Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/13137
DOI URL: http://dx.doi.org/10.21474/IJAR01/13137

RESEARCH ARTICLE

TAILORING EVIDENCE-BASED INTERVENTIONS TO REDUCE METHAMPHETAMINE USE AMONG HIV-POSITIVE PATIENTS ON METHADONE IN HO CHI MINH, VIETNAM

Han Dinh Hoe[1], Tran Van Huong[1], Khoa Tran[1], Nguyen Van Hai[1] and Nguyen Thi Lien[2]

1. Hanoi Medical University, Center for Research and Training on Substance Abuse and HIV, Hanoi, Vietnam.
2. University ofLabour Social Affairs.

Manuscript Info

Manuscript History
Received: 10 May 2021
Final Accepted: 14 June 2021
Published: July 2021

Key words:-
Methamphetamine, ATS, Methadone, Vietnam

Abstract

This study evaluated the effectiveness of evidence-based intervention to reduce methamphetamine (MET) use among HIV-positive users in Ho Chi Minh. A total of 236 HIV-positive patients were screened, 71 (30.1%) met the inclusion criteria and 51 (71.8%) were enrolled. Of those enrolled, 49 completed 12 weeks of the intervention, most (?%) of whom used amphetamine-type substances at moderate or higher risk of dependence. The intervention reduced the rate of positive urine MET tests from 54.9% to 12.5%. Participants at intermediate risk for MET (93.1%) were significantly more likely to respond to positive behavior management during the first 6 weeks than participants at high-risk (6.9%, p=0.01). The responder group with positive behavioral management (n=29, 56.8%) received phone/SMS intervention during the latter six weeks of the study and were able to maintain negative urine drug tests. In the non-responder group (n=20), there was no significant difference between the group receiving the Matrix intervention and the group receiving the Matrix intervention in combination with positive behavior management. At the end of the study, 31% of responders and 35% of non-responders had viral loads below the detectable threshold. The results of the study suggest that an evidence-based intervention can reduce the MET use among HIV-positive methadone patients. More studies with larger sample size are needed to better evaluate the effectiveness of interventions as well as their feasibility for widespread adoption.

Introduction:-

Methamphetamine (MET) is a widely used and highly addictive illicit drug. Among people living with HIV who also have MET addiction, MET use reduces the effectiveness of HIV and substance abuse treatment programs. A 2016 study in Hai Phong, where the HIV epidemic among injecting drug users was thought to be under control, found that injecting drug users with concomitant MET use were less likely to enroll in methadone treatment compared to those without MET use [1]. Le Minh Giang et al. (2016) reported that in the group of HIV-positive injecting drug users who were randomized to receive buprenorphine (BUP) or Methadone, MET use was associated with reduced ART adherence and reduced viral load control at non-infectious levels at during 6-month study period [2]. These studies illustrated the negative impact of MET use in HIV treatment, however, there are few studies on opioid dependent patients especially those who are in methadone treatment. The status of Amphetamine type

Corresponding Author:- Han Dinh Hoe
Address:- Hanoi Medical University, Center for Research and Training on Substance Abuse and HIV, Hanoi, Vietnam.

substance (ATS) use among people in methadone treatment [3] [4] , as well as interventions to reduce ATS and MET use in Vietnam have not yet been fully described.

Currently, behavioral interventions for people who use stimulant substances, including MET, have proven effective not only in reducing MET use but also in keeping people in treatment. Interventions based on cognitive behavioral theory (CBT) have been shown to improve treatment outcomes compared to other methods in treating MET dependence [5]. A meta-analysis of 53 CBT interventions with randomized controlled trial design [6] to treat illicit drug and alcohol use disorders showed promising and consistent results across studies. Another systematic review of the treatments for MET use disorder also showed positive and consistent effectiveness of CBT in reducing MET use [7]. Interventions using positive behavior management (CM) are also described in the studies. A meta-analysis of the efficacy of CM in treating stimulant use disorders showed a therapeutic effect in the range of 0.4-0.6 [8] Both methods, CBT and CM, demonstrated remarkable effects and were suitable for application in the substance abuse treatment system [3] The Matrix model described in the literature has shown the need to develop new treatment approaches to respect the cultural context and stigma-related issues among key populations, not just substance users (eg, male/male sex workers or male/female sex workers) [9] One such development was the increasing use of text message (SMS) in healthcare and public health programs. A study by Redback et al. reported that using SMS to provide information and interact with MET users was effective in retaining people in treatment, reducing MET use, and reducing HIV-risk sexual behaviors [10]. CM-based intervention was effective when combined with cognitive behavioral therapy and motivational interviewing [11]. The combination of motivational interviewing and CBT was able to significantly reduce MET use in HIV-positive men who have sex with men [12] However, in treating opioid addiction, systematic reviews reported inconsistent effectiveness of interventions that combined psychological and pharmacological treatments [13] And studies evaluating intervention for opioid addiction using a combination of psychological intervention and methadone more common compared to intervention studies on MET addiction.

Vietnam faces an increasing prevalence of ATS use disorder [14], which raises concerns about the HIV epidemic among non-injecting drug users [15] and poses a risk to the sustainability of the newly established substance abuse treatment system, especially the MMT program [16] Other Southeast Asian countries also face similar challenges [16]. Because of limited resources, it is challenging in low- and middle-income countries to address substance abuse. It is important to identify evidence-based intervention models that are culturally appropriate and effective [17]. This study evaluated an evidence-based intervention to reduce MET use among HIV-positive methadone patients in Ho Chi Minh, Vietnam.

Methods:-

Participants

Opioid dependent patients from three methadone treatment facilities in district 4, 8, and Binh Thanh, Thu Duc districts of Ho Chi Minh, Vietnam, were eligible to participate in the study if they were: (1) aged 16 or older, (2) HIV-positive, (3) at moderate or higher risk of ATS use per the ASSIST scale (ASSIST score ≥4) and/or positive for MET per urine test, and (4) able to consent and sign an agreement to participate in the study.

Methods

This study utilized one group comparing pre- and post-intervention, without a control group. The study period was between January 2019 and November 2019.

Description of interventions:

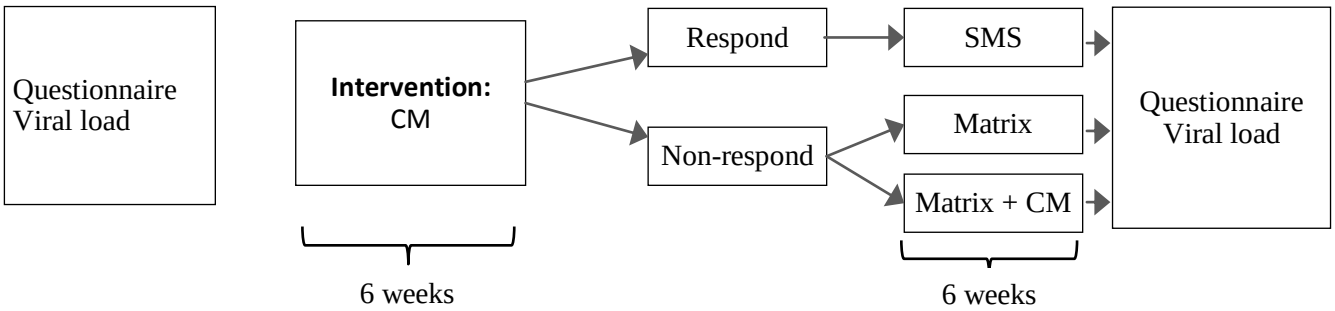


Figure 1:- Adaptive design model.

The positive behavior management (CM) intervention consisted of a points and rewards system based on urine drug test results (two tests per week) in order to motivate and encourage the participants to achieve treatment goals.

The matrix intervention model consisted of a combination of group counseling (one time/week) and individual counseling (two times/week) to teach knowledge and skills to control the use of MET.

In the phone/SMS intervention, participants received six automatic text messages on the Sunday of the intervention week. The messages asked the participants to update their status regarding substance use, family, and work. Every Sunday, after receiving the messages, the participants replied via SMS with their answers to each question

Important evaluation criteria/definitions used in the interventions:
Methamphetamine-free week (MET-free week): MET-free week was defined as the week that a participant had two negative urine drug tests for MET. A responder is a participant with two MET-free weeks at week 5 and week 6 of the intervention. Non-responders were those tested positive for MET at weeks 5 and 6.

The intervention included the following steps:
Step 1: Patients in opioid addiction treatment in district 4, 8, and Binh Thanh, Thu Duc districtswere screened for eligibility based on above-mentioned selection criteria.
Step 2: All participants received CM intervention for six weeks.
Step 3: After six weeks, all patients were assessed based using the responder/non-responder definition described above and assigned to the intervention subgroup:

+ Patients who responded (being MET-free at week 5 and 6) after the first six weeks of intervention received the phone/SMS intervention for the next six weeks (subgroup 1)

+ Patients who did not respond after the first six weeks of intervention will be randomly assigned to two subgroups, each received one of two types of intervention: matrix intervention (subgroup2) or matrix intervention combined with CM (subgroup 3).

Step 4: After a total of 12 weeks, participants in the three subgroups were assessed based on assessment criteria and study indicators.

Variables
Collected data included age, gender, education level, marital status, employment, ATS use status, self-confidence level about reducing ATS use, HIV treatment adherence, HIV viral load before and after intervention, mental health (PHQ-9), quality of life (EQ-5D-5L), satisfaction with the implementation of the intervention (VAS), and satisfaction with the intervention (TCU).

Data collection and analysis
Participants were interviewed using questionnaires before the intervention (week 1) and at the end of the intervention (week 12). Data were collected using quantitative questionnaires, data collection forms for methadone and ARV medical records. Weekly urine test results and information related to ART were extracted from medical records.

Data was collected using a tablet computer and stored using the REDCap online tool. Stata 14.0/MP software was used for cleaning and analysis. Mean, median, and percentages were used to describe socio-demographic characteristics, substance use characteristics, risk behaviors, and level of satisfaction with the intervention. Student's t-test (or Mann-Whitney test) and chi-squared test (or fisher exact test) were used to compare the participants' characteristics and intervention indicators among the three intervention groups. McNemar's test was used to compare the proportions of participants reporting using ATS before and after receiving intervention.

Ethics in research
The study was approved by the Ethics Committee in Biomedical Research, Hanoi Medical University, No. 29 HMUIRB on August 6, 2019.

Result:-

Characteristics of the participants

Table 1 describes socioeconomic characteristics of 51 participants. The average age was 40.9 years old (SD = 6.3). All participants were of Kinh ethnic group. Most were male (88.2%), had a high school education or less (92.2%), and about 45.1% were married. The average income was about 8 million VND per month. A little more than half of the participants mainly worked in street sales, security, cleaning and unskilled labor (54.9%), and about 13.7% were unemployed.

Characteristics	**N**	**%**
Age (Mean ± SD)	40,86 ± 6,32	
Male	45	88,24
Female	6	11,76
Ethnic		
Kinh	51	100
Others	0	0
Education		
Lower than high school	47	92,16
High school and above	4	7,84
Marital status		
Married	23	45,10
Single	16	31,37
Others	12	23,53
Occupation		
Low-skilled jobs	28	54,90
Unemployed	7	13,73
Others	16	31,37
Average income per month	8096 ± 8627,26	

Figure 1:- Sociodemographic characteristics (N=51).

Substance use

Table 2 describes the status of substance use in the 30 days before and after the intervention of the study participants. After 12 weeks of intervention, the participants were significantly less likely to use MET compared to before the intervention. The participants were also less likely to use heroin and opioids, but the decrease in proportions was not statistically significant.

	Before intervention (n = 49)		**After intervention (n = 49)[a]**		**p-value***
	n	**%**	**n**	**%**	
Heroin use in the last 30 days					
No	35	71,4	41	83,7	0,083
Yes	14	28,6	8	16,3	
METH use in the last 30 days					
No	14	28,6	34	69,4	**<0,001**
Yes	35	71,4	15	30,6	
Some symptoms related to substance use in the last 30 days					
No	24	49,0	26	53,1	0,593
Yes	25	51,0	23	46,9	

Figure 2:- Status of substance use before and after intervention

Effectiveness of the intervention

The proportions of participants with positive urine tests for MET and opioids during 12 weeks of intervention are shown in figure 1. At the start of the study, 54.9% of the participants had a positive urine test result for MET and 25.5% positive for opioids. After 12 weeks, the proportions of positive urine tests were 12.5% and 14.6% for MET and opioids, respectively.

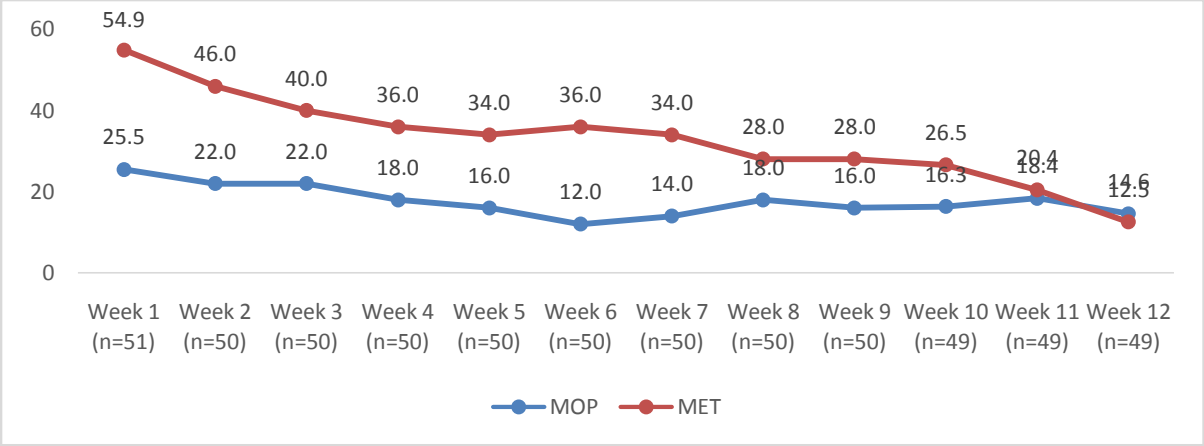
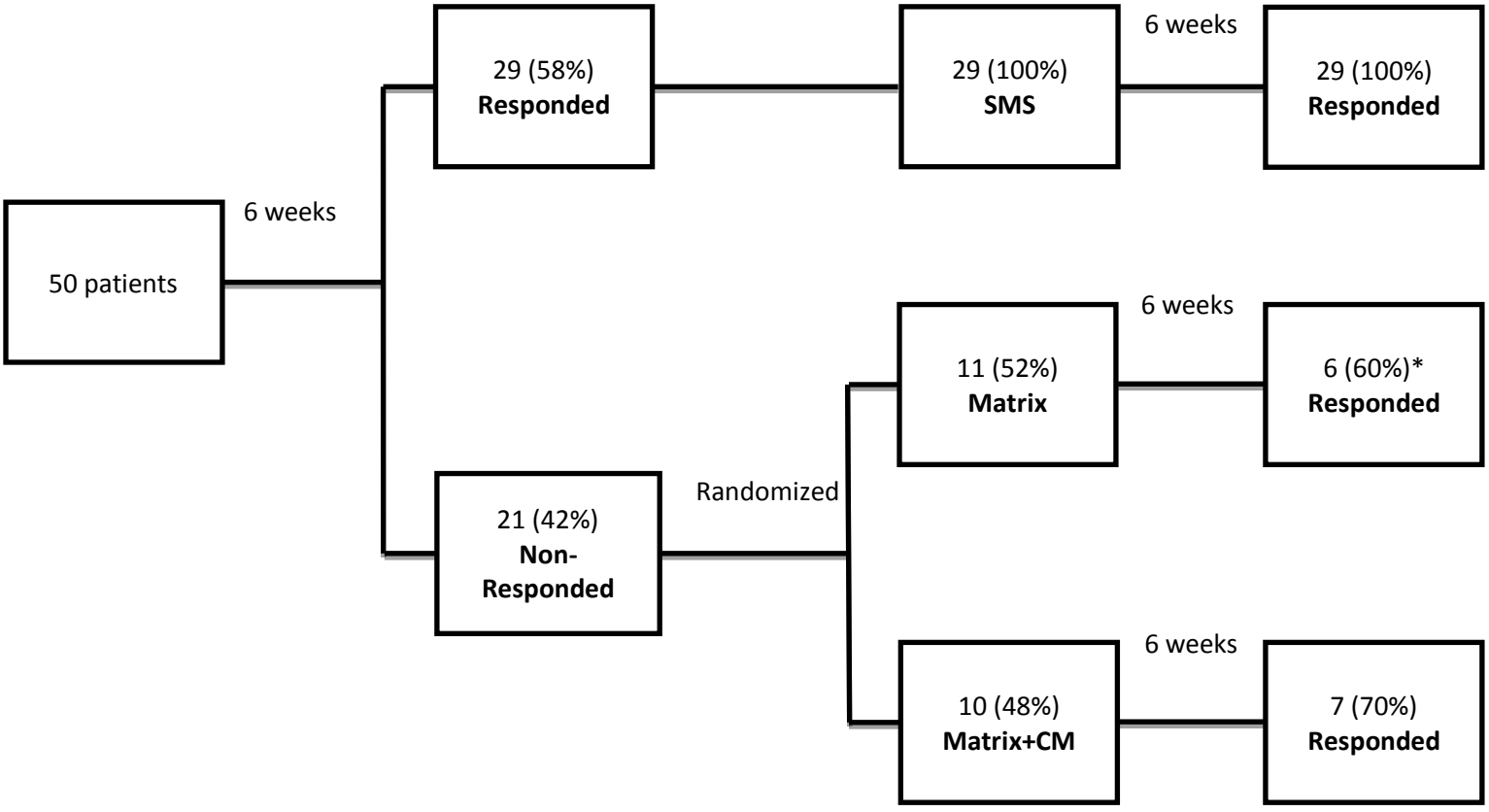


Figure 3:- Positive urinalysis for meth.

After the first six weeks of (CM) intervention, 29 (58%) of the participants were MET-free for week 5 and 6 (Figure 2). These responders went on to receive the phone/SMS intervention for the remaining six weeks, while the other 21 (42%) non-responders were randomly assigned to two groups. Of these 21 non-responders, for the remaining six weeks, 11 (52%) received the Matrix intervention and 10 (48%) received the Matrix in combination with (CM) intervention. and also continued follow-up for 6 weeks. At the end of the 12-week period, the response rate to the interventions by phone/SMS, Matrix, and Matrix with (CM) was 100%, 54.5%, and 70%, respectively.

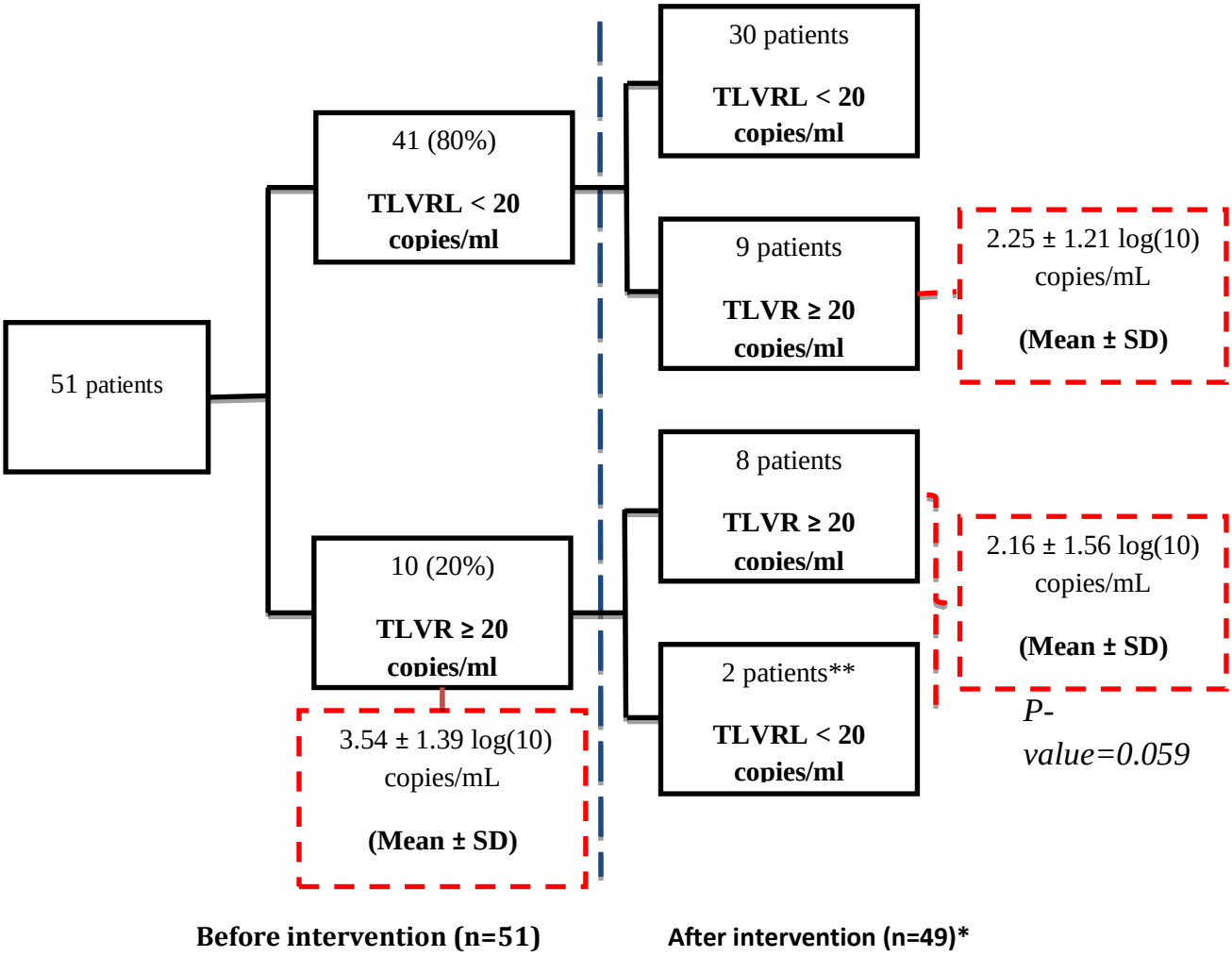


**1 patient was arrested*

Figure 4:- Response to intervention at 6 weeks and 12 weeks.

Effective for HIV status

Before the intervention, 20% of the participants had a viral load of 20 copies/ml or more with an average viral load of 3.54 log(10) copies/ml. After 12 weeks, the average viral load decreased to 2.16 log(10) copies/ml, however the difference did not reach statistical significance(p = 0.059). Among the 41 (80%) participants with viral load below 20 copies/ml before the intervention, 9 (23%) had an increase in viral load after 12 weeks of intervention.



*: *1 patient was arrested1 bênh nhân ngừng tham gia*
**: *Giảđịnh VRL = 1 copies/ml*
a: Wilcoxon rank-sum test

Figure 5:- Viral load results.

Discussion:-

Cognitive behavior-based interventions have been shown to be effective in the world and are now tested among HIV-positive substance abuse patients undergoing methadone treatment in Vietnam. The results showed that the HIV-positive MET- or opioid-using participants responded well to the evidence-based interventions. The interventions were able to reduce the proportion of participants who used MET and resulted in decreased HIV viral load during the intervention.

Reduce substance use

The proportion of participants who used MET in the prior 30 days significantly decreased from 71.4% to 30.6% ($p < 0.001$), and the proportions of participants with positive urine tests for MET decreased from 54.9% to 12.5% after 12 weeks. This is a very positive outcome for the effectiveness of the intervention among MET-using methadone patients with HIV. The positive behavior management, Matrix group activities, individual counseling and daily messaging to the participants aimed to encourage and motivate them, building positive self-beliefs, reducing motivation to use substances and gradually leading to quitting MET. Studies around the world often evaluate the effectiveness of each type of intervention individually, but the combination of interventions in this study showed consistent results in the literature on the effectiveness of behavioral interventions in reducing MET use among substance abuse patients compared to conventional treatments.

Response to interventions

Combining methadone maintenance treatment with cognitive behavioral intervention has been shown to work better than just one type of conventional intervention, which is an advantage in intervention to reduce MET use in patients in methadone treatment

It is necessary to assess and categorize substance abuse patients based on how severe their substance use disorder is in order to apply the appropriate interventions to make the best use of the available resources. For patients who responded well in the early stage of intervention, interventions using daily text messaging might be a suitable option for continued treatment, as demonstrated by the participants in our study who received the phone/SMS intervention and subsequently had a perfect 100% rate of negative urine drug test.

One main component of this study is the assessment of the effect of the intervention in helping HIV-positive substance abuse patients maintain their viral load level below the detection threshold. Although the decrease in viral load is not statistically significant, this suggests behavioral intervention interventions may still hold unexplored benefits for HIV-positive patients in methadone replacement therapy.

The study is limited in terms of small sample size;therefore, it may not have the power to detect the effectiveness of the intervention. However, the results obtained from this pilot study can help guid future studies on behavioral interventions for treating substance abuse in Vietnam.

Conclusion:-

Behavioral interventions for MET-using methadone patients in general and MET-using HIV patients in particular could result in a significant reduction in MET use as well as a reduction in heroin use.

This study advocates for the flexible application of interventions in substance abuse treatment, which is important in resource-limited settings. The three interventions used in this study can be applied in outpatient facilities; however, more research is needed to evaluate the long-term effectiveness of the interventions as well as the feasibility of expanding the intervention model in the future.

References:-

1. Feelemyer J, Thi HD, Pham MK, Thi GH, Thanh NTT, Oanh KTH, Arasteh K, Moles JP, Hai VV, Vallo R, Quillet C, Rapoud D, Michel L, Hammett T, Laureillard D, Nagot N, Jarlais DD. (2018), *Increased Methamphetamine Use among Persons Who Inject Drugs in Hai Phong, Vietnam, and the Association with Injection and Sexual Risk Behaviors. J Psychoactive Drugs*, .
2. Kamien J., Branstetter S., và Amass L. (2008). Buprenorphine-Naloxone Versus Methadone Maintenance Therapy: A Randomised Double-Blind Trial With Opioid-Dependent Patients. *Heroin Addiction and Related Clinical Problems*, **10**.
3. Rawson RA, Huber A, McCann M, Shoptaw S, Farabee D, Reiber C, Ling W. A (2002), *Comparison of Contingency Management and Cognitive-Behavioral Approaches During Methadone Maintenance Treatment for Cocaine Dependence.*, .
4. Roux P, Lions C, Vilotitch A, Michel L, Mora M, Maradan G, Marcellin F, Spire B, Morel A, Carrieri PM (2016), *Correlates of cocaine use during methadone treatment: implications for screening and clinical management (ANRS Methaville study).*, .

5. Rawson Richard A., Marinelli-Casey Patricia, Anglin M. Douglas và cộng sự (2014). A multi-site comparison of psychosocial approaches for the treatment of methamphetamine dependence. Addiction, 99(6), 708–717. .
6. Magill M, Ray LA. (2009), *Cognitive-Behavioral Treatment With Adult Alcohol and Illicit Drug Users: A Meta-Analysis of Randomized Controlled Trials. J Stud Alcohol Drugs*, .
7. Lee NK, Lee NK, Rawson RA, Lee NK, Rawson RA. (2008), *A systematic review of cognitive and behavioural therapies for methamphetamine dependence. Drug Alcohol Rev*, .
8. Prendergast M, Podus D, Finney J, Greenwell L, Roll J. (2006), *Contingency management for treatment of substance use disorders: a meta-analysis*, .
9. Giang L, Thuy D, Trang N, Okafor CN, Li M, Shoptaw S. (2019), *Feasibility And Outcomes Of Evidence-Based Interventions To Reduce Methamphetamine Use Among Patients On Methadone Maintenance Therapy In Hanoi, Vietnam*, .
10. Reback CJ, Fletcher JB, Leibowitz AA (2019), *Cost effectiveness of text messages to reduce methamphetamine use and HIV sexual risk behaviors among men who have sex with men. J Subst Abuse Treat*, .
11. Gómez W, Olem D, Andrews R, Discepola MV, Ambrose P, Dilworth SE, Carrico AW. (2018), *Optimizing Contingency Management With Methamphetamine-Using Men Who Have Sex With Men. Cogn Behav Pract*, .
12. Parsons JT, John SA, Millar BM, Starks TJ (2018), *Testing the Efficacy of Combined Motivational Interviewing and Cognitive Behavioral Skills Training to Reduce Methamphetamine Use and Improve HIV Medication Adherence Among HIV-Positive Gay and Bisexual Men. AIDS Behav*, .
13. Dugosh K, Abraham A, Seymour B, McLoyd K, Chalk M, Festinger D. A (2016), *Systematic Review on the Use of Psychosocial Interventions in Conjunction With Medications for the Treatment of Opioid Addiction. J Addict Med*, .
14. UNODC. (2015), *The Challenge of Synthetic Drugs in East and South-East Asia and Oceania: Trends and Patterns of Amphetamine-type Stimulants and New Psychoactive Substances. Vienna, Austria: United Nations Office on Drugs and Crime*, .
15. Bao Y-P, Liu Z-M, Li J-H, Zhang R-M, Hao W, Zhao M, Shi J, McGoogan JM, Lu L. (2015), *Club drug use and associated high-risk sexual behaviour in six provinces in China. Addiction*, .
16. Shariatirad S, Maarefvand M, Ekhtiari H. (2013), *Methamphetamine use and methadone maintenance treatment: An emerging problem in the drug addiction treatment network in Iran*, .
17. Baingana F, al'Absi M, Becker AE, Pringle B. (2015), *Global research challenges and opportunities for mental health and substance-use disorders. Nature*, .