African Journal of Emerging Issues
Peer reviewed | Double blind | Interdisciplinary

African Journal of Emerging Issues (AJOEI)
Online ISSN: 2663 - 9335
Available at: https://ajoeijournals.org

CLINICAL PSYCHOLOGY

RISK ASSOCIATED WITH MARIJUANA AND THE EFFECTIVENESS OF MINDFULNESS BASED COGNITIVE BEHAVIORAL THERAPY IN THE TREATMENT OF ADDICTION AMONG YOUTHS IN SELECTED REHABILITATION CENTRES IN KENYA

***[1]Josephine Kinya, [2]Prof. Niceta Ireri, [3]Dr. Alice Omondi & [4]Dr. Tom Ochieng' Kuja**

[1]PhD Student, Africa International University

[2,3,4]Lecturer, Africa International University

***Email of the Corresponding Author: Kinya.Josephine@africainternational.edu**

Publication Date: June 2026

ABSTRACT

Purpose of the Study: This study examined the effectiveness of Mindfulness-Based Cognitive Behavioural Therapy (MB-CBT) in managing marijuana addiction among youths aged 18–35 years. This research was guided by the following objectives; To establish the risk factors associated with marijuana addiction among the youth in selected rehabilitation centres in Kenya; To evaluate the effectiveness of MBCBT in managing marijuana addiction among the youth in selected rehabilitation centres in Kenya.

Methodology: The study, grounded in pragmatism and informed by cognitive-behavioural and mindfulness theories, used a quasi-experimental non-equivalent control group design at Karuri Level 4 Hospital. Experimental (MB-CBT plus treatment-as-usual) and control (treatment-as-usual only) groups were drawn from the same institution to enhance validity. A purposive sample of 60 participants was assessed using the Marijuana Craving Questionnaire (MCQ), Mindful Attention Awareness Scale (MAAS), Emotion Regulation Scale (ERS), and a sociodemographic tool. Analyses included descriptive statistics, Cronbach's alpha, paired-samples t-tests, ANCOVA, and effect size estimation.

Findings: Results revealed significant pre–post improvements in the experimental group, including reductions in craving and emotional reactivity and increases in mindfulness ($p < .01$), while the control group showed no significant changes. ANCOVA confirmed significant group differences at post-test after controlling for baseline scores ($p < .01$), with large effect sizes observed across outcomes.

Conclusion: The findings demonstrated that MB-CBT significantly improves craving reduction, mindfulness, and emotional regulation beyond standard treatment alone. The study provided empirical support for integrating MB-CBT into rehabilitation programs in Kenya and contributes context-specific evidence to youth-centred psychosocial intervention strategies.

Recommendation: These results suggest that structured mindfulness-based interventions can enhance existing rehabilitation approaches and strengthen relapse prevention outcomes.

Keywords: *Risk, Marijuana, Effectiveness, Mindfulness, Cognitive Behavioural, Therapy*

BACKGROUND OF STUDY

The use of marijuana in Africa is a complex issue that is growing by leaps and bounds. According to research by the South African Community Epidemiology Network on Drug Use (SACENDU), marijuana accounted for 23% of the drug of choice of patients under 20 years who were treatment-seeking in the first half of 2020 (Dada et al., 2020). An example of this can be South Africa, which has been reporting an increase in treatment admissions related to marijuana. In Nigeria, the National Drug Use Survey conducted in 2018 estimated that about 10.8 million Nigerians aged 15 to 64 had used marijuana in the last year, and the number of those who had developed dependence MBCBT quite significant (United Nations Office on Drugs and Crime, 2019). These statistics emphasize the urgency of deploying effective interventions across the whole continent.

Based on the United Nations Office on Drugs and Crime 4.2 million Nigerians aged 15–35 smoke marijuana daily. In Lagos, there have been 1,200 rehab admissions in 2022 (UNODC, 2023). The 2022 SACENDU report pointed out that 60% of treatment admissions were due to marijuana as the primary substance of abuse among youths (Dada et al., 2022). Despite these astounding figures, less than 5% of rehabilitation centres in the country provide evidence-based therapies such as MBCBT. Ghana and Zambia are following the same pattern. The Ghana Health Service (2023) disclosed that in Accra, the number of youths with marijuana dependence rose by 60% from 2020 to 2023 and MBCBT at 62,000, whereas the Ministry of Health in Zambia (2021) stated that 35% of psychiatric admissions in Lusaka were due to marijuana. This means that the African countries are going through the same wave of marijuana-related harms that the rest of the world has experienced, yet they do not have enough and well-established evidence-based measures to respond.

The treatment gap where millions of youths are dependent on but only a small number have access to modern interventions is one of the reasons why it is so important to look for MBCBT solutions that are culturally adapted and can be scaled up. For Kenya, these trends show that the country followed the same path of addiction rates going up and rehabilitation systems getting overwhelmed if no intervention is taken. Kenya’s battle with marijuana addiction has been smothered by the country's major public health problems, however, the statistics speak volumes. The National Authority for the Campaign Against Alcohol and Drug Abuse (NACADA) have announced in 2017 that about 1.3 million Kenyans aged 15 to 65 have used

marijuana at least once in their lifetime, with prevalence rates being higher among younger demographics (NACADA, 2017). A study by the University of Nairobi uncovered that 30% of the university students had used marijuana, implying that considerable exposure has been going on within the educational institutions (Ngarachu et al., 2022). Where the youth already must face high unemployment, stress, and limited access to mental health resources, these world trends become even more alarming. They indicate that, without interventions in place, the adoption of these international trends, Kenya may result in elevated addiction rates, thereby exacerbating the challenges faced by a rehabilitation system that is currently under considerable strain.

The prevalence of smoked marijuana and marijuana edibles among Kenya youths is 14.9% and 11.9%, respectively, and it is surprising that 1 in every 7 youths is smoking marijuana. Among the youth demographic, especially the one between the ages of 15 and 24, for every 37 people (193,430), one is currently involved in marijuana use. On top of that, an alarming 47.4% of current marijuana users are addicted to the drug (NACADA, 2024). The above-mentioned patterns are the result of a combination of factors, including peer pressure, unemployment, socioeconomic hardship, and the availability of cheap marijuana products (WHO, 2014). Even though biological predispositions and heritable factors also play a role in the risk (American Psychiatric Association, 2022), socio-economic drivers are particularly critical in the Kenyan context. The point that is made here is that addiction to marijuana among the Kenyan youth is not only widespread, but it is also increasing, and this growth is being driven by systemic vulnerabilities. Consequently, this highlights the necessity of accessible-targeted, evidence-based interventions such as the MBCBT which directly addresses the cognitive and emotional regulation aspects while offering a culturally adaptable alternative to Kenya's largely abstinence-based rehabilitation models.

MBCBT employs psychosocial intervention methods that are based on cognition and behavior therapy, together with mindfulness techniques, to address the psychological aspects of addiction. MBCBT MBCBT pioneering in the effort to conduct relapse prevention in the case of individuals with SUD. Just to highlight one instance, a US-based, controlled randomized trial exhibited a 35% decline in relapse rates caused by MBCBT in contrast to the control group standard CBT (Dey et al., 2022). Similarly, a program established as a trailblazer in South

Africa reported that half of the participants reached the state of abstinence hence signalling the potential of the intervention to be efficacious in different contexts.

STATEMENT OF THE PROBLEM

Worldwide, MBCBT research has shown potential positive effects in various cases of substance use disorders. However, there is a very limited amount of research based on the studies of marijuana addiction and MBCBT application in the rehabilitation Centres, whereas the use of marijuana is a trend that is becoming more common in entire continent, with Africa being responsible for around 25% of the world's total marijuana production (Ayange, 2019). The statement above is quite instructive as it acknowledges the existence of a significant gap in the volume of comprehensive addiction treatment-related studies that focus on the incorporation of MBCBT in treatments. There has been a 40% increase in marijuana addiction among the Kenyan youth from 2019, but the treatment protocols are still the same (Kamau et al., 2022).

The relapse rate reported by existing interventions such as detoxification and counselling is at 72% within six months, thus indicating the insufficiency of these interventions in handling the aspects of addiction that arise from the cognitive and emotional side of the problem (Kamau et al., 2022). The significance of this research lies in its potential to become a collaboration partner with the limited literature and thus to play the role of the empirical field in which the effectiveness of the MBCBT in the context of the rehabilitation was tested. It brought forward scientific evidence supporting the implementation of MBCBT if findings demonstrate its effectiveness, thus potentially leading to rehabilitation treatment improvement.

1.4 Objectives of the Study

i. To establish the risk factors associated with marijuana addiction among the youth in selected rehabilitation centres in Kenya.
ii. To evaluate the effectiveness of MBCBT in managing marijuana addiction among the youth in selected rehabilitation centres in Kenya

1.5 Research Questions

This study seeks to answer following research questions:

i. What risk factors were associated with marijuana addiction among the youths in selected rehabilitation centres in Kenya?

ii. How effective was Mindfulness-Based Cognitive Behavioural Therapy (MBCBT) in the treatment of marijuana addiction among the youths in the selected rehabilitation centres in Kenya?

LITERATURE REVIEW

The section presents the theoretical framework, empirical review and conceptual framework.

THEORETICAL FRAMEWORK

Mindfulness is grounded in early Eastern contemplative traditions, particularly Buddhist teachings, where the Pali term sati refers to present-moment awareness and remembrance. Within this tradition, mindfulness involves paying careful attention to thoughts, emotions, and bodily sensations without attachment, avoidance, or judgment. This practice helps individuals develop emotional balance, self-awareness, and the ability to observe internal experiences rather than react impulsively to them (Singh, 2023). The movement of mindfulness into Western psychology was largely advanced by Jon Kabat-Zinn, who developed Mindfulness-Based Stress Reduction (MBSR) in 1979 as a secular therapeutic approach for managing stress, pain, and psychological distress (Kestly, 2016). This transition created a foundation for mindfulness-based interventions, including Mindfulness-Based Cognitive Therapy (MBCT), Acceptance and Commitment Therapy (ACT), and Dialectical Behaviour Therapy (DBT), which combine mindfulness with structured therapeutic methods to address depression, anxiety, emotional dysregulation, and addiction (James et al., 2024).

In addiction treatment, mindfulness is useful because it trains individuals to recognize cravings, emotional triggers, and automatic thoughts without immediately acting on them. This makes it relevant to marijuana addiction, where impulsivity, craving, emotional discomfort, and social triggers often sustain continued use. Mindfulness-Based Cognitive Behavioural Therapy (MBCBT) strengthens recovery by combining mindful awareness with cognitive restructuring, helping clients notice craving cues, challenge harmful thoughts, and adopt healthier coping responses (Srivastava & Srivastava, 2024). Empirical studies support this position. Shrier et al. (2022) found that mindfulness combined with dialectical behaviour therapy reduced marijuana use among youth in residential treatment while improving distress tolerance. Similarly, Dey et al. (2022) reported that mindfulness-based self-help modules reduced marijuana use frequency by improving participants' awareness of bodily and emotional cues linked to substance use. In

Kenya, Anundo et al. (2023) found that mindfulness cognitive behavioural therapy produced stronger relapse-prevention outcomes than the 12-Step model among participants in rehabilitation centres, suggesting its relevance to local addiction treatment settings.

However, mindfulness-based interventions require regular practice, motivation, and contextual adaptation to produce meaningful results. Some participants may struggle with abstract meditation practices, while others may have difficulty sustaining mindfulness skills after treatment, especially when they return to environments marked by peer influence, idleness, stress, and easy access to marijuana (Carlon et al., 2023; Roos et al., 2024). Recent reviews also show that although mindfulness-based interventions are promising in substance use treatment, fewer studies have focused directly on marijuana use disorder, leaving gaps on how mindfulness addresses marijuana-specific triggers such as withdrawal, social use, and craving patterns (Barré et al., 2024). In addition, mindfulness may not fully address biological mechanisms such as dopamine dysregulation associated with marijuana addiction, which suggests that it may work best when integrated with broader rehabilitation support, clinical monitoring, and, where necessary, other treatment approaches (Brewer et al., 2022; Siegel, 2024). This study is therefore anchored on the view that MBCBT can reduce marijuana addiction among youths by improving craving awareness, emotional regulation, cognitive control, and relapse-prevention capacity within rehabilitation settings.

EMPIRICAL REVIEW

This section reviews empirical studies based on the two study objectives. It focuses on risk factors associated with marijuana addiction and the effectiveness of MBCBT in managing marijuana addiction among youths in rehabilitation settings.

Risk Factors Associated with Marijuana Addiction

Empirical studies show that marijuana addiction among youths is shaped by socioeconomic, psychological, family, and peer-related factors. In the United States, regular marijuana use is higher among adults with low income and lower education levels, suggesting that economic disadvantage and limited educational attainment increase vulnerability to marijuana use (Witters, 2024). Similarly, Hines et al. (2024) found that adolescents using high-potency marijuana had higher odds of depression, anxiety, and auditory hallucinations, indicating that the strength of marijuana products can intensify mental health risks among young users. Other

studies show that early exposure, weak parental monitoring, peer influence, and co-occurring substance use increase the likelihood of marijuana and broader substance use among adolescents. Wellman et al. (2023) found that early marijuana use among Canadian students was associated with being male, low household income, prior use of cigarettes or alcohol, gambling, depressive symptoms, impulsivity, and having friends or siblings who smoke. Nawi et al. (2021) also identified impulsiveness, emotional regulation problems, psychiatric disorders, family substance use, weak parental supervision, and peer influence as major risk factors for adolescent drug abuse.

In Kenya, local studies confirm that youth substance use is strongly linked to peer pressure, poor parenting, emotional distress, availability of drugs, and economic challenges. Asanyo (2019) found that among college youth in Mlolongo, peer pressure was the leading factor influencing substance use, followed by poor parenting and easy availability of substances. Mutiso et al. (2022) also reported a strong relationship between substance use, economic hardship, mental health conditions, and use of multiple substances among students. These findings suggest that marijuana addiction among Kenyan youths should be addressed through interventions that combine psychological support, family involvement, peer-risk reduction, and targeted rehabilitation strategies.

Effectiveness of MBCBT in Managing Marijuana Addiction among Youths in Selected Rehabilitation Centres in Kenya

Empirical evidence shows that mindfulness-based interventions can improve treatment outcomes among individuals with marijuana and other substance use disorders. Budak et al. (2024) found that mindfulness-based psychoeducation significantly reduced negative automatic thoughts and improved medication adherence among patients with marijuana use disorder. This suggests that mindfulness-based approaches can help individuals manage harmful thinking patterns and strengthen commitment to treatment. Similarly, Garland and Howard (2018) reported that mindfulness-based interventions reduce substance misuse and cravings by improving self-regulation, emotional control, and reward-processing mechanisms.

Studies comparing mindfulness-based approaches with standard treatment also show promising but mixed results. Schneegans et al. (2021) found no significant short-term reduction in marijuana consumption between participants receiving Mindfulness-Based Relapse

Prevention and those receiving treatment as usual, although participants reported positive changes in consumption behaviour. Dammers (2023) further found that mindfulness-based therapy may be as effective as CBT in the short term but may produce stronger long-term benefits in reducing craving, stress, anxiety, and depression. Sancho et al. (2018) also concluded that mindfulness-based interventions are useful in reducing dependence, craving, and addiction-related symptoms, especially when combined with treatment as usual or other active interventions.

In Kenya, Anundo, Muaka, and Ongaro (2022) found that Mindfulness Cognitive Behavioural Therapy was more effective than the 12-Step model in relapse prevention among substance users in selected rehabilitation centres. Their findings suggest that MBCBT may be useful in local rehabilitation settings because it addresses craving, emotional regulation, cognitive restructuring, and relapse prevention. Nonetheless, the reviewed studies still leave a clear gap because many focus on substance use disorders generally rather than marijuana addiction specifically. This supports the need for the current study, which directly examines the effectiveness of MBCBT in managing marijuana addiction among youths in selected rehabilitation centres in Kenya.

CONCEPTUAL FRAMEWORK

The current research is concerned with examining the efficacy of Mindfulness-Based Cognitive-Behavioural Therapy (MBCBT) as a method of treatment for cocaine use disorder in youths attending selected rehabilitation facilities in Kenya. The conceptual framework presents a causal relationship between the type of therapy applied and the degree of addiction symptoms because of the intervention.

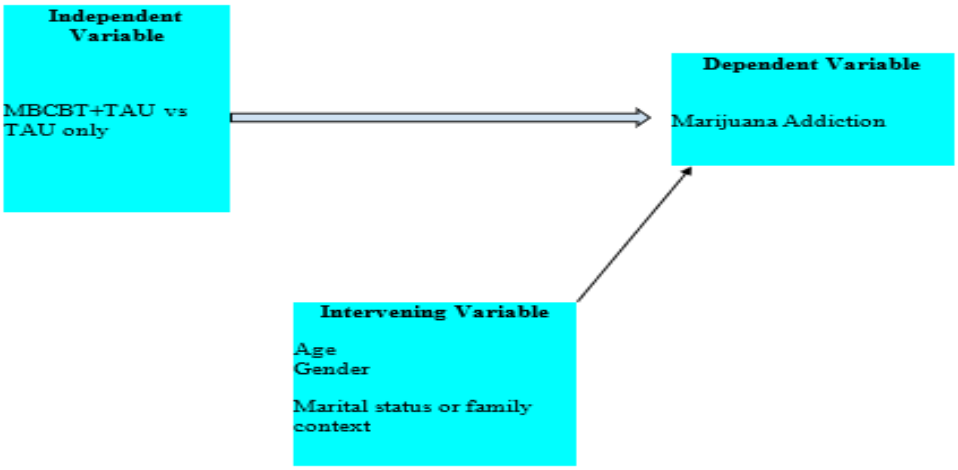

Figure 1: Conceptual Framework

METHODOLOGY

The study adopted a quasi-experimental non-equivalent control group design to assess the effectiveness of Mindfulness-Based Cognitive Behavioural Therapy (MBCBT) in managing marijuana addiction among youths in selected rehabilitation centres in Kenya. The design was appropriate because random assignment was not practical in the rehabilitation setting, while the use of experimental and control groups allowed comparison of treatment outcomes under real-life clinical conditions. The study targeted male and female youths aged 18–35 years who were undergoing rehabilitation for marijuana addiction and met the DSM-5-TR criteria for marijuana use disorder.

Participants were purposively selected from rehabilitation records, and the final sample comprised 60 respondents, with 30 assigned to the experimental group receiving MBCBT plus treatment-as-usual and 30 assigned to the control group receiving treatment-as-usual only. Data were collected using a sociodemographic questionnaire, Marijuana Craving Questionnaire, Mindful Attention Awareness Scale, and Emotion Regulation Scale. A pretest was conducted using 10% of the sample to assess clarity, reliability, and suitability of the instruments, while validity was strengthened through the use of standardized tools and expert review. Ethical approvals were obtained from Africa International University, NACOSTI, and the participating health facilities before data collection. The MBCBT intervention was implemented over eight weeks through structured sessions covering psychoeducation, mindful breathing, cognitive reframing, emotional tracking, urge management, relapse-trigger mapping, journaling, and

support planning. Data were coded, cleaned, and analysed using SPSS, where descriptive statistics summarized participant characteristics, Cronbach's alpha tested reliability, paired-samples t-tests assessed within-group changes, ANCOVA compared post-test outcomes while controlling for baseline scores, and Cohen's d established the practical strength of the intervention effect.

FINDINGS AND DISCUSSION

This section would focus on finding and discussion, and it sought to determine the risk factors of marijuana dependency among the participants. In particular, the co-occurring substance use and prior history of treatment were identified as the main vulnerability factors to addiction. This knowledge of these risk factors is important to explain the multifaceted nature of marijuana dependency and to evaluate whether underlying behavioural and environmental factors might influence treatment outcomes.

Table 1: Previous Treatment History

Treatment	Experimental n	Control n	Total n	Experimental %	Control %	Total %
Yes	22	24	46	73.3%	80.0%	76.7%
No	8	6	14	26.7%	20.0%	23.3%
Total	**30**	**30**	**60**	**100.0%**	**100.0%**	**100.0%**

The results in Table 1 show that most participants had previously received treatment for marijuana use before joining the current study. In the experimental group, 22 participants (73.3%) had prior treatment history, while 8 participants (26.7%) had not received previous treatment. In the control group, 24 participants (80.0%) had undergone prior treatment, whereas 6 participants (20.0%) had no previous treatment exposure. Overall, 46 out of 60 participants (76.7%) had received previous treatment, while only 14 participants (23.3%) had not. This indicates that marijuana dependency among the participants was largely recurrent rather than a first-time problem, suggesting repeated relapse, continued vulnerability, and possible limitations of earlier rehabilitation approaches. The relatively similar distribution between the experimental and control groups also shows baseline comparability, which strengthened the interpretation of intervention outcomes. The findings further suggest the need for treatment approaches such as MBCBT that go beyond routine rehabilitation by addressing craving,

emotional regulation, self-awareness, and relapse prevention among youths with marijuana dependency (American Psychiatric Association [APA], 2022).

Table 2: Number of Previous Rehab Admissions

Times in Rehab	Experimental n	Control n	Total n	Experimental %	Control %	Total %
1 time	10	9	19	33.3%	30.0%	31.7%
2 times	8	10	18	26.7%	33.3%	30.0%
3 times	6	7	13	20.0%	23.3%	21.7%
4+ times	6	4	10	20.0%	13.3%	16.7%
Total	**30**	**30**	**60**	**100.0%**	**100.0%**	**100.0%**

Table 2 shows that repeated rehabilitation admission was common among the participants, suggesting persistent relapse vulnerability and difficulty in sustaining recovery after previous treatment. In the experimental group, 10 participants (33.3%) had been admitted once, 8 participants (26.7%) twice, 6 participants (20.0%) three times, and 6 participants (20.0%) four or more times, while in the control group, 9 participants (30.0%) had been admitted once, 10 participants (33.3%) twice, 7 participants (23.3%) three times, and 4 participants (13.3%) four or more times. Overall, only 19 participants (31.7%) had been admitted once, while 41 participants (68.3%) had undergone rehabilitation two or more times. This pattern indicates that marijuana dependency among the youths was recurrent and that previous rehabilitation exposure had not fully prevented relapse. The relatively similar admission patterns across the experimental and control groups also supported baseline comparability before the intervention. The findings therefore point to the need for more comprehensive relapse-prevention approaches such as MBCBT, which address craving, emotional regulation, mindfulness, cognitive restructuring, and long-term behavioural self-management among youths with marijuana dependency (American Psychiatric Association [APA], 2022; Beck et al., 1993).

Table 3: Descriptive Statistics for Effectiveness of MBCBT Intervention

Group	Variable	Mean_Pre	SD_Pre	Mean_Post	SD_Post	N	Change
1	MCQ	42.73	14.9	28.76	5.35	30	-32.69
1	MAAS	43.47	15.2	61.31	8.45	30	41.04
1	ERS	34.24	11.24	27.07	3.04	30	-20.94
2	MCQ	54.23	4.95	54.3	5.3	30	0.13
2	MAAS	25.7	3.6	26.17	3.46	30	1.83
2	ERS	52.36	2.77	51.5	5.76	30	-1.64

Table 3 presents the descriptive statistics on the effectiveness of the MBCBT intervention by comparing pre-test and post-test scores for marijuana craving, mindfulness, and emotion regulation between the experimental and control groups. The findings show that the experimental group recorded clear improvement across all three outcomes after receiving the intervention. Marijuana craving scores reduced from a pre-test mean of 42.73 (SD = 14.90) to a post-test mean of 28.76 (SD = 5.35), representing a 32.69% decline, which suggests a meaningful reduction in craving intensity. Mindfulness scores increased from 43.47 (SD = 15.20) to 61.31 (SD = 8.45), reflecting a 41.04% improvement and indicating enhanced present-moment awareness, self-monitoring, and attentional control. Emotion regulation scores also improved, reducing from 34.24 (SD = 11.24) to 27.07 (SD = 3.04), representing a 20.94% improvement in participants' ability to manage emotional responses linked to marijuana use. In contrast, the control group showed very small changes, with marijuana craving increasing slightly from 54.23 to 54.30, mindfulness improving marginally from 25.70 to 26.17, and emotion regulation reducing only from 52.36 to 51.50. This sharp difference between the two groups indicates that the improvements observed in the experimental group were likely associated with the MBCBT intervention rather than normal change over time. Overall, the results suggest that MBCBT contributed to reduced craving, improved mindfulness, and better emotional regulation among youths undergoing rehabilitation for marijuana dependency, thereby supporting its value as a relapse-prevention and behavioural self-management intervention.

Table 4: Descriptive Statistics of Study Variables

Variable	Group	Pre-test Mean (SD)	Post-test Mean (SD)	% Change
Marijuana Craving (MCQ)	Experi-mental	42.73 (14.90)	28.76 (5.35)	-32.69%
	Control	54.23 (4.95)	54.30 (5.30)	+0.13%
Mindfulness (MAAS)	Experi-mental	43.47 (15.20)	61.31 (8.45)	+41.04%
	Control	25.70 (3.60)	26.17 (3.46)	+1.83%
Emotion Regulation (ERS)	Experi-mental	34.24 (11.24)	27.07 (3.04)	-20.94%
	Control	52.36 (2.77)	51.50 (5.76)	-1.64%

The experimental group recorded a 32.69% reduction in MCQ craving scores, a 41.04% improvement in MAAS mindfulness scores, and a 20.94% improvement in ERS emotional regulation scores. The control group showed negligible changes across all three variables. These differences indicate that improvements in the experimental group were associated with the MBCBT intervention rather than natural variation over time. The findings are consistent with prior studies demonstrating that mindfulness-based interventions reduce substance craving and enhance self-regulation (Bowen et al., 2014; Garland et al., 2014; Kabat-Zinn, 2003; Segal et al., 2013).

Table 5: Qualitative Themes on Mindfulness Development

Theme	Illustrative Evidence
Trigger awareness	Recognition of peer pressure, idleness, and emotional discomfort
Cognitive restructuring	"Winning the mind and reprogramming it"
Mindfulness integration	Deep breathing, body scan, urge surfing, butterfly hug
Improved self-aware-ness	Conscious monitoring of thoughts and emotions

ERS scores in the experimental group declined from 34.24 at pre-test to 27.07 at post-test, representing a 20.94% improvement in emotional regulation. The control group recorded only

a marginal reduction of 1.64%. Qualitatively, participants described feeling calmer and more emotionally settled after mindfulness breathing and body scan sessions. Several reported adopting healthier coping strategies such as walking, journaling, exercising, and listening to music. Participants also demonstrated increased insight into how stress, frustration, and peer influence contributed to their marijuana use, suggesting that the intervention strengthened the capacity to recognize and manage emotional antecedents of addictive behavior. These findings align with prior evidence that mindfulness-based therapies reduce emotional impulsivity and improve regulatory capacity among individuals with substance use disorders (Garland et al., 2017; Chambers et al., 2009).

Table 6: Paired Samples t-Test

Pair	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
MCQ (G1)	-13.90	17.06	3.115	-4.46	29	< .001
MAAS (G1)	18.00	16.98	3.100	5.81	29	< .001
ERS (G1)	-7.83	12.00	2.191	-3.57	29	.002
MCQ (G2)	0.07	1.99	0.363	0.18	29	.858
MAAS (G2)	0.47	1.55	0.283	1.65	29	.110
ERS (G2)	-0.87	5.79	1.057	-0.82	29	.420

Paired-samples t-tests confirmed statistically significant pre-to-post changes in all three outcome variables for the experimental group: MCQ, $t(29) = -4.46$, $p < .001$; MAAS, $t(29) = 5.81$, $p < .001$; and ERS, $t(29) = -3.57$, $p = .002$. The control group showed no statistically significant changes across any variable, confirming that observed improvements in the experimental group were attributable to the MBCBT intervention.

Table 7: ANCOVA Results for Post-Test Scores Controlling for Pre-Test Scores

Variable	Source	F	df	Sig. (p)	Partial Eta²
MCQ	Group	19.89	1, 57	< .001	0.26
MAAS	Group	33.76	1, 57	< .001	0.37
ERS	Group	12.75	1, 57	.001	0.18

ANCOVA confirmed significant group differences at post-test after controlling for baseline scores across all three outcomes. The group effect was significant for MCQ, $F(1,57) = 19.89$, $p < .001$, $\eta p^2 = .26$; for MAAS, $F(1,57) = 33.76$, $p < .001$, $\eta p^2 = .37$; and for ERS, $F(1,57) = 12.75$, $p = .001$, $\eta p^2 = .18$. These results establish that the intervention effect was statistically significant beyond baseline differences between groups.

Table 8: Effect Sizes for Within-Group Changes

Variable	Group	Cohen's d	Interpretation
MCQ	Experimental	0.81	Large
MAAS	Experimental	1.06	Large
ERS	Experimental	0.65	Medium
MCQ	Control	0.04	Negligible
MAAS	Control	0.30	Small
ERS	Control	0.15	Small

Effect size estimates confirmed the practical significance of the intervention. The experimental group yielded large effects for MCQ ($d = 0.81$) and MAAS ($d = 1.06$), and a medium effect for ERS ($d = 0.65$). The control group produced only negligible to small effects across all variables, further affirming that the changes observed in the experimental group resulted from the MBCBT intervention rather than natural variation.

THEMATIC ANALYSIS

The thematic analysis qualitative findings offered valuable contextualization to the quantitative results, as it showed how the participants underwent the MBCBT intervention. One of the main themes that arose was good participation and openness of the participants and most of the

participants were very active during the sessions and showed consistent attendance during the intervention period. This aspect of involvement implies that the subjects were sufficiently exposed to the therapeutic elements of the programme, which enhances internal validity of the research. Also, it was found that the participants underwent a significant emotional de-escalation and de-regulation when practicing mindfulness, suggesting the intervention was successfully applied to promote emotional awareness and alleviate distress within the session.

Moreover, the thematic analysis showed that the participants gradually acquired mindfulness and cognitive behavioural skills, such as the capacity to recognise triggers, cope with cravings, and use coping mechanisms, such as grounding and urge surfing. Group-based format was also instrumental in the improvement of peer-supported learning and creating openness, experience, and support among participants. The intervention was deemed as both possible and acceptable in the rehabilitation environment despite slight implementation issues (environmental distraction, disengagement in some cases). These qualitative data complement the statistical results that can prove that the intervention was effective, but how and why it led to the improvement in the mindfulness, emotional regulation, and behavioural outcomes.

CONCLUSION

This study demonstrated that Mindfulness-Based Cognitive Behavioural Therapy is an effective intervention for managing marijuana addiction among youths in selected rehabilitation centres in Kenya, producing statistically significant and practically meaningful improvements in craving reduction, mindfulness, and emotional regulation in the experimental group, while the control group receiving treatment-as-usual alone showed no comparable gains. The risk factor analysis further revealed that marijuana dependency among the study population was largely recurrent, characterised by repeated rehabilitation admissions and co-occurring substance use patterns, underscoring the limitations of conventional rehabilitation approaches and the need for more psychologically comprehensive interventions. The convergence of quantitative and qualitative evidence confirmed that MBCBT enabled participants not only to reduce addictive cognitions but also to develop enduring awareness, emotional insight, and behavioural coping skills applicable beyond the rehabilitation setting, thereby providing a strong empirical basis for integrating MBCBT into Kenya's existing rehabilitation frameworks as a structured, evidence-based relapse-prevention strategy.

RECOMMENDATIONS

Rehabilitation centres across Kenya should formally integrate structured MBCBT programs into their standard treatment protocols, ensuring that therapists receive adequate training in both mindfulness techniques and cognitive-behavioural skills, while policymakers and health stakeholders invest in early intervention initiatives within schools and communities to address marijuana use before severe dependence develops. Given that unemployment and socioeconomic vulnerability were identified as significant contextual risk factors, government agencies and community organizations should complement clinical interventions with youth empowerment programs offering vocational training and economic support, as these structural factors underpin much of the addiction burden among young Kenyans. Rehabilitation programs should further adopt holistic, individualized treatment models that incorporate co-occurring substance use screening, relapse history assessment, and sustained aftercare services, while public health campaigns are strengthened to correct misconceptions about the safety of marijuana and raise awareness of its mental health consequences, thereby creating a coordinated and multi-level response to marijuana addiction among Kenyan youth.

REFERENCES

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). American Psychiatric Publishing.

Anundo, J. A., Muaka, C. A., & Ongaro, K. (2022). A comparative study on effectiveness of mindfulness cognitive behaviour therapy and 12-steps model on relapse prevention among persons with substance use disorder in selected rehabilitation centres in Nairobi and Kajiado Counties in Kenya. *African Journal of Clinical Psychology, 4*(3), Daystar University.

Anundo, J. A., Muaka, C. A., & Ongaro, K. (2023). A comparative study on effectiveness of mindfulness cognitive behaviour therapy and 12-steps model on relapse prevention among persons with substance use disorder in selected rehabilitation centres in Nairobi and Kajiado Counties in Kenya. *African Journal of Clinical Psychology, 4*(3), 1–12. https://doi.org/10.1186/s12888-022-03802-9

Asanyo, K. L. (2019). *Factors associated with substance use among youth in colleges (18-25 years) in Mlolongo, Machakos County* (master's thesis). Jomo Kenyatta University of Agriculture and Technology.

Barré, T., Cherikh, F., Carrieri, P., & Marcellin, F. (2024). A call for mindfulness-based interventions for marijuana-use disorders. *Encephale, 50*(1), 118–120. https://doi.org/10.1016/j.encep.2023.06.015

Boness, C. L., Votaw, V. R., Schwebel, F. J., Moniz-Lewis, D. I. K., McHugh, R. K., & Witkiewitz, K. (2023). An evaluation of cognitive behavioural therapy for substance use disorder: A systematic review and application of the Society of Clinical Psychology criteria for empirically supported treatments. *Clinical Psychology (New York), 30*(2), 129–142. https://doi.org/10.1037/cps0000131

Brewer, J. A., Elwafi, H. M., & Davis, J. H. (2022). Craving to quit: Psychological models and neurobiological mechanisms of mindfulness training as treatment for addictions. *Psychology of Addictive Behaviors, 27*(2), 366–379.

Budak, F. K., Akbeniz, A., & Cumurcu, H. B. (2024). The effect of mindfulness-based psychoeducation on negative automatic thoughts and medication adherence in individuals with marijuana use disorder: A randomized controlled trial. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-024-01143-2

Carlon, H. A., Earnest, J., & Hurlocker, M. C. (2023). Is mindfulness associated with safer marijuana use? A latent profile analysis of dispositional mindfulness among college students who use marijuana. *Mindfulness, 14*(4), 797–807. https://doi.org/10.1007/s12671-023-02110-x

Dada, S., Burnhams, N. H., Laubscher, R., Parry, C., & Myers, B. (2020). Alcohol and other drug use trends: July–December 2019 (Phase 47). South African Community Epidemiology Network on Drug Use (SACENDU).

Dammers, M. (2023). *The application of mindfulness-based therapy (MBT) in substance use disorder (SUD): A scoping review*. Faculty of Behavioural, Management and Social Sciences, University of Twente.

Dey, M., Wenger, A., & Malischnig, D. (2022). Comparing a mindfulness- and CBT-based guided self-help internet- and mobile-based intervention against a waiting list control condition as treatment for adults with frequent marijuana use: A randomized controlled trial of CANreduce 3.0. *BMC Psychiatry, 22*, 456. https://doi.org/10.1186/s12888-022-03802-9

Eaton, S. L. (2019). *The history of cognitive-behaviour therapies*. https://doi.org/10.13140/RG.2.2.27628.33924

Garland, E. L., & Howard, M. O. (2018). Mindfulness-based treatment of addiction: Current state of the field and envisioning the next wave of research. *Addiction Science & Clinical Practice, 13*, 14. https://doi.org/10.1186/s13722-018-0115-3

Hines, L. A., Cannings-John, R., Hawkins, J., Bonell, C., Hickman, M., Zammit, S., Adara, L., Townson, J., & White, J. (2024). Association between marijuana potency and mental health in adolescence. *Drug and Alcohol Dependence, 261*, 111359. https://doi.org/10.1016/j.drugalcdep.2024.111359

James, S., Anoopa, K. R., & Jayims, B. K. (2024). Theoretical background of mindfulness-based play therapy. *Journal of Emerging Technologies and Innovative Research, 11*(5).

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*(2), 144–156.

Kamau, J., Njenga, A., & Muteti, J. (2022). Trends in marijuana addiction and rehabilitation outcomes among Kenyan youth. *African Journal of Alcohol and Drug Abuse*, *9*(1), 45–58.

Kestly, T. A. (2016). Presence and play: Why mindfulness matters. *International Journal of Play Therapy*, *25*(1), 14–23. https://doi.org/10.1037/pla0000019

Mutiso, V. N., Ndetei, D. M., Muia, E. N., Musyimi, C., Osborn, T. L., Kasike, R., Onsinyo, L., Mbijjiwe, J., Karambu, P., Sounders, A., Weisz, J. R., Swahn, M. H., & Mamah, D. (2022). Prevalence and perception of substance abuse and associated economic indicators and mental health disorders in a large cohort of Kenyan students: Towards an integrated public health approach and clinical management. *BMC Psychiatry*, *22*, 191. https://doi.org/10.1186/s12888-022-03817-2

Mutunga-Mwenda, C. S. (2015). Descriptive characteristics of psychoactive substance-dependent patients in Nairobi, Kenya. *International Journal of Medical and Health Science*, *1*(3). https://doi.org/10.53555/eijmhs.v1i3.97

NACADA. (2017). *Rapid situation assessment of the status of drug and substance abuse in Kenya, 2017*. National Authority for the Campaign Against Alcohol and Drug Abuse.

NACADA. (2024). *National survey on the status of drugs and substance use in Kenya*. National Authority for the Campaign Against Alcohol and Drug Abuse.

Nawi, A. M., Ismail, R., Ibrahim, F., Hassan, M. R., Manaf, M. R. A., Amit, N., Ibrahim, N., & Shafurdin, N. S. (2021). Risk and protective factors of drug abuse among adolescents: A systematic review. *BMC Public Health*, *21*(2088). https://doi.org/10.1186/s12889-021-12046-1

Ngarachu, E. W., Kiburi, S. K., Owiti, F. R., et al. (2022). The prevalence and pattern of marijuana use among patients attending a methadone treatment clinic in Nairobi, Kenya. *Substance Abuse Treatment, Prevention, and Policy*, *17*(1), 12. https://doi.org/10.1186/s13011-022-00437-7

Randhawa, A., Brar, M. S., Kumari, B., & Chaudhary, N. (2020). Sociodemographic profile and pattern of substance abusers: A retrospective study to unveil the public health problem of Punjab. *Journal of Family Medicine and Primary Care*, *9*(7), 3338–3342. https://doi.org/10.4103/jfmpc.jfmpc_499_20

Roos, C. R., Kiluk, B., Carroll, K. M., et al. (2024). Development and initial testing of mindful journey: A digital mindfulness-based intervention for promoting recovery from substance use disorder. *Annals of Medicine*, *56*(1), 2315228. https://doi.org/10.1080/07853890.2024.2315228

Sancho, M., De Gracia, M., Rodríguez, R. C., Mallorquí-Bagué, N., Sánchez-González, J., Trujols, J., Sánchez, I., Jiménez-Murcia, S., & Menchón, J. M. (2018). Mindfulness-based interventions for the treatment of substance and behavioural addictions: A systematic review. *Frontiers in Psychiatry*, *9*, 95. https://doi.org/10.3389/fpsyt.2018.00095

Scheier, L. M., & Griffin, K. W. (2021). Youth marijuana use: A review of causes and consequences. *Current Opinion in Psychology*, *38*, 11–18. https://doi.org/10.1016/j.copsyc.2020.06.007

Schneegans, A., Bourgognon, F., Albuisson, E., Schwan, R., Arfa, M., Polli, L., Moulard, M., Laprévote, V., & Schwitzer, T. (2021). Mindfulness-based relapse prevention for marijuana regular users: Preliminary outcomes of a randomized clinical trial. *ScienceDirect Assets*.

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2013). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse* (2nd ed.). Guilford Press.

Shrier, L. A., Harris, S. K., & Kim, S. (2022). Associations of momentary mindfulness with affect and marijuana desire in a trial of marijuana use interventions with and without momentary assessment. *Journal of Adolescent Health, 71*(6), 734–740. https://doi.org/10.1016/j.jadohealth.2022.09.002

Siegel, A. (2024). Mindfulness therapy (MT) for addiction: Definition, types, uses, techniques, and benefits. *Nature Reviews Psychology, 3*(2), 89–101. https://doi.org/10.1038/s44159-024-00283-3

Singh, S. P. (2023). Sakshi and Dhyana: The origin of mindfulness-based therapies. *BJPsych Bulletin, 47*(2), 94–97. https://doi.org/10.1192/bjb.2022.39

Srivastava, P., & Srivastava, M. (2024). The Buddhist perspective of mental health: Destigmatization and relevance in psychotherapy. *International Journal of Indian Psychology, 12*(1), 1628–1634. https://doi.org/10.25215/1201.150

United Nations Office on Drugs and Crime. (2019). *Drug use in Nigeria 2018*. UNODC.

United Nations Office on Drugs and Crime. (2023). *World drug report 2023*. https://www.unodc.org/unodc/en/data-and-analysis/wdr2023.html

Wellman, R. J., O'Loughlin, E. K., Sylvestre, M. P., Dugas, E. N., & O'Loughlin, J. L. (2023). Factors associated with marijuana use in early adolescence. *Health Promotion and Chronic Disease Prevention in Canada, 43*(1). https://doi.org/10.24095/hpcdp.43.1.02

Witters, D. (2024, April 18). Marijuana use greatest among lower-income and less educated. *Gallup*. https://news.gallup.com/poll/642851/marijuana-greatest-among-lower-income-less-educated.aspx

World Health Organization. (2014). *Global status report on alcohol and health 2014*. WHO Press.