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 Centers in Nairobi and Kajiado Counties in Kenya.

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Abstract

High relapse rates present significant challenges for substance use disorder (SUD) treatment. The purpose of this study was to compare effectiveness of mindfulness cognitive behaviour therapy (MCBT) and the 12-Steps model on relapse prevention among persons with SUD in selected rehabilitation centres in Kenya. Objectives of this study were to establish the baseline socio-demographic characteristics; types of substances abused and relapse rates from previous treatments; to compare post-discharge relapse performance of MCBT participants vs 12-Steps participants in selected rehabilitation centres in Kajiado and Nairobi Counties in Kenya. This study adopted quasi-experimental design targeting 96 rehabilitation centres, focusing on participants aged between 18 - 40 years. The study used a sample size of 120 participants from 6 rehabilitation centers. Purposive sampling was used to select the study sites while convenience sampling used to select participants. The rehabilitation centers were grouped into 3 experimental groups (MCBT) and 3 control groups (12-Steps). Data was collected through questionnaires and assessment tools consisting of a Socio-Demographic Questionnaire, Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), Alcohol Use Disorders Identification Test (AUDIT) and Advance Warning of Relapse (AWARE) Questionnaire. Quantitative data was analyzed using descriptive, inferential statistics. The study found that age and religiosity were significant SUD relapse risk factors. Generally, both interventions, MCBT and 12-Steps model, were effective managing SUD, however, it was evident that MCBT had a higher success rate than 12-Steps model in preventing SUD relapse. It is, therefore, recommended that SUD rehabilitation institutions in the country begin adopting MCBT. The study also recommends that among the SUD rehabilitation institutions that opt to continue with the 12-Steps model, their counsellors should be given additional training on MCBT. Finally, religious leaders as well as other stakeholders need to work on destigmatizing addiction and encourage treatment for persons with SUD and especially females with substance use problems.

Keywords: 12-steps, Mindfulness Cognitive Behaviour Therapy, relapse, SUD

Introduction and Background

Substance use disorder (SUD) is a condition that affects a person's brain and behaviour by impairing the individual's ability to manage the use of a legal or illicit substance or prescription (Yang et al., 2017). SUD is rapidly spreading around the globe and has been a perpetual health issue afflicting almost every country on earth (Rawson et al., 2015). According to the United Nations Office on Drugs and Crime's (UNODC) (2020) most recent World Drug Report, an estimated 269 million persons used drugs worldwide in 2018, up 30% from 2009, while over 35 million people suffer from drug use disorders.

During the addiction process there is a fundamental problem, in that individuals often make numerous unsuccessful efforts to stop substance use before they eventually succeed in stopping the behaviour (Luo et al., 2008). Therefore, the addiction progression can be seen as a repeated event (Hosseini et al., 2014). In other words, people who use psychoactive substances may relapse several times before they finally break free from the habit. Relapse is a term used to describe someone who has returned to drug or alcohol use after a period of abstinence or recovery from an addiction; even if it is just a single drink after abstaining for several weeks, months or years (Andersson et al., 2019). Rimaz et al. (2013) demonstrated that relapse into drug usage is strongly linked to personal, social, psychological and medical characteristics.

A survey by the Kenya's National Campaign against Drug Abuse (NACADA) (2017) revealed that 23.3% of Kenyans are abusing at least one drug. Among the largely misused substances include alcohol, tobacco, cannabis and Khat Despite the criminalization of substance use and possession, addiction continues to be on the rise in Kenya and the availability of drug treatment for addiction despite the increasing number of rehabilitation centers, there has been limited impact notably by the yearly relapse rate that is averagely reported at 60% (NACADA, 2017).

Treatment for SUD may be difficult because of the wide range of repercussions that addiction can have on a person's life, including their job performance, family and social relationships, and their physical and psychological health and well-being (WHO, 2014). Treatment of SUD is best accomplished via evidence-based interventions such as behavioural therapy (Connery et al, 2020). Relapse prevention is one of the main goals of behavioural therapy, which teaches people how to better handle circumstances that might lead to drug abuse and relapse (Jhanjee, 2014).

Behavioural therapies have evolved over the years in theory and application resulting to their classification into three distinct waves. The 12-Steps model is a second wave therapy and is the most commonly used in rehabilitation centers globally being used by at least by 74% of treatment centers universally (Bayles, 2014) including Kenya. Previous studies have shown that the 12-Steps model is effective in SUD treatment among adults (Alcoholics Anonymous World Services, 2018; Narcotics Anonymous World Services, 2018) and teens (Lee et al., 2017). However, several studies spanning four decades suggest that despite its broad acceptability in SUD management, the 12-steps model SUD patients have high rates of post-treatment relapse (Brandsma, Maultsby, & Welsh, 1980; Vallaint, 2003; Timko, DeBenedetti & Billow, 2006; Bowen et al., 2009; Kelly, Stout & Slaymaker, 2012; Bayles, 2014).

Traditional cognitive-behavioural treatments have evolved and expanded to include "third wave" cognitive behavioural therapies (Bass, van Nevel & Swart, 2014). As a result, the third wave of CBT has included enhancements such as mindfulness, which have evolved into entire programs. Evidently, the Mindfulness Cognitive Behavioural Therapy (MCBT) fit the description of the third wave behavioural therapies. With growing empirical evidence of its efficacy, CBT is now regarded as the gold standard in psychotherapy (David et al., 2018). There are considerable empirical studies showing the limitations of CBT as a gold standard (Kelly, 2017; Ray et al., 2020). Kelly (2017) even went as far as suggesting that Twelve-step facilitated (TSF) treatment programs yield better rates of sustained remission than CBT or motivational enhancement therapies (MET). However, in the case of MCBT, there is scarcity of comparative studies with other therapies especially 12-Steps model which is commonly used in rehabilitation centers in the country. The purpose of the study, therefore, was to compare the effectiveness of MCBT and 12-Steps model on relapse prevention among persons with substance use disorder in selected rehabilitation centers in Nairobi and Kajiado Counties in Kenya.

Methodology

This study adopted a quasi-experimental design targeting 96 accredited rehabilitation centers in the Country focusing on participants aged between 18 and 40 years. The study purposively selected 6 rehabilitation centers from Kajiado and Nairobi Counties as its study sites with a total of 120 participants sampled through convenience sampling. The rehabilitation centers were grouped into the experimental group comprising of three centers to which was administered the

Mindfulness Cognitive Behaviour Therapy (MCBT) as an intervention, and the control group also comprising of three centers which was taken through the 12-Steps model. Since the purpose of the study was to compare effectiveness of mindfulness cognitive behaviour therapy (MCBT) and the 12-Steps model, the control group comprised of participants receiving the 12 Steps model as treatment. Data was collected at 3 levels; at Baseline level during admission; at the Midline level when the MCBT and 12-Steps treatment models were being administered for a period of 8 weeks for the MCBT and 10 weeks for the 12-Steps model respectively, and; the End-line level for a period of 8 weeks after being discharged from the rehab (post-discharge) as the participants came back for aftercare program. The tools used during the study for the data collection are shown in Table 1.

Table 1: Data Collection Tools

Level of study	Tools	Purpose
Baseline	1. Socio demographic questionnaire 2. Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) 3. Alcohol Use Disorders Identification Test (AUDIT)	To establish the background characteristics of the subjects and their substance use trends
Midline	Observation Schedule (researcher designed)	To collect in-depth information about the participants' progress during the treatment sessions by capturing the responses to therapy
End-line	1. Advance Warning of Relapse (AWARE) 2. ASSIST 3. AUDIT	1. To assess the likelihood of relapse 2. To check for use of psychoactive substances 3. To check for alcohol use

The data collected was quantifiable owing to the scales used in the instruments. Therefore, quantitative techniques involving the use of both descriptive and inferential statistics were used. More specifically, descriptive statics used were frequencies to show the general trends of the constructs being assessed. For inferential statistics, the Pearson's Chi-square and Independent t-tests were used to establish the level of significance of the constructs being examined and also to carry out the comparisons within the groups. Data analysis was done with the aid of SPSS Version 24 and presented using tables. All ethical considerations were observed.

Results

Baseline Assessment: Socio-demographic characteristics, types of substances abused and relapse rates from previous treatments

Using the ASSIST and AUDIT tools, the study determined that all the 120 selected participants in both the experimental and control groups met the inclusion criteria for treatment for substance use disorder. Most of the participants were male (63.3%) and the average participant age was 29.98 years. Most of the participants (40%) were single and 72.5% of the respondents were Christians of whom 39.2% subscribed to the Protestant Christian faith. Further, most were university educated (42.5%) and were employed (65.8%). Substance use trends indicated that poly-substance use was most common among the participants. cannabis (76.2%), alcohol (70.8%) and Miraa (khat) (70.1%) respectively in that order were the most hazardously used substances. Additionally, 40.8% of the participants had been treated for substance use before suggesting that they had relapsed. Marital status ($p = 0.000 \leq 0.05$) and religion ($p = 0.000 \leq 0.05$) were significantly associated with substance use relapse.

End-line Assessment: Relapse Warning Signs Post the Intervention Period for 12-Steps & MCBT Using The AWARE Tool

The results showed that with an aggregate mean of 2.499 and a standard deviation of 1.800, the 12-Steps method was effective in reducing relapse inclinations of the Control Group participants after completion of the program and being discharged based on the scores on relapse warnings. The high standard deviation, however, indicates that the variations were high along the range of responses on all statements meaning that while there were those who had better responses to the program (minimum of 1 indicating never), there were those who were still unable to successfully adapt to the 12-Steps interventions (maximum values 6 and 7 indicating almost always and always).

Specifically, fewer participants reported that their drinking was still out of control (mean = 1.857), thought about drinking (mean = 2.045) and were doing something special to stay sober (mean = 2.179) compared to the other items which had higher means. However, the participants still experienced challenges in other areas of their lives such as insomnia (mean = 3.034), tunnel vision (mean = 3.310), having many problems in their lives (mean = 3.621) and feeling nervous or unsure of their ability to stay sober (mean = 3.690).

Concerning MCBT, with an aggregate mean = 1.854; SD = 1.141, it was evident that the MCBT program had been effective in reducing the relapse tendency among the Experimental group. The high standard deviation, however, indicates that the variations were not high based on the range of responses on all statements implying that while there had been better responses to the program (minimum of 1 indicating never) there were those who were still unable to successfully cope (maximum values 5 and 6 indicating almost always and always) respectively. Fewer participants reported that; their drinking was still out of control (mean = 1.536); they were doing something special to stay sober (mean = 1.543), and; they thought about drinking (mean = 1.552), and; they were feeling nervous or unsure of their ability to stay sober (mean = 2.914) as compared to the other items which had higher means. However, the participants still experienced challenges in other areas of their lives such as insomnia (mean = 2.257); engaged in wishful thinking (mean = 2.657); still had so many problems in their lives (mean = 2.943).

Table 2: Independent Samples Test for the 12-Steps and MCBT interventions (AWARE)

Statement	Levene's Test for Equality of Variances		t-test for Equality of Means			Mean Difference
	F	Sig.	t	df	Sig. (2-tailed)	
1. I feel nervous or unsure of my ability to stay sober	2.602	0.112	2.522	62	0.014	0.775
2. I have many problems in my life	2.764	0.101	2.283	62	0.026	0.678
3. I tend to overreact or act impulsively	13.433	0.001	1.275	62	0.207	0.504
4. I keep to myself and feel lonely	9.887	0.003	1.397	61	0.167	0.57
5. I get too focused on one area of my life	0.84	0.363	3.063	62	0.003	0.939
6. I feel blue, down, listless or depressed	0.452	0.504	2.946	60	0.005	1.062
7. I engage in wishful thinking	8.936	0.004	-0.278	62	0.782	-0.105
8. The plans I make fail	6.109	0.016	1.430	62	0.158	0.567
9. I have trouble concentrating and prefer to dream about how things could be	13.622	0.000	0.370	62	0.712	0.134
10. Things don't work out well for me	6.364	0.014	1.692	62	0.096	0.665
11. I feel confused	12.159	0.001	1.858	62	0.068	0.780
12. I get irritated or annoyed with my friends	18.592	0.000	0.628	62	0.533	0.237
13. I feel angry or frustrated	9.696	0.003	1.734	62	0.088	0.711
14. I do not have good eating habits	8.691	0.005	1.724	62	0.090	0.711
15. I feel trapped and stuck, like there is no way out	13.394	0.001	1.964	61	0.054	0.801
16. I have trouble sleeping	14.224	0.000	2.286	62	0.026	0.777
17. I have long periods of serious depression	16.231	0.000	2.162	62	0.034	0.802
18. I don't really care what happens	18.637	0.000	2.042	62	0.045	0.767
19. I feel like things are so bad that I might as well drink	13.455	0.001	1.706	49	0.094	0.721
20. I am not able to think clearly	18.735	0.000	1.941	61	0.057	0.700
21. I feel sorry for myself	23.878	0.000	2.130	62	0.037	0.808
22. I think about drinking	6.983	0.011	1.247	49	0.218	0.494
23. I lie to other people	17.266	0.000	2.038	61	0.046	0.786
24. I lack confidence and I feel hopeless	18.637	0.000	2.042	62	0.045	0.767
25. I feel angry at the world in general	16.33	0.000	1.851	62	0.069	0.699
26. I am not doing anything special to stay sober	11.584	0.001	1.712	61	0.092	0.636
27. I am afraid that I am losing my mind	15.132	0.000	1.953	62	0.055	0.733
28. I am drinking out of control	2.942	0.093	0.835	47	0.408	0.321

Table 1 suggests that the differences in means observed between 12-Steps and MCBT interventions in predicting relapse warning were significant in at least 10 out of the 28 items ($p \leq 0.05$, equality of variances assumed). In particular, significant differences were observed in; the feelings of lack of confidence and hopelessness ($p = 0.045 \leq 0.05$), lying to other people ($p = 0.046 \leq 0.05$), feeling sorry for oneself ($p = 0.037 \leq 0.05$), the attitudes about caring of outcomes ($p = 0.045 \leq 0.05$), having long period of serious depressions ($p = 0.034 \leq 0.05$) and trouble sleeping ($p = 0.026 \leq 0.05$). Other significant differences were observed in feeling blue, listless and depression ($p = 0.005 \leq 0.05$), getting too focused on one area of one's life (tunnel vision) ($p = 0.003 \leq 0.05$), having many problems in life ($p = 0.026 \leq 0.05$) and feeling nervous or unsure of one's ability to stay sober ($p = 0.014 \leq 0.05$). In all the 10 selected cases, the means of the MCBT were significantly lower than those of 12-Steps as shown in Table 3.

Table 3: Areas where MCBT was more effective than 12-Steps

	GROUPS	N	Mean	Std. Deviation	Mean Difference
I feel nervous or unsure of my ability to stay sober	Control	29	3.69	1.339	0.775
	Experimental	35	2.91	1.121	
I have many problems in my life	Control	29	3.62	1.293	0.678
	Experimental	35	2.94	1.083	
I get too focused on one area of my life	Control	29	3.31	1.339	0.939
	Experimental	35	2.37	1.114	
I feel blue, down, listless or depressed	Control	29	2.76	1.504	1.062
	Experimental	33	1.70	1.334	
I have trouble sleeping	Control	29	3.03	1.721	0.777
	Experimental	35	2.26	0.950	
I have long periods of serious depression	Control	29	2.34	1.876	0.802
	Experimental	35	1.54	1.039	
I don't really care what happens	Control	29	2.31	1.911	0.767
	Experimental	35	1.54	1.039	
I feel sorry for myself	Control	29	2.38	1.935	0.808
	Experimental	35	1.57	1.037	
I lie to other people	Control	28	2.36	1.929	0.786
	Experimental	35	1.57	1.092	
I lack confidence and I feel hopeless	Control	29	2.31	1.911	0.767
	Experimental	35	1.54	1.039	

Participants who had undergone MCBT had significantly better control over the relapse warning predictors compared to those of TAU. This was indicated by the comparatively lower means of MCBT to TAU on the statements and the high mean differences (the size effect being negligible as equal variances were assumed). This confirms that the observed differences in the aggregate means between the 12-Steps (mean = 2.499) and MCBT (mean = 1.854) were indeed significant and could predict the likelihood of the relapse rates among the participants drawn from both groups.

Discussion

The socio-demographic profile of the participants revealed that most of the participants were male (63.3%) and the average participant age was 29.98 years. The overall mean age of the participants was 29.98 years. This agrees with previous studies by Lipari and Van Horn (2017) and UNODC (2018) that showed that drug use was higher among people in their 20s. It was also

evident that there were more males in the rehabilitation programs than females. This may not necessarily reflect the SUD trends but rather as explained by Fox, Morgan and Sinha (2014), females with drug use disorders face a number of unique challenges when trying to get help and are underrepresented in treatment facilities. Their substance use issues are seldom recognized or even addressed by their families, and as such, most fail to get the therapy they need to overcome their addictions.

Most of the participants (40%) were single and 72.5% of the respondents were Christians of whom 39.2% subscribed to the Protestant Christian faith. The findings that single people were more inclined to be dependent on alcohol than any other group along the marital status, however, did not agree with Silveira et al. (2014) who found that being single was not necessarily an indicator of substance use as is the stereotype. Silveira et al. (2014) argued that single have a higher feeling of self-determination and tended to focus more personal development and as such were not highly susceptible to substance use. The findings that majority of the respondents were affiliated to a mainstream religion were rather confounding given that religion has been largely regarded as a protective factor against substance use. The findings, therefore, fail to support previous studies such as Lyons et al. (2010) and Moscati and Mezuk (2014) have found religion as a protective factor against substance use and also relapse.

Further, most were university educated (42.5%) and were employed (65.8%). The findings suggesting that a high proportion of the participants were university educated can be explained by Atwoli et al., (2014) who found that substance use among university students was high. The findings, however, revealed that majority of the participants were employed which is contrary to the majority of the studies that mainly attribute unemployment to substance use. For example, Henkel (2011) reported that unemployment was a significant risk factor for substance use and the subsequent development of substance use disorders. However, given that the present study was carried out in private rehabilitation facilities, cost could be a constraining factor for the potential participants. Since the rehabilitation centers were charging a substantial fee, most of the unemployed could not afford to enroll in the programs unless they had some form of sponsorship. Ntembi (2010), for example, found that unemployed drug users may not enroll or stay in treatment for a long amount of time because of the expenses.

Substance use trends indicated that polysubstance use (combining both alcohol and other drugs) was most common among the participants. cannabis (76.2%), alcohol (70.8%) and Miraa (khat) (70.1%) respectively in that order were the most hazardously used substances. The findings on polysubstance use trends agrees with Qadri, et al., (2013) who found significant polysubstance use among persons with SUD in India. However, the findings fail to support the findings of a Center for Behavioral Health Statistics and Quality (CBHSQ) Report (2016) which found that 1 out of 9 had both an alcohol-related problem and an illicit-drug-related problem in the US.

Additionally, 40.8% of the participants had been treated for substance use before suggesting that they had relapsed. Marital status ($p = 0.000 \leq 0.05$) and religion ($p = 0.000 \leq 0.05$) were significantly associated with substance use relapse. However, looking at the findings, it is evident that there was a relapse rate of 40.8%, this was lower than the yearly relapse rate of 60% reported by NACADA (2017) in Kenya. The findings are, therefore, not contrary to those of Okpataku et al. (2014) who found that marital status was a significant risk factor to substance use disorder. They also agree with Tesfaye, Derese and Hambisa (2014) who linked marriage with university students engaging in substance use.

In the post-discharge phase, the comparison of the post-discharge relapse prevention capabilities of MCBT vs the 12-Steps model revealed that, both interventions were effective in treating SUD, however, their levels of efficacy differed. On the basis of the aggregate mean score of 2.499 on the AWARE questionnaire, it was evident that the 12-Steps model method was effective in reducing relapse inclinations of the Control Group participants after completion of the program and being discharged. Findings from the Experimental Group (MCBT) also suggested that with an aggregate mean of 1.854 on the AWARE questionnaire, the MCBT program had been effective in reducing the relapse likelihood as the intervention progressed. The low means on the AWARE questionnaire among the former MCBT participants compared to participants who attended the 12-Steps model was, however, indicative the MCBT was more effective than 12-Steps model in preventing relapse.

This was further corroborated by the findings that there were significant differences in means observed between 12-Steps model and MCBT interventions in predicting relapse were significant in at least 10 out of the 28 items. This meant that participants who had undergone MCBT had significantly better control over the relapse predictors compared to those of 12-Steps

model. The findings, therefore, are contrary to those of Kelly (2017) who suggested that 12-step facilitated (TSF) treatment programs yield better rates of sustained remission than CBT or motivational enhancement therapies (MET). According to Humphreys et al. (2020), persons addicted to other drugs may have more difficulties than persons addicted to alcohol in sustaining meaningful participation in 12-Step groups. The findings are, however, in support of Vidrine et al. (2016) who demonstrated the effectiveness of MCBT by providing evidence that addiction treatment patients had achieved better abstinence and reduced relapse rates.

Conclusion

The study concludes that relapse risk was significant across age and religion demographics. However, while differences were observed across gender, employment and education level, the differences were not significant. Therefore, the study concludes that age was a SUD relapse risk factor. Religiosity too was a SUD relapse risk factor rather than a protective factor contrary to findings in previous studies. Generally, both interventions, MCBT and 12-Step model, were effective in inculcating life skills that helped participants manage their substance use habits. However, it was evident that MCBT had a higher success rate than 12-Step model in reducing relapse likelihood. Therefore, the study concludes that MCBT was a better intervention at preventing SUD relapse than the 12-Step model widely used in rehabilitation institutions.

On the basis of the evidence presented in the current study, it is therefore recommended that SUD rehabilitation institutions in the country begin adopting MCBT. The study also recommends that among the SUD rehabilitation institutions that opt to continue with the 12-Step model, their counsellors should be given additional training on MCBT so as to enable them to apply some of the strategies in their SUD rehabilitation programs. Policymakers should also help establish professionally managed community counselling centers across the Country where persons with SUD can find relevant information and counselling support in a cost-effective way. Further, in order to help patients to sustain sobriety and hence reduce relapse rates; rehabilitation centers need to create an extended post-rehabilitation program (aftercare programs) where they can track the progress of their patients for a longer period and offer them incentives for registering for additional rehabilitation support. Finally, religious leaders as well as other

stakeholders need to work on destigmatizing addiction and encourage treatment for persons with SUD and especially females with substance use problems.

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