with a mean gap of approximately 10 points—highlighting strong practical significance.

The magnitude of change is further supported by large effect sizes (Cohen's d = −1.713 at midline; −1.513 at endline), indicating that the observed improvements were not only statistically significant but also clinically meaningful. The 40% reduction in depressive symptoms observed among participants in the MBCT treatment group in this study is consistent with prior research affirming the efficacy of MBCT in alleviating depression. Notably, Omungo (2020) reported a similar 40% decrease in depressive symptoms among clergy following MBCT intervention, measured from baseline to endline. This parallel reinforces the reliability of MBCT across diverse populations.

Furthermore, Eisendrath et al. (2016) found a 36.6% reduction in Hamilton Depression Rating Scale (HAM-D) scores among individuals receiving MBCT combined with Treatment as Usual (TAU), compared to 25.3% in the control group, alongside a 30.3% response rate.

Complementing these findings, Foroughi et al. (2020) demonstrated statistically significant improvements in depression severity, rumination, mindfulness, and self-compassion, with effects sustained at one-month follow-up. Collectively, these studies underscore the therapeutic potential of MBCT and affirm its feasibility and effectiveness in reducing depressive symptoms, particularly among caregivers facing treatment-resistant depression.

A recent study by Yan et al. (2024) examined the efficacy of an online MBCT intervention tailored for caregivers of children with allergic rhinitis. The findings demonstrated statistically significant improvements in psychological outcomes, including reductions in anxiety and depression levels, as well as enhanced mindfulness and emotional regulation. Notably, the intervention also alleviated caregiver burden, suggesting that MBCT may foster more adaptive coping strategies in high-stress caregiving contexts. These results underscore the feasibility and therapeutic value of digitally delivered MBCT programs, particularly in pediatric chronic illness settings where caregiver distress is prevalent. The study contributes to the growing body of evidence supporting scalable, accessible mental health interventions for caregivers, aligning with broader efforts to integrate psychological support into routine care.

In a pilot study conducted by Seritan et al. (2022), quantitative analyses demonstrated statistically significant reductions in anxiety and depression symptoms among individuals with Parkinson's disease following participation in an online MBCT program, as measured by the GAD-7 and PHQ-9 scales. Participants also showed increased mindfulness, particularly in the domains of observing and non-reactivity, based on scores from the Five Facet Mindfulness Questionnaire (FFMQ-15). Subgroup analyses revealed that those with elevated baseline anxiety or depression experienced the most substantial improvements. Although the caregiver sample was insufficient for separate statistical analysis, qualitative feedback indicated high levels of acceptability and perceived benefit. These findings suggest that online MBCT may be an effective modality for reducing psychological distress and enhancing mindfulness in people with Parkinson's disease, with encouraging implications for future caregiver-focused adaptations.

Meta-analyses consistently show that MBIs yield positive outcomes for caregiver mental health, though effect sizes and domains of impact vary. Saragih et al.2023 reported significant reductions in depression, anxiety, and caregiver burden among dementia caregivers, with moderate to large effect sizes across delivery formats. In contrast, Fjorback et al. found that while MBCT effectively reduced depressive relapse and MBSR improved general mental

health, results were more modest when compared to active controls, and long-term follow-up data were limited.

Rambukwella Abeysinghe et al. highlighted that online MBIs were generally effective but noted variability in adherence due to digital literacy and caregiving demands. Some studies emphasized improvements in mindfulness traits (e.g., non-reactivity, present-moment awareness), while others prioritized reductions in psychological distress. Overall, while MBIs are beneficial, their impact is shaped by delivery mode, population characteristics, and methodological rigor. These results underscore the feasibility and therapeutic value of digitally delivered MBCT programs, particularly in pediatric chronic illness settings where caregiver distress is prevalent. The study contributes to the growing body of evidence supporting scalable, accessible mental health interventions for caregivers, aligning with broader efforts to integrate psychological support into routine care.

LIMITATIONS

The study acknowledges several significant methodological limitations that affect the interpretation and generalizability of its findings. While the research demonstrated significant short-term reductions in depression, the sustainability of these benefits remains unclear due to the limited follow-up period. Longitudinal designs with extended tracking are essential for determining whether MBCT provides enduring protection or requires booster sessions to maintain effectiveness, as supported by Chayadi et al. (2022) who found that MBCT and MBSR produced medium effect sizes for depression and anxiety in oncology populations, with benefits maintained for at least three months post-intervention. Additionally, the study's reliance solely on quantitative measures through the BDI-II may have missed important dimensions of the caregiver experience. A mixed-methods approach incorporating qualitative interviews would provide deeper understanding of how MBCT influences coping strategies, role identity, and meaning-making processes, while also capturing cultural, gender, and contextual factors that shape intervention acceptability and effectiveness, as demonstrated by Abeysinghe Mudiyanselage et al. (2024) in their mixed-methods systematic review.

Furthermore, the study lacks comparative analysis with other established interventions, making it impossible to determine MBCT's relative effectiveness compared to Cognitive Behavioral Therapy, Acceptance and Commitment Therapy, or other psychosocial treatments. This limitation prevents researchers from understanding whether MBCT should be used as a standalone treatment, an adjunct to existing care, or a targeted option for specific caregiver

subgroups. The absence of head-to-head trials in cancer caregiving contexts represents a significant gap in the literature, as previous research (Hofmann et al., 2010; Piet & Hougaard, 2011) has suggested mindfulness-based interventions are at least as effective as traditional cognitive-behavioral approaches, but head-to-head trials in cancer caregiving contexts remain sparse. Future research should prioritize randomized controlled trials with active comparison groups to establish MBCT's position within the broader landscape of caregiver support interventions.

CONCLUSION

The study concludes that MBCT represents a highly effective intervention for reducing depression among caregivers of cancer patients in Nairobi County, Kenya. Using a quasi-experimental research design with a quantitative approach, the research demonstrated that depression scores in the experimental group declined by over 40% from baseline to endline, accompanied by large effect sizes that indicate substantial clinical impact. The sustained improvement pattern observed throughout the intervention period suggests that MBCT builds therapeutic momentum rather than producing temporary relief, with participants showing continued progress from midline to endline assessments. These findings affirm MBCT's potential for scalable implementation in caregiver support programs, particularly in oncology settings where psychological distress is prevalent and sustained intervention is needed. The research contributes valuable evidence to the growing body of literature supporting mindfulness-based interventions for vulnerable populations, while also demonstrating the cross-cultural applicability of MBCT in a Kenyan healthcare context. However, the study's limitations—including the quasi-experimental design, limited follow-up period, and absence of active comparison groups—indicate that while these results are promising, further research through randomized controlled trials with extended monitoring periods is necessary to establish MBCT's definitive place within comprehensive caregiver support frameworks.

RECOMMENDATIONS

The results of this study underscore the need to develop simplified and culturally adapted MBCT materials that are accessible to caregivers with lower educational attainment, who were shown to have poorer quality of life outcomes. Program materials should be presented in plain, jargon-free language and supported with short audio recordings, visual aids, or pictorial guides that can be easily understood by individuals with limited literacy. Cultural adaptation is essential, requiring the use of local metaphors, examples that reflect daily

caregiving realities, and translation into local languages. Accessibility could be further enhanced by flexible scheduling of sessions, translation into common languages, and the use of mobile-based delivery formats such as WhatsApp audio notes. Pilot testing these materials with caregivers of different educational backgrounds will ensure that they are usable and effective, while outcome tracking should assess comprehension, adherence, and psychological benefits across educational levels.

A routine mental health screening for caregivers should be established as part of standard oncology care. Depressive symptoms observed in this study demonstrate the importance of early detection and timely intervention. Screening tools such as the BDI can be easily administered in waiting rooms, clinics, or digitally, and scores can be embedded into medical records to prompt referrals when needed. A step-care approach would ensure that caregivers with mild symptoms receive psychoeducation and digital mindfulness practices, those with moderate symptoms are referred to group-based MBCT programs, and those with severe symptoms or suicidality are connected rapidly to specialized mental health professionals. Integration of these systems would allow for ongoing monitoring of outcomes and ensure that support is targeted appropriately.

In summary, the findings call for a multi-level response that embeds MBCT into oncology settings, adapts materials for caregivers with lower literacy, strengthens workplace policies to protect caregiver well-being, and implements systematic mental health screening and stepped-care interventions. Together, these strategies have the potential to reduce caregiver depression, improve quality of life, and address structural barriers to mental health care in this vulnerable population.

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