

The Effectiveness of Cognitive-Behavioral Group Therapy in Reducing Craving among Methamphetamine Abusers Living with HIV/AIDS

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Abstract

Background: This study aimed to determine the efficacy of cognitive-behavioral group therapy in reducing craving among methamphetamine abusers living with HIV/AIDS.

Methods: The study design was quasi-experimental with pre-test, post-test, follow-up and control group.

Objective: Sixty methamphetamine abusers living with HIV/AIDS were selected by convenience sampling. They were randomly assigned to the experimental and control groups. The experimental group received the cognitive-behavioral group therapy, while the control group did not. The research measurement instrument comprised the Desire for Drug Questionnaire (DDQ). Multivariate analysis of covariance (MANCOVA) models was employed to test the study hypothesis.

Results: The results showed that methamphetamine craving reduced among the abusers living with HIV/AIDS.

Conclusion: So, the principle and techniques of cognitive-behavioral therapy and the benefits of group therapy have an effect on craving among methamphetamine abusers living with HIV/AIDS.

Keywords: Methamphetamine abusers; Craving; HIV/AIDS; Cognitive-behavioral therapy; Group therapy

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Introduction

AIDS is one of the most serious challenges in the area of mental health and the world is committed to ending this epidemic by 2030 [1]. Presently, HIV is the largest infectious lethal virus and the fourth cause of death in the world [2,3]. Among people living with HIV/AIDS, methamphetamine abuse is highly prevalent [4]. They may abuse drugs for many reasons. On one hand, there is a significant interaction between mental health problems and HIV/AIDS [5]. According to the study of Kagee et al. [6], people living with HIV/AIDS suffer from major depressive, generalized anxiety, posttraumatic stress and alcohol use disorders. On the other hand, they tend to abuse drugs in order to be relieved of the psychological problems caused by the illness. Robinson

and Rempel [7] reported that people living with HIV/AIDS use methamphetamine to treat HIV-related depression, fatigue and neuropathic pain. Generally, drug abuse is an important factor that increases HIV infection because it leads to HIV transmission, discontinuation of treatment and more virus activity [8,9]. Also, methamphetamine abuse is coexisting with HIV infection because of the association between high risk behavior and methamphetamine abuse [10,11]. Also, methamphetamine abuse has a devastating effect on HIV infection. Liang et al. [12] showed direct evidences at the cellular and molecular levels, to support the concept that meth has a cofactor role in enhancing HIV infection and replication. Meth has malicious effects such as negative effect on body immunity, expanding the attainment of various pathogens and intensifying severity of

the illness [13]. Also, Massanella et al. [14] reported that meth abuse in people living with HIV/AIDS undermine their immune system and has a devastating impact on the illness. Furthermore, methamphetamine affects Monocyte Derived Dendritic Cells and enhances the HIV infection among people living with HIV/AIDS [15]. Potula and Persidsky [16] despite the limited available information suggested that methamphetamine can help in the extension of the virus, damage the immune system and exacerbate HIV-related side effects.

As mentioned earlier, methamphetamine abuse is a common behavior among people living with HIV/AIDS and has damaging impact on prognosis of the illness. Therefore, reducing methamphetamine craving among them can be beneficial. Among the addictive substances, amphetamines, especially meta-amphetamine has a high risk of dependence and may result in mental health problems [17]. United Nation Office for Drug Control and Crime Prevention [18] reported that over 35 million people regularly use amphetamine and methamphetamine. In Iran, methamphetamine which is known as the glass is one of the main substances abused. The frequency of glass abuse is 5.2 in the total substance abuse [19]. Methamphetamine is a stimulant and addictive substance. Its main compound is amphetamine ($C_9H_{13}N$). This substance strongly stimulates the dopamine system of the brain and immediately creates a state named rush or flash (pleasure condition) [20].

Among factors affecting substance abuse, craving plays an important role in maintaining substance dependency and relapse. Craving is an uncontrollable desire for substance abuse. The desire if not fulfilled, leads to a lot of psychological and physical suffering such as weakness, anorexia, anxiety, insomnia, aggression and depression [21]. Methamphetamine abusers experience a high level of craving [22,23]. Craving is related to inefficient beliefs. Three kinds of thought which are related to drug abuse and play a part in urges, craving and ultimately, the final use of drugs, have been introduced: anticipatory beliefs, relief-oriented beliefs, and permissive beliefs, and various ways have been described to evaluate more widespread, long-time beliefs related to drug abuse. Therefore, cognitive elements and behaviors caused by them play an important role in substance dependence [24].

Studies showed the effectiveness of various interventions in improving the condition of drug abusers living with HIV/AIDS. Carrico et al. [25] in a pilot randomized controlled trial, used multi component resilient affective processing (RAP) intervention that includes expressive writing exercises targeting HIV-related traumatic stress. The finding of this study showed significant reduction in the amount of methamphetamine used. In another pilot study, Zule et al. [26] used motivational interviewing (MI) intervention for reducing HIV risk among an out-of-treatment sample of men who have sex with men (MSM) and use methamphetamine. They suggested that MI intervention may be useful for reducing methamphetamine use and sexual risk among MSM who use methamphetamine. Mimiaga et al. [27] in a pilot trial used integrated behavioral activation and sexual risk reduction counseling for HIV-uninfected men who have

sex with men and abuse crystal methamphetamine. This study indicated statistical reduction in depression and poly-substance abuse. Furthermore, Landovitz et al. [28] conducted a pilot trial and used HIV prevention strategies for methamphetamine abusers who have sex with men. The results indicated that post-exposure prophylaxis (PEP) when combined with the contingency management (CM) is flexible, and acceptable as an HIV prevention strategy in methamphetamine-using MSM. Esposito-Smythers et al. [29] tested an integrated cognitive behavioral and contingency management (CBT/CM) intervention for young people living with HIV and with alcohol and/or cannabis use disorder in an open pilot trial. Results showed significant reduction in alcohol and marijuana use and related problems among them. Furthermore, several studies showed the effectiveness of various interventions in the treatment of people living with HIV and who use drugs [30-33].

Lee and Rawson [34] in a systematic review showed that cognitive-behavioral therapy is one of the most effective treatments for methamphetamine dependency. Therefore, several new studies showed the effectiveness of this intervention on methamphetamine dependency [35-38].

According to theoretical foundations and proposed research, the authors decided to test the effectiveness of cognitive-behavioral group therapy on reducing methamphetamine craving among methamphetamine abusers living with HIV/AIDS.

Materials and Methods

Research design and participants

The design of this study was quasi-experimental with pre-test, post-test, follow-up and control group. The convenience sampling method was used in this study. Statistical population consisted of all methamphetamine abusers living with HIV and benefited from positive club services. First of all, the participants were interviewed for basic evaluation. Then, they were assessed by urinalysis and Desire for Drug Questionnaire. Also, they all met some inclusion criteria: 1. positive Western Blot Test; 2. Methamphetamine abuse for more than 6 months; 3. the lack of psychotherapy simultaneously; 4. the absence of psychosis; 5. the lack of other substance abuse (only methamphetamine abuse). Finally, 60 methamphetamine abusers living with HIV/AIDS participated in this study. They were randomly assigned to two groups: experimental (30 people) and control groups (30 people). The experimental group received Cognitive-Behavioral Group Therapy, while the control group received no treatment.

The demographic information of the participants consisted of marital status, education, age and duration of methamphetamine abuse as presented in **Table 1**.

Measures

Desire for drug questionnaire

This questionnaire was designed by Franken et al. [39] and centered on craving. The scale assesses the craving at the moment. This questionnaire consisted of 13 questions and three

subscales. The first subscale contains seven items. This subscale is named "desire and intention" and shows the desire to abuse heroin. The second subscale of this questionnaire contains four items and they are on sedation of negative senses. This subscale is named "negative reinforcement". The third subscale is named "control" and contains items on the control of heroin use. Internal consistencies, as measured with Cronbach's alpha were 0.81, 0/84 and 0.79 for factors 1, 2 and 3, respectively. Test-retest reliability for these three subscales is as follows: "thought and interference" ($r=0.41$, $P<0.001$), "negative reinforcement" ($r=0.29$, $P<0.005$) and "control scales" ($r=0.23$, $P<0.05$) [39]. Hasani et al. [40] reported on the internal consistency of these subscales for methamphetamine abusers (desire and intention: 0.78, negative reinforcement: 0.65 and control: 0.81).

Procedure

Positive club provide psychological, pharmacological and supportive services to people living with HIV/AIDS. These patients benefit from these services voluntarily. Between the summer and fall of 2016, the members of positive club were invited to participate in this study. Among the 223 people living with HIV/AIDS who enrolled in the positive club, 123 were methamphetamine abusers. A total of 102 of them tended to participate in this clinical trial. First, the interview was conducted. This interview was on the history of methamphetamine abuse and demographic information. According to the inclusion criteria, 60 of them were eligible for the study. They were randomly assigned to two groups: An experimental group (30 people) and a control group (30 people). Before the pre-test stage, they signed the consent form. At the pre-test stage, they were assessed using

Table 1 Demographic information of participants.

Characteristics	Experimental group	Control group	Total
Marital status			
Single	12 (46.1%)	10 (41.6%)	22 (44.0%)
Married	6 (23.0%)	5 (20.8%)	11 (22.0%)
Divorced	7 (26.9%)	9 (37.5%)	16 (32.0%)
Widowed	1 (3.8%)	0 (0.0%)	1 (2.0%)
Education			
Illiterate	5 (19.2%)	4 (16.6%)	9 (18.0%)
Primary school	7 (26.9%)	6 (25.0%)	13 (26.0%)
Junior high school	8 (30.7%)	9 (37.5%)	17 (34.0%)
Senior high school	6 (23.0%)	5 (20.8%)	11 (22.0%)
University	0 (0.0%)	0 (0.0%)	0 (0.0%)
Age (mean \pm SD)	32.43 \pm 4.71	31.23 \pm 4.19	31.83 \pm 4.44
History of imprisonment			
Yes	14 (53.8%)	13 (54.1%)	27 (54.0%)
NO	12 (46.1%)	11 (42.3%)	23 (46.0%)
History of injecting drugs			
Yes	10 (38.4%)	8 (33.3%)	18 (36.0%)
No	16 (61.5%)	16 (66.6%)	32 (64.0%)
History of using narcotics			
Yes	13 (50.0%)	11 (45.8%)	24 (48.0%)
No	13 (50.0%)	13 (54.1%)	26 (52.0%)

the Desire for Drug Questionnaire. Then, the experimental group received 12 sessions of Cognitive-Behavioral Group therapy every week for 90 min, while the control group received no treatment. At the post-test stage, all the participants in the two groups filled out the DDQ. Three months later, the participants were invited to the positive club again and filled out the Desire for Drug Questionnaire as a follow-up stage. It should be noted that 4 people living with HIV in the experimental group and 6 people in the control group did not continue with the treatment for personal reasons. Finally, the data gathered from the 50 participants were analyzed (26 methamphetamine abusers living with HIV in the experimental group and 24 methamphetamine abusers living with HIV in the control group). Also after the end of study process, participants who fall in the control group received cognitive behavioral group therapy.

Intervention

Cognitive-behavioral group therapy was used in this study as an intervention. This intervention consisted of 12 sessions. The content of the therapy sessions is as follows: The first session is on individual motivational feedback and advantages and disadvantages of making changes, the second session is based on high-risk situation, triggers & cognitive theory of drug abusing, the third session discussed planning method to cope with craving, the fourth session focused on combating negative thoughts and cognitive restructuring, the fifth session explained how to deal with methamphetamine proposers, the sixth session is on the forecast of emergency situation, the seventh session was on assertiveness, in the eighth session, participants practiced anger management and stress reduction skills with role playing, the ninth session focused on planning for enjoyable activities, tenth session focused on the problem solving skill, the eleventh session focused on the communication skills, and the twelfth session was about topics related to the end of treatment. The content of the therapy session is based on the cognitive therapy of substance abuse [41], addiction recovery work book [42] and psychotherapy for substance abuse [43] (Table 2).

These sessions were held every week for 90 min. Group therapy session was conducted in therapy rooms of the positive club. These sessions were led by two certificated leaders who provided more training hours for cognitive-behavioral group therapy. They demonstrated good proficiency during the training course and then used for this study.

Statistical analysis

The data obtained from implementing the DDQ in pre-test, post-test and follow-up stages were analyzed by SPSS 21. In order to show mean, standard deviation and demographic information, descriptive statistics was used. From inference, the data multivariate analysis of covariance (MANCOVA) was used to test the assumption and control the effect of pre-test.

Results

Table 3 presents the mean and standard deviation of pre-test, post-test and follow-up scores of subscales of DDQ (desire and

Table 2 Summary of cognitive-behavioural group therapy sessions.

Session 1	Preparing and setting goals, familiarity between participants, introducing cognitive-behavioural therapy model. Training increasing motivation (hopes). Individual motivational feedback: the disadvantage of continued methamphetamine abuse for prognosis of HIV infection, advantages and disadvantages of making changes in methamphetamine abusing in general and especially in related HIV infection.
Session 2	Identifying high risk situation (intrapersonal and interpersonal). Identifying triggers (emotions, people, places and objects) and deal with them. Explanation of cognitive-theory of drug abusing: triggers- thoughts- craving addictive-behaviours. The participants were asked to explain the abuse of methamphetamine in this cycle.
Session 3	Elaboration the therapeutic goals for each participant, identifying the underlying factors for methamphetamine abusing, understanding craving and coping with it, planning methods to deal with cravings such as thought stopping techniques, practicing creating balance in decision making, and delayed methamphetamine abusing. Determining the assignment for the next session
Session 4	Paying attention to the two biases of participants about the treatment of methamphetamine use. Dealing with negative thoughts, the relationship between negative thoughts about HIV infection and emotions, coping with these negative thoughts and cognitive restructuring.
Session 5	Reviewing the assignments of last sessions, assessment of methamphetamine availability for each participant, identifying the methamphetamine proposers (friends and members of family), how to deal with methamphetamine proposers and determining assignment for the next session.
Session 6	Functional analysis of high-risk situation, forecasting and planning for emergency situation, planning for factors of unexpected triggers.
Session 7	Coping and refusing skills against direct suggestion for methamphetamine abusing, role playing for express the assertiveness answers.
Session 8	Anger management and methamphetamine abusing, identifying signs and symptoms of anger, relaxation skills, cognitive restricting about anger triggering thoughts.
Session 9	Checking the getting away from enjoyable activities as a results of drug abusing and HIV infection, planning for enjoyable activities as a healthy solution, making a commitment in order to addressing the enjoyable activities.
Session 10	Problem solving skills for solving problems about the complications of HIV infection and methamphetamine abusing: definition of the problems, providing possible solutions, choosing the best solution, evaluating the solution that selected.
Session 11	Creating new friendship with people living with HIV/AIDS who don't abusing methamphetamine and other drugs. Cutting of the relationship with friend and acquaintances who are drug abusers. Finding supportive groups and participating to the self-help programs.
Session 12	Reviewing the plans, palming for follow-up period and evaluating post-treatment, providing feedback for progressing, getting feedback from participants about successful and unsuccessful aspects of treatment and Discussed about issues in relation to the termination of treatment such as facilitation of the client's independent functioning, enhancement of the client's sense of competence, reinforcement of the use of social support, positive reinforcement of the client's gain, acknowledgement of the sense of loss, exploration of client's feeling about therapy termination, therapist's self-disclosure of feeling about conclusion, mutual feedback about therapy and review, management of any post-therapy contacts, etc.

intention, negative reinforcement and control). As shown in the table, the means of desire and negative reinforcement decreased and the mean of control subscale increased in the experimental group in the post-test and follow up stages.

Before presenting the results of MANCOVA to compare the experimental and control groups in terms of subscales of DDQ (desire, negative reinforcement and control), it was noted that the results of the Kolmogorov-Smirnov tests were not significant ($p > 0.05$). The lack of significance of the Kolmogorov-Smirnov tests indicates that the data is normal. The results of Box's tests were significant ($P = 0.001$). Therefore, the homogeneity of the variance-covariance matrix assumption was not supported. Since the homogeneity of the variance-covariance matrix assumption was not supported to investigate the significance of multivariate effects, Pillai's Trace tests were used for all the subscales (**Table 4**). These tests showed that the CBT has significant multi-variable impacts on the linear combination of the post-test of subscales.

To compare the means of subscales scores in the post-test in both groups, the tests of Between Subjects' Effects were used. This test for all variables showed a significant difference between the participants in the experimental and control groups in the post-test scores for desire ($F = 1102.08$, $P = 0.001$), negative reinforcement ($F = 282.07$, $P = 0.001$) and control ($F = 223.78$,

$P = 0.001$), Therefore, the results demonstrated the effectiveness of CBT in the experimental group when compared with the control group in terms of desire, negative reinforcement, and control (**Table 3**). The experimental group showed a significant difference when compared with the control group (**Table 5**). Furthermore, the test of between subject's effects indicated that there is significant difference between the methamphetamine abusers living with HIV/AIDS in both the experimental and control groups in follow up scores of all subscales (follow ups of desire $F = 282.07$ $p = 0.001$; negative reinforcement $F = 271.87$ $p = 0.001$; control $F = 153.31$ $p = 0.001$). Therefore, the results showed the effectiveness of CBT among methamphetamine abusers in the experimental group as compared to the control group. As shown in **Table 3**, the experimental group, in terms of desire and negative reinforcement showed a significant decrease and in terms of control, showed a significant increase as compared to the control group.

Discussion

This study examined the effectiveness of cognitive behavioral group therapy for reducing methamphetamine craving among methamphetamine abusers living with HIV/AIDS. As shown in **Table 5**, cognitive behavioral group therapy reduced craving in the experimental group as compared to the control group.

Table 3 Subscales of DDQ scores in the experimental group and the control group.

Groups	Variables	Stages	N	Mean	Std. Deviation
Experimental		Pre-test	26	41.23	4.87
	Desire and intention	Post-test	26	27.46	4.72
		Follow-up	26	32.19	5.72
control		Pre-test	26	21.53	2.80
	Negative reinforcement	Post-test	26	14.23	1.42
		Follow-up	26	16.57	2.36
	Control	Pre-test	26	5.69	1.22
		Post-test	26	10.96	1.18
		Follow-up	26	8.61	1.09
	Desire and intention	Pre-test	24	41.95	4.24
		Post-test	24	41.45	4.50
		Follow-up	24	41.79	3.98
	Negative reinforcement	Pre-test	24	22.33	2.83
		Post-test	24	22.41	2.87
		Follow-up	24	22.45	2.16
	Control	Pre-test	24	6.33	1.49
		Post-test	24	6.45	1.99
		Follow-up	24	5.33	0.96

Table 4 The results of multivariate test for DDQ.

Variables	Value	Hypothesis (df)	Error (df)	F	sig	Partial Eta Squared
Desire for drugs	0.97	6	40	278.31	0/001	0/97

Table 5 The results of test of between-subject effect for comparison groups in subscales of DDQ.

Variables	Source	Sum of Squares	df	Mean Square	F	P	Partial Eta Squared
Desire and intention	Post-test	1983.56	1	1983.56	1102.08	0/001	0/96
	Follow-up	856.68	1	856.68	282.07	0/001	0.86
Negative reinforcement	Post-test	649.80	1	649.80	428.78	0/001	0.90
	Follow-up	333.72	1	333.72	271.78	0/001	0.85
control	Post-test	296.76	1	296.76	223.78	0/001	0.83
	Follow-up	118.89	1	118.89	153.31	0/001	0.77

The results of the current study are consistent with those of Carrico et al. [25], Zule et al. [26], Mimiaga et al. [27] and Landovits et al. [28] in terms of reduction of methamphetamine use among people living with HIV/AIDS. Furthermore, the finding is the same with those of Esposito-Smythers et al. [29], Altice et al. [30], Safren et al. [31], Ingersoll et al. [32] and Feaster et al. [33] in terms of the effectiveness of interventions among drug abusers living with HIV/AIDS. Furthermore, the results of this clinical trial are in line with the findings of Baker et al. [35,44], Yen et al. [36], Alammehjerdi et al. [37] and Reback and Shoptaw [38] in terms of effectiveness of cognitive behavioral therapy on methamphetamine dependency.

As mentioned earlier, there is an association between HIV infection and drug abuse [45]. People living with HIV/AIDS and abuse drugs create more health problems for themselves [46]. In fact, addiction is a physical, psychological and social illness. This illness itself is the cause of other illness such as AIDS [47]. This study showed that cognitive behavioral group therapy reduced craving among methamphetamine abusers living with HIV/AIDS. Several important factors contributed to the success of this clinical trial. First, all methamphetamine abusers living with HIV/AIDS participated in this study voluntarily. This means that they were very enthusiastic to reduce their craving.

The second factor is the effects of the elements of cognitive-behavioral therapy. Emphasizing on identifying cognitive distortion of patient is the key success of cognitive-behavioral therapy. Identification and awareness of thought is not possible through pharmacotherapy. And this is one of the reasons why this therapy is important. Teaching tasks such as functional analysis, learning skills and dealing with consumer desire increase the motivation of abusers and staying in treatment [48]. The finding of this study showed that cognitive-behavioral therapy helps methamphetamine abusers living with HIV/AIDS to identify triggers of internal and external craving. Also, they learned how to choose alternative ways to deal with craving. Triggers, psychological factors [49] and social aspects [50] have an important role in drug abuse. More clearly, in this model, participants were able to identify the high risk situations, and then they applied effective strategies to deal with them. In fact, participants by using effective coping strategies (for example: a behavioral strategy like leaving a situation or a cognitive strategy like positive self-talk), were able to cope with high risk situation.

This strategies help to reduce craving. This means that people living with HIV/AIDS and have effective coping skills as compared to those who do not have these skills, are less at risk of craving

and relapse. Also, cognitive behavioral therapy by using cognitive restriction, challenged the methamphetamine abuser believes on the consequence of methamphetamine abuse, because drug abusers, before consuming substance, have positive expansion, while drug abuse in the long term have negative outcomes. Cognitive restriction helps methamphetamine abusers living with HIV/AIDS, put aside the unrealistic expectations of drug abuse. Furthermore, problem solving training is one of the most important elements of cognitive-behavioral therapy in this study. In fact, one of the theories on the etiology of substance dependence has suggested that people tend to abuse substances in order to get rid of aversive emotional states and emotional tensions [51-53]. Therefore, drug abusers when faced with stressful events, use ineffective emotions and abuse substance instead of using problem-oriented strategies. Therefore, learning problem-solving skill helped the participants to use problem-solving strategies in high risk situation. Problem solving and other life skills led to more social acceptability, which in turn reduced drug abuse tendency [54]. Self-regulation was an effective component of cognitive-behavioral therapy in this study. It is an important factor in refraining from drug abuse [55-56]. By learning self-regulation, the participants were able to control their thought and emotions towards abusing the drug. Another reason for the effectiveness of this study is a change in lifestyle of the participants. Several studies showed that if the lifestyle of drug abusers cannot be changed with the intervention, they will re-abuse the drugs due to the nature of relapsing. Therefore, change in lifestyle could reduce craving and increase the period of abstinence [57]. In the Beck's theory, negative emotions and being able to manage them is one of the most important stimulants in drug abuse. Drug abusers who utilize better emotion regulation strategies are more successful in the recovery process. Vice versa, drug abusers who are unable to control their emotions, will likely be permanent consumers of drugs [58]. Sin and Lyubomirsky [59] showed that psychotherapy based on cognitive-behavioral approach is one of the most complete and effective therapies for substance abuse because drug abuse is considered as an individual, social, personality and behavioral problem. Cognitive-behavioral therapy helps methamphetamine abusers to change distorted thoughts and ineffective behaviors. In order to achieve these changes, they used regular discussions, behavioral assignments, exactly organized behavioral and cognitive tactics. A number of behavioral and cognitive assignments are used in the field of assertiveness, relaxation, decision making, problem

solving, communication with others, and time management [60]. It seems, cognitive-behavioral therapy theoretically and practically, have a great impact on positive believes, controlling the craving for abusing methamphetamine, quality lifestyle and individual and social relationship.

The third factor that contributed to the success of this clinical trial is the use of group therapy. Bateganya et al. [61] in a systematic review of the literature, reported that using support groups as an intervention is expected to have a high impact on morbidity and retention in care and a moderate impact on mortality and quality of life of people living with HIV/AIDS. Also, group therapy is a useful model for the treatment of abuse [62,63]. Group therapy provided a supportive condition for methamphetamine abusers living with HIV/AIDS. The current study shows the advantages of group therapy to addicted people, these include providing affirmative support and pressing to keep away from abusing drug, reduction of the feeling of isolation that most drug abusers experience, making it possible for drug abusers to witness the recovery of other drug abusers, facilitating clients to learn how to cope with their drug abuse and other problems by allowing them witness how others manage similar problems, providing feedback on the values and abilities of other group members, and confronting individual members on drug abuse and other damaging behaviors [64].

Conclusion

The finding of this study showed that cognitive-behavioral therapy reduced methamphetamine craving among its abusers living with HIV/AIDS. As mentioned in the introduction, methamphetamine abusers living with HIV/AIDS encounter critical condition because of the progressive nature of the disease. Cognitive-behavioral group therapy helped the participants to reduce their amphetamine craving, by using various skills and benefits of group therapy. Therefore, this clinical trial indicated that the use of techniques and principle of cognitive-behavioral group therapy can be useful treatment to help methamphetamine abusers living with HIV/AIDS. It is hoped that in the future, informed pilot studies will be used to improve the condition of this particular group of people.

Conflict of Interests

The authors declare that they have no competing interests.

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