Original Article

Effectiveness of Cue Exposure Therapy in the Management of Substance Addiction in a Tertiary Hospital in Enugu, South-East Nigeria: A Comparative Study

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Abstract

Background: Globally, psychoactive substance use and its resulting dependence are gradually attaining a menacing trend. Psychotherapeutic techniques like cue exposure therapy, in combination with other treatment approaches, may potentially produce better outcomes.

Objectives: This study aims to determine and compare the sociodemographic determinants, the relationship between sociodemographic characteristics and relapse, the distribution of psychoactive substances, the prevalence of relapse, and the mean duration to relapse among the cases (patients who received CET while on treatment) and control group (patients who did not receive CET while on treatment).

Method: This is a retrospective cross-sectional interventional study. From the case notes of 75 cases and 75 controls, information concerning sociodemographic characteristics, number of relapses, different psychoactive substances used and duration before relapses (latency to relapse) were retrieved. **Conclusion:** Overall, Nigerian pathologists' attitude to their role in suicide management is not positive. Their performance of this role is negatively affected by social factors surrounding a suicide event.

Results: The results showed a significant association between the number of relapses and sociodemographic variables of age, marital status and occupation. A significant majority of patients used cannabis; patients who received CET had significantly fewer relapses and had a significantly longer duration before relapse (relapse latency period) in comparison with controls (patients who did not receive CET).

Conclusion: CET, in combination with other evidence-based treatment modalities, produces better outcome measures in the management of patients with substance dependence.

Keywords: Effectiveness, Cue, Exposure, Therapy, Management, Substance

Introduction

Addiction involves craving something intensely, loss of control over its use, and continuing involvement with it despite adverse consequences. Addiction changes the brain, first by subverting the way it registers pleasure and then by corrupting other normal drives such as learning and motivation.1 In ICD-11, it is defined as a pattern of psychoactive substance use that appreciably increases the risk of harmful physical or mental health consequences to the user or others to an extent that warrants attention and advice from health professionals.

Cue Exposure Therapy (CET) is a behavioristic psychological approach to treating substance use disorders (SUD) whereby individuals are exposed to relevant drug cues to extinguish conditioned responses.[1,2] Essentially, CET entails exposing patients to drug cues as part of overall treatment for drug dependent patients after they have been taught appropriate and adequate adaptive coping mechanisms that they can apply whenever they have craving or urge to use the psychoactive substances.[2]

Cue exposure therapy (CET) for addiction is based on the assumption that environmental stimuli that are repeatedly associated with a drug can elicit conditioned responses that lead to craving and relapse.

Pavlovian or classical conditioning is the process of learning associations between stimuli and outcomes. In regards to addiction, drugs are an unconditioned stimulus that produces reliable biological and psychological unconditioned responses. It is believed that locations and stimuli that are present during drug use (e.g., sight and smell of drugs, glasses, syringes, friends, etc.) become conditioned stimuli that can produce a conditioned response similar to that of the unconditioned responses. A conditioned stimulus's ability to produce a conditioned response is believed to lead to motivational changes, such as cravings, which can trigger drug use and relapse.[1]

The procedure for CET exposes drug-dependent patients to the sight and smell of the drug without allowing consumption in an attempt to weaken the CS-US link through extinction and, by extension, attenuate cravings. It must first be noted that research on CET for addiction has been limited, with only 46 published randomised control trials over a three-decade period. Such a small amount of research limits our ability to draw firm conclusions from the data.

While some research has shown CET reduces cravings, increases the time to relapse and reduces the amount of drug use to a greater extent or at least equally to the comparison control treatment[2,3], CET has never produced long-term, complete abstinence for drug-dependent patients. Several important limitations are consistent across most CET research for all drug classes, which could confound the results and mask the potential benefits of CET. Firstly, the sample sizes of these studies tend to be small, and attrition rates tend to be high. Secondly, there is often a lack of control or no appropriate control group. Thirdly, they often lack interoceptive stimuli (e.g. moods, drug states) and only utilise a limited number of exteroceptive stimuli. The exteroceptive stimuli used have sometimes been standardised and not adapted to address the peculiarities of each patient.

This study aims to determine and compare the sociodemographic determinants, the relationship between sociodemographic characteristics and relapse among cases and controls, the distribution of psychoactive substances among cases and controls, the prevalence of relapse among cases and controls, as well as the mean duration to relapse among the cases (patients who received CET while on treatment) and control group (patients who did not receive CET) while on treatment.

Materials and Methods

Study location

This study was conducted at the Federal Neuropsychiatric Hospital in Enugu, Nigeria.

Study design

Retrospective case-controlled study

Ethical issues

This study did not involve any invasive procedures. The patient's identity was not disclosed at any stage of this study. Approval for the study was given by the ethical committee of the Federal Neuropsychiatric Hospital Enugu, Nigeria

Participants' selection

All new patients seen by the unit between January 2022 and July 2023 and who meet the ICD-10 diagnostic criteria for dependence syndrome had their case notes examined for duration of substance use, specific substances used, number of relapses, duration between discharge and relapse, duration of stay in treatment, and whether or not the patient received cue exposure therapy while on treatment as well as relevant sociodemographic information. Cases were respondents who were exposed to relevant physical drug cues while on therapy as part of the overall drug treatment. Respondents not exposed to relevant physical drug cues served as the Controls in this study.

Procedure

For this study, the collection of data was from March to September 2023. The researchers used a sociodemographic questionnaire to, collect information about age, educational status, occupation, marital status, previous history of psychiatric illness, and history of use of antipsychotic medications. A total of 150 case notes were studied.

Statistical analysis

Data were analysed using the personal computer version of the Statistical Package for the Social Sciences (SPSS- PC version 22). Categorical variables were compared using the chi-square test, while the t-test was used for continuous variables. All tests were two-tailed with a significance level set at 0.05%.

Sociodemographic characteristics of cases and controls

The mean (SD) age of cases was 29.96(6.321) years., whereas for the controls, it was 31.28(9.79) years. Among the cases, there were 71(74.7%) males and 4 (5.3%) females, while for the controls, there were 72(96%) males and 3(4%) females. Table1.

Relationship between sociodemographic characteristics and relapse among respondents

There was a significant association between the number of relapses and the age of patients (age >30yrs) for both cases (X^2=77.13, df= 4 p< 0.01) and controls (X^2=76.48, df=4, P<0.01). There was a significant association between marital status and number of relapses (X2= 77.07, df= 4, p<0.01). There was also a significant association between occupational status and the number of relapses (X2=94.52, df= 20, P<0.01). There is no association between gender and number of relapses for both cases (X_2=1.053, df=2, p=0.501) and controls (X_2=3.600, df=8, p=0.891).

Table 1 : Sociodemographic distribution of respondents

Variables	Frequency (%)	
	Cases N=75	Controls N=75
Age(years)		
10-20	2(2.68)	4(5.43)
21-30	48(64.1)	38(50.5)
31-40	20(26.8)	27(36)
41-50	5(6.7)	2(2.7)
51-60	-	2(2.7)
61-70	-	2(2.7)
Mean age (SD)	29.96(6.321)	31.28(9.79)
Marital status		
Single	66(88)	55(73.7)
Married	9(12)	20(26.3)
Educational status		
Primary	8(10.7)	27(36)
Secondary	45(60)	40(53.3)
Tertiary	22(29.3)	8(10.7)
Employment status		
Unemployed	30(40)	37(48)
Employed	45(60)	38(51.3)

Distribution of substance use among cases and controls

Most of the respondents (97.4% of the cases and 96.1% of controls) used cannabis. Among the cases that used cannabis, 30% used cannabis alone, while 67.4% used multiple substances. Among the controls who used cannabis,54% used cannabis alone, while 43.4% used multiple psychoactive substances.

Prevalence of relapse among respondents

Among the cases, 7(9.33 %) had a relapse, while 66(88%) of the control had a relapse.
The mean number of relapses among the cases was 0.17, whereas the mean for the controls was 3.37. This difference was statistically significant (Table 2).

Table 2: Relationship between number of relapses for cases and controls

	Test statistic			
Variable	**mean**	**t**	**df**	**p-value**
Cases	0.17	2.40	74	<0.001
Controls	3.37	12.06	74	

Duration before relapse among the cases and controls

The mean duration before relapse for cases was 14.4 months, whereas it was 5.16 months among the controls. This difference was statistically significant (t= 2.73 , df=74, p=0.008)

Discussion

Sociodemographic characteristics of cases and controls

This study used patients who met the criteria for dependence, whether inpatients or outpatients. This is similar to the cohort studied in an Egyptian study[4] Nevertheless, A 2010 study[5] studied only attendees at the outpatient clinic in the neuropsychiatry department of Tanta University Hospital. In this study, most cases were male, single, and employed. This is similar to the cohort used in a 2013 Malaysian study.[6]

Relationship between sociodemographic characteristics and relapse among respondents

The sociodemographic factors found to significantly influence relapse in the current study included age, marital status, and occupation. The results revealed that patients with Substance dependence aged below 30 years were more likely to have relapses. Our results are in agreement with some other studies[7,8], which found that younger patients were more likely to have an increased risk of relapse than older patients. On the contrary, some previous studies[9,10] reported no significant association between age and relapse among patients with SUD.

This study shows that relapse was commoner among the single than the married. Some other studies[10,11,12] had similar results. This could be due to the inevitable fact that this group of persons receive less family, social and emotional support. Therefore, they are more likely to experience a “slip” and ultimately drift back into a relapse. The index study shows that occupational status is significantly associated with relapse. A 2012 study[5] strongly supports this notion. Curiously, some other studies[8,13,14] vehemently disagree with this notion but instead report that employment is a significant risk factor for continued drug use. This may likely be because drug use is a very expensive habit; hence, employed persons are more likely to have the financial muscle to source for the large sum of money required to maintain this habit of continued drug use.

In this study, there was no significant association between gender and relapse among the cases and controls. Nevertheless, a recent study[15] clearly showed that there was a significant association between gender and relapse. it was reported that “among users, males generally exceeded females in meeting abuse criteria with some exceptions mainly in the youngest cohort”. The likely reason for this difference in the findings between this report and the report in this index study may not be unconnected with the study design and the proportion of the genders in the two studies.

Distribution of substance use among cases and controls

A significant majority of the respondents in this study used cannabis, but data collected from a 2020 report[16] shows that Alcohol was by far the most commonly abused in the United States. This was closely followed by nicotine before marijuana. A possible reason for this discrepancy is the relatively shorter duration (twelve months) covered by the 2020 data survey compared to this index study, which covered eighteen months. Conversely, a Systematic review[17] of 23 eligible Nigerian studies revealed that cannabis was the most commonly used psychoactive substance, closely followed by codeine, Amphetamine, Heroin and cocaine. This is in keeping with the findings in this index study.

Prevalence of relapse among respondents

This study showed that cue exposure therapy has a significant effect on the rate of relapse among drug-dependent patients who were exposed to physical drug cues as an integral part of their treatment while on admission. Similarly, in a meta-analytic review[18] following a systematic search of the literature, where a total of seven controlled trials were identified, CET showed no to small additional effects on drinking intensity and drinking frequency, a small additional effect on total drinking score and a moderate additional effect on latency to relapse. Stratification and analysis of a-priori-defined trial covariates revealed that CET may have an increased effect in the longer term and that CET combined with urge-specific coping skills may be the better option for treating AUD than conventional CET. In contrast, a previous meta-analytical review[19] showed that there is no consistent evidence for the efficacy of CET on substance use disorders (SUDs). A possible reason for this difference is, as identified by the authors themselves as a limitation to their study, the identified studies were heterogeneous regarding the included population, treatment approaches and applied methodology. Additionally, they reported that they had limited data.

Duration before relapse among the cases and controls

This study found that patients who received cue exposure as part of their treatment (cases) had significantly longer duration before relapse when compared to the controls (who did not have CET). This is similar to findings in a meta-analytic review18, which reported longer latency to relapse among patients who received CET as part of the treatment.

Author Contributions

All authors made substantial, direct, and intellectual contributions throughout all stages of this study, from conceptualisation to this final document.

Conflict of Interest

The authors declare that all the investigators conducted and solely financed the research, and thus, there is no potential conflict of interest.

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