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Opioid abuse interventions: a brief review

Abstract

It established that the etiology of opioid abuse is highly complex and depends on various socio-demographic, genetic, cultural and psychological factors. Here, we review the different intervention strategies which could help in curbing the burden of opioid abuse globally. Data from the literature show that use of Methadone as a maintenance treatment for combating opioid dependence is highly efficacious. However, despite these pharmacological treatments the relapse from drug-free state to re-addiction is highly prevalent, with a 40-60 % relapse rate as indicated by the National Institute on Drug Abuse.

Keywords: opioid dependence, re-addiction, highly efficacious, trans theoretical, pharmacological treatments, environmental interventions, housing, food, help physicians, health education, health promotion

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Abbreviations: TTM, stages of change model; MI, motivational interviewing; CBT, cognitive behavioral therapy; TTM, trans theoretical model; PCI-OA, processes of change inventory for opiate addicts; NASPER, national all schedules prescription electronic reporting act

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Thus, designing treatment approaches using psychological processes underlying addiction becomes extremely important in order to design a sustainable and relapse proof intervention.[1,2] This is where individual, group, media, policy and environmental interventions can play a huge role. Individual interventions (including health education, counseling and health promotion practices) which can modify the behavioral intentions of the target population prove to be highly effective. Also, various health behavior models and theories like the Trans theoretical/ Stages of Change Model (TTM), Motivational Interviewing (MI) and Cognitive Behavioral Therapy (CBT) can be applied to design effective interventions targeting both intrinsic and extrinsic factors which can help in lowering substance abuse and decreasing the relapse rates. Furthermore, use of community building approach described by Rothman's Model of Community Organization provides another strategy which may be effective against opioid abuse and dependence. The Trans theoretical Model (TTM) by Prochaska has been utilized by several researchers and clinicians as an effective intervention for drug dependence. The Trans- theoretical model describes stages of change, processes of change and perceived pros and cons of changing, self-efficacy and temptation.[3] Stages of change define a temporal dimension while the processes of change are covert or manifest strategies used by a person to change an existing unfavorable (addictive) behavior.[4] These core concepts have been utilized to assess the motivation and willingness of abusers to change which largely determine the success of relapse prevention strategies.

Knowing the psychological process of the abuser with regards to stage of change and process used to change will aid in implementing specific strategies to increase the success rate of interventions used. It helps the counselors to provide an individualized approach to each client keeping in mind their preferences and thought patterns in order to achieve the desired outcome. The main advantage of this model is the description of changes in addictive behaviors as being a gradual process, a sequence of improvement-oriented phases, instead of stressing the relevance of abstinence as the first target to be achieved.[4] Numerous studies have assessed various components of the TTM for opioid users. A landmark study conducted by Tejero et al.,[4] made use of Prochaska's TTM to assess the patients diagnosed with opioid dependence. The authors designed an instrument called "The Processes of Change Inventory for Opiate Addicts" (PCI-OA), a self-reported questionnaire with 40 items, for the assessment of the processes of change in abusers. The PCI-OA is answered by means of a 4-point Likert scale measuring the frequency of occurrence/ utilization (0, never to 3, usually) of each item content. The objective of the PCI-OA is to identify the frequency at which opiate addicts use these processes of change. The study concluded that the current stage and process of change when integrated form an important variable in correct patient/ treatment matching. It also implied that PCI-OA can be an important instrument of the part of cognitive behavioral assessment protocol which can help physicians in individualizing therapeutic intervention strategies.

An interesting review conducted by Mayet et al.,[5] compared five randomized controlled studies utilizing various caveats of the TTM especially Contingency management and Cue exposure therapeutic interventional strategies. The review mentions a study by Gruber et al.,[6] which describes reinforcement based outpatient treatment (RBT) for opiate abusers. The Gruber 2000 study incorporated a brief version of RBT. The therapy provided abstinence-contingent partial support of housing, food and recreational activities, abstinence-contingent access to social skills and job finding along with non-contingent individual counseling addressing the individual needs of the patient. Fifty two heroin abusers were randomly assigned to RBT (n=28) or referred to community treatment resources (n=24).One month after detoxification, 61% of RBT versus 17% of referral patients were enrolled in an outpatient treatment ($P<0.01$). RBT patients were significantly less likely than controls to have relapsed and 50% of RBT vs 21% of controls reported 30 days of abstinence from heroin and cocaine with confirmatory negative urine ($P<0.05$). Thus, the study established RBT as an effective intervention post detoxification to prevent relapse in opioid abusers. This study was an example of how the reinforcements in the form of contingency contracts over punishment are an effective method of behavioral modification.[3,4] The above review also states another study conducted by Dawe et al.[7] which uses

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the "Cue Exposure/ Stimulus control" process as a mode of altering behavior of the abusers. Cue exposure therapy focuses on decreasing the craving and hence reducing the relapse rates by removing cues for unfavorable behavior from the environment. Although, the study did not show significant difference in the incidence of relapse in the cue exposure and control group, it was proposed that an inpatient setting provided a favorable environment to decrease the chance of relapse after detoxification since it led to reduction of exposure to unfavorable cues as compared to an outpatient setting.

Another effective strategy for behavioral modification which has been shown to be extremely effective is Motivational Interviewing (MI). It is a client centered approach with the goal of increasing the readiness of people to change their behaviors and to resolve their ambivalence.[8] It is a directive therapy where patients own motivations for change are elicited and bolstered to increase the chance of successful withdrawal of drug. MI is based on four guiding principles which are: expressing empathy, bolstering self-efficacy, rolling with resistance and developing discrepancy. Empathy involves the counselor walking in the clients shoes. It entails that the counselor must see the world through the eyes of the client and shares the feelings of the client. MI bolsters self-efficacy by providing positive reinforcement for past successes and encouragement to overcome adversities by highlighting the skills and strengths possessed by the client. Moreover, rolling with resistance and developing discrepancy engage the client in a process whereby they identify the problems and discover answers for the same, thus eliminating any resistance to adhering to these solutions.[8] Furthermore, MI includes the assessing motivation, enlisting social support, counter conditioning, developing a stress management technique and developing a self- instruction routine all targeted toward the ultimate goal of relapse prevention.

A controlled trial conducted by Saunders et al.[9] described the use of MI in opiate users attending a methadone clinic. Clients were divided into two groups after conducting a research assessment. The two groups were: experimental group (who received motivational interviewing based on the principles of Millers work on MI for problem drinkers) and control group (who received simple educational intervention) and both these groups were followed up at 1 week, 3 and 6 months. The results showed that clients exposed to motivational interviewing made a more positive initial shift on Stage of Change measure, reported greater reduction in opioid related problems, perceived more positive outcomes for abstaining, remained engaged in treatment longer and relapsed less often. Thus, the study concluded that MI had a definitive advantage over simplistic health education measures. However, other studies on Motivational Interviewing in illicit drug users provide inconclusive evidence. In a review of 59 studies conducted by Smedslund et al.,[10] the authors studied various trials of MI being used in abusers of alcohol and illicit drugs including opiates. This study concluded that although MI proved to be superior to no treatment in reducing the relapse rates among abusers, it did not have any additional benefit over the other active treatments. Also, there was lack of conclusive evidence about the effects of MI on retention in treatment and readiness to change. The conclusion of this study was further supported by evidence from another clinical trial conducted by.[11] The trial included 152 outpatients and 56 in patients who were randomly assigned to receive or not receive a single session of MI. Follow up conducted at 3,6,9 and 12 months showed no clear effect of MI on drug use outcomes in both outpatient or inpatient settings.

Cognitive Behavioral therapy is another weapon in the arsenal of behavioral therapies for substance abuse disorders. It is a union of cognitive approach (which emphasizes on internal thought processes) and behaviorism (which focuses on external behaviors). The CBT is based on two principles: restructuring of cognitive events and social and interpersonal skills training. It is built on two pathways of reinforcement: strengthening the thoughts that lead to positive behaviors and strengthening the behavior due to positive outcomes. The former has its roots in cognitive therapy, the latter in behavioral therapy.[12] CBT includes various components like: Modeling (learning by repetition of others behavior), Guided practice, Approximation (continual improvement of one's behavior until the desired goal is attained), Feedback and Reinforcement and repetition of practice with self-instruction. Cognitive behavioral therapy is obviously superior to no therapy but also comparable and superior to a few other treatment strategies as well. This was shown in a metanalysis by Magill et al.,[13] where the authors reviewed 53 controlled trials of CBT for adults diagnosed with alcohol or illicit drug use disorders. Although, the effect of CBT was found to be largest in the marijuana studies ($g=0.513$, $p<0.005$), studies including opiate abuse found small but significant difference in patients receiving CBT vs those not receiving any treatment or receiving other interventions. Another study by Carroll et al.,[14] described a novel form of CBT use. It mentioned the use of computer assisted delivery of CBT for addiction. The study had 77 participants (16% of which were opioid abusers) who were randomly allocated into either the CBT4CBT group (who were given standard treatment plus computer assisted CBT) and control group (who only received standard treatment). Assessment of both groups after 8 weeks showed that participants assigned to CBT4CBT group submitted fewer urine specimens that were positive and had longer duration of drug abstinence than the control group. Also, the CBT4CBT group provided positive evaluations for the program and were more satisfied with the intervention. The CBT4CBT program participants felt more confident after the program and hence this shows that CBT resulted in an increase in self-efficacy of the participants, which has been established as an important factor in various behavioral change models.

As we know, media has the power of persuasion and the capability to introduce a change in the attitudes of people if used prudently. Media in the form of television, radio and news plays an enormous role in health education and promotion. With the advent of internet and mobile phones, newer avenues of delivering health information have come into play. Social media sites like Facebook, twitter, internet blogs, SMS texts and videos can become new weapons in inducing behavior change if used efficiently. Currently ongoing research funded by NIH tests the feasibility, acceptability, and preliminary effectiveness of applying the Harnessing Online Peer Education (HOPE) intervention (a peer support social media community model) to reduce prescription drug abuse among chronic opioid non-cancer pain patients. Community-based approaches, such as peer leader and peer support interventions, have been successful in creating health behavior change and could be applied to reduce opioid abuse. However, because peer support groups often require in-person visits and a great deal of time and financial resources, these groups have high drop-out rates. With the recent increase in social media/online communities, these technologies could be used as cost-effective platforms to deliver peer support interventions for opioid abuse and overdose. Substance abuse in communities is a complex problem requiring culturally appropriate, multidimensional approaches.

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One promising perspective supports community-based programs or community mobile treatment which eliminate the need for people to leave their remote communities. The people become the focus of community development, as the community becomes the treatment facility. A detailed review of community based programs done by Jiwa et al.,[15] shows that Community-based addictions programs are appropriate alternatives to treatment at distant residential addictions facilities. The key components of success appear to be strong leadership, strong community-member engagement and the ability to develop infrastructure for long-term program sustainability. The above concept is also bolstered by research study conducted by Mohatt et al.,[16] which describes how culturally anchored participatory research helped in alcohol withdrawal among Alaskan Natives.

Apart from the aforementioned behavioral and community based treatment approaches; a broader policy level approach is also required for curbing substance abuse. Fine tuning of allocative and regulatory policies can bring massive change in the incidence of substance abuse. Currently, prescription opioid abuse is regulated by prescription monitoring programs which have 3 primary components: data collection for prescriptions, central repository for this data and protocol to make this data available to the appropriate agencies and authorities. This was further strengthened to prevent cross border narcotic trafficking by the introduction of National All Schedules Prescription Electronic Reporting Act (NASPER) in 2005 Sehgal et al.[17] Furthermore, the White House in April 2011 announced a plan to curb prescription drug abuse called "Epidemic: Responding to America's Prescription Drug Abuse Crises." The key elements of which are: expansion of state based prescription drug monitoring programs, supporting education for patients and health care providers, and reducing the number of "pill mills," and doctor- shopping through law enforcement.[17] However, the problem with regulating prescription opioids is that the usual regulatory policies of increased taxation and drug ban are not feasible since opioids are a part of essential drugs and simply cannot be taken off from the market. Thus, drug policies for opioids need to be regulated prudently so as to maintain an adequate balance between its benefits and risks.

Even though environmental influences appear to be an important factor in substance abuse/ dependence, twin studies suggest that these factors are not significant in case of opioid abuse. In a landmark study conducted by,[18] the authors surprisingly conclude that opiate abuse in twins depends on genetic but not on environmental factors. Despite this, regulating and controlling one's environment in the form of eliminating any cues and stimulations responsible for relapse appears to be an effective strategy as noted in the study by.[19] In conclusion, various strategies exist for reducing opioid abuse. These interventions range from individual health education and promotion to the involvement of the community and nationwide policy changes. Although large number of studies show that Cognitive Behavioral Therapy approach is effective, due consideration should also be given to other approaches like Trans theoretical Behavioral Change model and Motivational interviewing which have also been proved to exert significant effects in some studies. In general, various promising targets for treatment interventions for drug offenders are: developing problem-solving and life management skills, self-control skills, associations/relationships and bonding with peers and role models, enhancing communication with family members.[19,20] The ideal interventional strategy is not a singular one but a combination of all the aforementioned interventions. The union of these interventions can be more effective than any of them used alone. An idealistic approach to inducing behavior change in opioid addicts should include assessment of the Stage of Change of the clients (tenet of trans- theoretical model) and use of Motivational interviewing techniques (e.g. expressing empathy and supporting self- efficacy). Furthermore, provision of critical methods of coping like journaling and drug refusal skills training (tenets of CBT) should be used in conjunction with the above techniques and traditional pharmacological interventions. In addition, since human behavior is highly influenced by the surrounding environment, strong community and policy level interventions are required. Specifically, mass media, community mobilization and enforcement of drug related policies will massively contribute in reducing the burden of opioid addiction. In spite of a rigorous policy on drugs, the United States is crippled by some of the highest rates of opiate abuse and in order to win the battle against opioid's implementation of effective interventions is urgently needed.

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Conflict of interest

The author declares there is no conflict of interest.

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