



Effectiveness of Contingency Management Therapy on Drug Abuse Treatment among Teacher Trainees in Kano State, Nigeria

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Abstract. This study aims at investigating the effectiveness of contingency Management therapy on Drug abuse treatment among students of teacher training institutions in Kano State, Nigeria. The approach is Quasi-experimental, group counseling therapy was employed. The sessions took place two times in a month for three month at the interval of two weeks. The design is pretest-posttest, 15 students were used in the experiment obtained through purposive and simple random sampling techniques. The instruments use in data collection were contingency management treatment assessment questionnaire (COMTAQ), Interview and observation. The tools use in the analysis of data are Paired sample t-test, interview transcript analysis and observation rating scale. The finding reveals that contingency Management is effective, sig (2-tailed=.019), the interview result indicates effectiveness (High level) and the result from the observation is also effective (Cumulative average=1.70). It was therefore concluded that, use of positive and negative rewards can effectively change the behavior of a person. Based on the finding, recommendation was proffered which suggest that, management of the institutions need to provide adequate support through funding and provision of facilities to the directorate of counseling in each institution. That could enable an effective counseling/treatment to the client dealing with drugs in the schools.

Keywords: Contingency Management, Drug Abuse, Treatment and Teacher Training Institutions

1. Introduction

It has been established in so many countries of Europe, Asia, America and Africa that drug abuse became one of the major issue of concern due to its debilitating effect (Parrot 2004). It has no boundary, as it cut across ages, gender, social classes and status. The incidence of drug abuse in Nigeria, particularly in Kano State has been uprising, particularly with the involvement of students. Report, reveals the statistics of tobacco and marijuana use among students in Nigeria, indicated that 22.1% of students were involved (Josephine 2014). Kano State is the most highly populous State in Nigeria, with about 12million people (estimate 2011). The arrest and banning of sales of alcohol and all hard/illicit drugs in the State could not save the persistence of its use in the state.

2. Statement of the Problem

Abuse of drugs especially among youth in Nigeria is becoming terrifying, particularly in the north and specifically in Kano State. Efforts put by the government in rescuing the situation were prove abortive, because the menace persists. Dankani (2012) discloses that, prevalence of Marijuana and cough syrup in northern Nigeria is very high, with more than 6million bottles of cough syrups daily sold in northern Nigeria, and Kano State have the highest consumption rate. And National Drugs Law Enforcement Agency (NDLEA 2014) reported Kano State on the top of the list of States with high prevalence of drug abuse in Nigeria. The most unfortunate issue is the involvement of students, particularly those studying teacher training courses, who are expected to become teachers whose responsibility is training the younger ones to acquire knowledge, discipline and values to become responsible and productive members of the society. If this attitude continues among those students, the future of the society will be at a stake.

The persistence of the menace is believed to be attributed to the wrong approach use in dealing with the menace. The general perception sees the menace as criminal offence, instead of psychological problem. And all the measures taken were force related measures. This article focuses on the use of behavioral approach in which the victims could understand the danger of abusing drugs and conditioned them to change the behavior.

3. Methodology

This study aims at investigating the effectiveness of contingency management therapy in the treatment of drug abuse. The approach is quasi-experimental (group counseling) conducted within the period of three month, at the interval of two weeks, making six consecutive meetings. Design is pretest-posttest. The population is students studying teacher training courses in tertiary institutions in Kano. The subjects used in the experiment are 15 students from Sa'adatu Rimi College of Education and Bayero University, Kano representing the institutions. Cluster, purposive and proportional sampling techniques were used to obtain the subjects.

Positive and negative reinforcement were used contingents on certain behavioral changes. Positive reinforcement used is cash (#100) for attendance, Meal (with chicken and soda, beef and water, meal only) for punctuality, withdrawal of reward and officer report for distractions, praising (clapping and appreciation) for contribution and cash (#200 and #100) for task completion. Paired sample t-test and Mean, were used in the analysis of the results, complementing with interview and observation.

4. Literature Review

Contingency management or systematic use of reinforcement is a type of treatment used in the mental health or substance abuse fields.

The theory is based on the assumption that alcohol and drug use are behavior that is influenced by neurological and environmental factors; therefore, the destructive substance can be changed by offering consistent environmental consequences or alternatives that reinforce more positive, healthy behavior changes (Petry 2012).

Patients' behaviors are rewarded (or, less often, punished); for the adherence to or failure to adhere to program rules and regulations or the treatment. Forness, Kavale, Blum and Llyod (1997) believed that its procedures produce one of the largest effect sizes out of all mental health and educational interventions.

According to Pearson, Lipton, Cleland and Yee (2002), the use of behavioral learning techniques by contingency management help in changing the general adaptive behavior of the clients. This means to have the clients return to their natural environment with new repertoires of skills, so they can obtain reinforcement in socially acceptable ways. Reinforcement history is a particularly potent predictor of future addictive behaviors, (Blume2002). Addiction blog (2011) discloses that contingency management is a treatment strategy used in inpatient and outpatient rehab setting where clinicians provide positive consequences to encourage positive behavior and used negative or punitive consequences for changing unwanted behavior, and is particularly useful in group therapy settings which meet once or several times per week. Petry, et'al (2000) studied 42 alcohol dependent veterans who were reinforced for provided alcohol free breath samples and completing goal related activities. They use contingency management and standard treatment. The result shows that 69% in the contingency management group were abstinent from alcohol, after eight weeks of treatment, compared to 39% of those in standard group. Haertzen, Kocher and Miyasota (1983) in Blume (2002), disclosed that, positive reinforcement which may be directly related in strength to the level of euphoria, certainly can lead to habitual use of substance after initial experimentation. Other studies believed that negative reinforcement is also a strong predictor of problems with substance abuse over a lifetime, (Carey and Correia 1997).

Carroll and Onken (2005) posits that contingency management have been shown to be potent intervention for several forms of addiction, asserts that, contingency management in which patients receive incentives or rewards for meeting specific behavioral goals (verified abstinence) has particularly strong, consistent and robust empirical support across a range types of drugs use. Prendergast, Podus, Finney, Greenwell and Roll (2006) examine the effectiveness of contingency techniques in treating substance used disorders (SUDs), and found that it improves the ability of clients to remain abstinent. This finding contradicts the findings of Crowley (1999) that the effects of contingency management tend to weaken after the contingencies are terminated. Olmstead, Sindelar and Petry (2007) used contingency management in the out-patients treatment of people, who are dependent on heroin, cocaine, alcohol or multiple drugs, and also, described it as the most effective and cost efficient therapy for drug abuse treatment.

But for Crowley (1999) the cost of providing rewards and administering contingencies management system has been a barrier to the adoption of these approaches by the clinical community. Considering the cost effectiveness of contingency management treatment, Petry et al (2002) provides solution to the cost issue of using contingencies. But Carroll and Rounsaville (2003) posit that even though the lower cost contingency management approaches that use reinforcers without monetary value, and that reinforced behavior other than provision of drug free urine samples are promising strategies. Still there are no cost effectiveness data that might persuade policy makers and third party payers to support the approaches in clinical practice.

While, Petry and Lamb (2004) disclose that Token economies, Voucher programs and Level system are the major approaches in contingency management. Token economy as form of contingency management is structured to reward desired behaviors with tokens or points that may eventually be exchanged for tangible rewards. Stitzer, Bickel, Bigelow and Liesbson (1986) and Stitzer, Iguchi and Feltch (1992), pointed out that, allowing a patient the privilege of taking home methadone doses, contingent on the patient's providing drug-free urine specimens is associated with significant reduction in illicit drug use. Dolan, Black, Penk, Robinowitz and Deford (1985), and Onken, Blaine and Boren (1993) have the same opinion, maintaining that, positive incentives (reward of desired behavior) are more effective in producing improved substance use outcomes and in retaining patients in treatment.

However, NIDA (2012) points that, Voucher based reinforcement (VBR) is another approach of contingency management in which monetary value can be exchanged for food items, movie passes or other goods or services in consistently with drug-free life style. Silverman, Higgins, Brooner, Mantoya, Cone, Schuster and Preston (1996), asserted that Voucher- based incentives has been proved highly effective in reducing cocaine use in the context of methadone maintenance. Their study assess the effectiveness of voucher- based reinforcement therapy in producing sustain

cocaine abstinence, use 52 patients consecutively admit injecting heroin and 37 patients with heavy cocaine use during baseline period using randomized controlled trial. Their findings conclude that voucher- based reinforcement produces sustained cocaine abstinence in injecting polydrugs abuser.

Supporting this also, Bickel, Amass, Higgins, Badger and Esch (1997), found VBR effective in reducing smoking as well as illicit substance use among opiod addicts in a methadone maintainance program. Silverman, Wong, Umbricit-Schneiter, Mantoya, Schuster, and Preston (1998), found VBR effective in improving retention and abstinence in outpatient opiod detoxification. Shoptaw, Rotheram-fuller, Yang, Frosch, Nahom, Jarvick, Rawson and Ling (2002), found it very effective in reducing frequency of marijuana use. Budney, Higgins, Randonovich, and Novy (2000) and Carrol et'al (2002) found it effective in improving medication compliance among opiods dependent individuals treated with neltraxonemaintainance.

Prize incentives contingencies apply similar principles as voucher bases reinforcement, but uses chances to win cash prizes. Treatment can take at least three month, one or more times a week (NIDA 2012). The chance for obtaining the cash defends on the submission of drug-negative urine or breath tests draw from a bowl. Client may also receive draws for attending counseling sessions and completing weekly goal-related activities. The number of draws begins at one and increases with consecutive negative drugs tests and /or counseling sessions attended, but resets to one with any drugs-positive sample or unexcused absence. Petry, Tedford, Austin, Carrol and Rounsaville (2004) evaluated the efficacy of low-cost contingency management intervention for reducing cocaine use. One hundred and twenty were randomly selected as sample to one of the three twelve week condition, and standard treatment plus contingency management with an expected maximum of \$80 of reinforcement or standard treatment plus contingency management with an expected maximum of \$240 of reinforcement. Drug use was measured at intake and throughout a three month treatment period. The finding shows that those in \$240 contingency management condition achieve more abstinence than clients in the standard condition. However, other study asserts that task accomplishment plan when used with voucher is more effective in addiction treatment, (Iguchi, Belding, Andrew, Lamb and Stephen 1997).

5. Results

Paired sample t-test showing the effectiveness of contingency management therapy in the treatment of drug abuse.

Treatment	mean	N	Std. Deviation	t	df	Sig(2-tailed)
Pair pre-test scores- 1 posttest scores	3.3861 3.7694	15 15	.46730 .36626	-3.039	14	.019

Paired sample t-test was computed for the effectiveness of contingency management therapy in the treatment of drug abuse.

Table 4.9 shows the result obtains from a paired sampled t-test. The findings reveal that mean of the pretest =3.3861, and mean of posttest=3.7694, the number of subjects is 15, while the standard deviation obtains from the pretest=.46730, and the standard deviation obtains from posttest = .36626, the tval=-3.039, the degree of freedom is 14 and the Sig (2-tailed) = .019.

Qualitative Result – Interview

Do you think using positive reinforcement can enhance abstinence from drug abuse?

Tr1- 'Indeed, most of them require support. And if proper attention is given to them, they may possibly change'.

Tr2- 'Yes, especially if it is in terms of regular and closed interaction and support'.

Tr3- 'Of course yes, because in most cases poverty forced them into abusing drugs'.

Tr4- 'Yes, especially if their needs could be attended to (met)'.

Tr5- 'No, it could not change them in any way, because they are matured and sensible that ordinary gift could not influence them'.

The responses from the interview reveal that, four respondents (80%) opined that use of positive reinforcement could help client abstained from drug abuse, while one respondent (20%) opines that positive reinforcement could not change the behavior of drug abusers.

In your opinion, what could be the impact of negative reinforcement in drug abuse treatment?

Tr1- 'Well, it could be the best way, because for some people punishment easily controls their behavior'.

Tr2- 'It could make an impact especially on adult'.

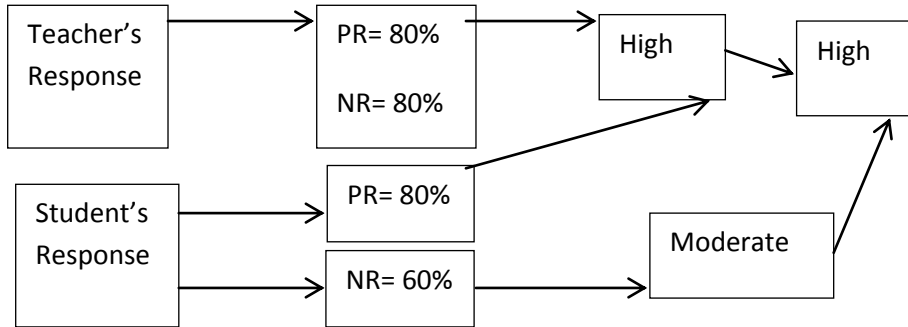
Tr3- 'It depends on the approach, because some people resisted'.

Tr4- 'It could be the fastest way of dealing with behavioral problems'.

Tr5- 'it could tur person to be good'.

The responses from the interview reveal that, three respondents (80%) opined that use of negative reinforcement could help client abstains from drug abuse, while one respondent (20%) believes that negative reinforcement could not change the behavior of drug abusers.

Interview Result on the effectiveness of CM



Qualitative Analysis Observation- Contingency Management Cumulative Behavior rating scale

	Grp	Attendance	Punctuality	Distraction	Contribution	Task Completion	Average
S/n		X/N	X/N	X/N	X/N	X/N	X/N
1	1	5	2.2	2.0	1.8	2.8	2.2
2	1	4	1.4	1.6	1.2	1.6	1.5
3	1	5	2.4	1.6	1.6	2.0	1.9
4	1	4	1.4	1.4	1.2	1.4	1.4
5	1	5	2.2	2.0	1.4	1.8	1.9
6	1	4	2.0	1.4	1.2	1.8	1.6
7	1	4	1.6	1.4	1.6	1.4	1.5
8	1	5	2.0	1.8	1.4	1.8	1.8
9	1	4	1.4	1.4	1.4	1.6	1.5
10	1	4	1.8	1.6	1.2	1.4	1.5
11	1	5	2.0	2.0	1.4	1.6	1.8
12	1	4	1.8	1.2	1.4	1.4	1.5
13	1	4	1.8	1.8	1.2	1.8	1.7
14	1	4	1.4	1.4	1.4	1.4	1.4
15	1	5	2.2	1.8	1.6	1.8	1.9
Total		4.40	1.84	1.62	1.32	1.68	1.70

Table 4.12 shows the individual and cumulative result obtains from the fifteen subjects of contingency management group through observation. The individual observation shows that, for client number one, attendance is 5, punctuality is 2.2, distraction is 2.0, contribution is 1.8, task completion is 2.8 and the average is 2.2 (Highly effective). For client number two, the attendance is 4, punctuality is 1.4, distraction is 1.6, contribution is 1.2, task completion is 1.6 and average is 1.5 (effective). For client number three, attendance is 5, punctuality is 2.4, distraction is 1.6, contribution is 1.6, task completion is 2.0 and average is 1.9 (effective). For client number four, attendance is 4, punctuality is 1.4, distraction is 1.4, contribution is 1.2, task completion is 1.4 and average is 1.4 (effective). For client

number five, attendance is 5, punctuality is 2.2, distraction is 2.0, contribution is 1.4, task completion is 1.8 and the average is 1.9 (effective).

The result of client number six shows that, attendance is 4, punctuality is 2.0, distraction is 1.4, contribution is 1.2, task completion is 1.8 and average is 1.6 (effective). For client number seven, attendance is 4, punctuality is 1.6, distraction is 1.4, contribution is 1.6, task completion is 1.4 and average is 1.5 (effective). For client number eight, attendance is 5, punctuality is 2.0, distraction is 1.8, contribution is 1.4, task completion is 1.8 and average is 1.8 (effective). For client number nine, attendance is 4, punctuality is 1.4, distraction is 1.4, contribution is 1.4, task completion is 1.6 and average is 1.6 (effective). For client number ten, attendance is 4, punctuality is 1.8, distraction is 1.6, contribution is 1.2, task completion is 1.4 and average is 1.5 (effective).

The result of client number eleven shows that, attendance is 5, punctuality is 2.0, distraction is 2.0, contribution is 1.4, task completion is 1.6 and average is 1.8 (effective). For client number twelve, attendance is 4, punctuality is 1.8, distraction is 1.2, contribution is 1.4, task completion is 1.4 and average is 1.5 (effective). For client number thirteen, attendance is 4, punctuality is 1.8, distraction 1.8, contribution is 1.2, task completion is 1.8 and average is 1.7 (effective). For client number fourteen, attendance is 4, punctuality is 1.4, distraction is 1.4, contribution is 1.4, task completion is 1.4 and average is 1.4 (effective). For client number fifteen, attendance is 5, punctuality is 2.2, distraction is 1.8, contribution is 1.6, task completion is 1.8 and average is 1.9 (effective).

The cumulative result obtains from the fifteen subjects of contingency management group through observation shows that total attendance for the whole session is Very High(4.40), the punctuality is Effective (1.84), Distraction is Effective (1.62), contribution is Effective (1.32) and Task completion is Effective (1.68), and the cumulative average is 1.70 (effective).

6. Discussion of findings

The result obtained from quantitative reveals that, contingency management has significant effect on the treatment of drug abuse (sig 2-tailed=.019). And, the Quantitative result also. Also the Qualitative result also shows that (Tr-PR=80%, NR=80% and Sr-PR=80%, NR=60%). And observation reveals that contingency management is effective (Cumulative average=1.70). Therefore the null hypothesis is rejected ($p < 0.05$). This means contingency management is effective in the treatment of drug abuse among the students.

This result agrees with Brigham et'al (1981), Dolan, Black, PenkRobinowitz and Deford (1985), Onken, Blaine and Boren (1993), Silverman, Higgins, Brooner, Mantoya, Cone, Schuster and Preston (1996) Bickel et'al (1997), Higgins et'al (1998), Budney, Higgins, Randonovich, and Novy (2000), Petry(2000), Miller (2002), Pearson, Lipton, Cleland and Yee and Shoptawet'al (2002), Carrol and Rounsenville (2003), Carrol and Onken (2005), Olmstead, Sindelar and Petry

(2007) Scott and Kreet (2013) who confirmed the effectiveness of contingency management therapy in the treatment of drug abuse.

This result agrees that appropriate reinforcement has impact in behavior change. Example, recognition through praising and given prizes to a positive behavior enhances the frequency of that behavior. Which means, the behavior could be modified by rewarding the action consistently and appropriately, whereas, withdrawal of reward especially when it is expected by the person seized unwanted behavior. Dolan et'al (1985), Onken, Blaine and Boren (1993), and Onken,(2005) posit that contingency management in which patients received rewards for meeting specific behavioral goals has particularly strong, consistent and robust empirical support across range types of drug use.

7. Conclusion

Based on the findings of the study, it is concluded that contingency management therapy is effective in the treatment of drug abuse. The quantitative result here shows the significant difference between the two tests and the qualitative result added with dimension and strength of the constructs as they lead to a behavioral change.

8. Recommendation

Based on these findings, the study suggested that, there should be sufficient facilities/funds provision to the counseling directorate.

Provision of sufficient facilities/funds could also make a great impact in dealing with the problem. Using contingencies either high or low requires support. For effective delivery of services by the counselors, the management of the institutions should consider the counseling programs in their budget and ensure that adequate fund is allocated to the directorate.

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