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Association Between Success Rates and Treatment Programs in Individuals with Substance Use Disorders

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ABSTRACT

Background: Substance use disorder (SUD) affects a person's ability to function in daily living activities from an inability to control the use of the substance(s) to achieve the desired effects. Drug addiction is a disease that affects a person's brain and behavior. Many individuals diagnosed with SUD fail to remain abstinent, thus relapse. Success rates of treatment is a roller-coaster of addiction experience. **Purpose:** The purpose of this review was to determine if treatment programs influence success rates in individuals with substance use disorders if they are successful, and which program(s) are the best. **Method:** This was a literature review of success rates in treatment programs for those diagnosed with a substance use disorder. The analyzes included current sources and evidence-based information regarding different treatment options and success rates in individuals with substance use disorder. The research was based on the following patient, intervention, comparison, and outcomes (PICO) question: What is the association between success rates and treatment programs for individuals with substance use disorders? The sources are ranked on the hierarchy of evidence. The top tier is level one which holds the strongest evidence, and the bottom tier, level seven holds the weakest evidence. **Findings:** The themes identified are medication therapies, a 12-Step program, and psychotherapy. **Conclusion:** Results of the review indicated; medication therapies had higher success rates for maintaining abstinence compared to the other treatment options. However, no single treatment option or combination of treatment options appeared to be the best course of treatment for individuals diagnosed with substance use disorder.

INTRODUCTION

Substance use disorder (SUD) is a condition where there is the uncontrolled use of a substance that results in harmful consequences [1]. Substance abuse refers to alcohol, illicit drugs, prescription drugs, and other substances that are used in illegal or harmful ways. The National Survey on Drug Use and Health (NSDUH) affirmed 19.7 million American adults, aged 12 and older battled a substance use disorder in 2017 [2]. In 2017, almost 74% of adults suffering from a substance use disorder struggled with an alcohol use disorder, and about 38% of adults battled an illicit drug use disorder [2]. Consequently, data from the National Vital Statistics System acclaimed in 2017, 70,237 people died in the U.S. from drug overdoses [3]. These statistics represent the thousands to potentially millions of Americans battling with a SUD. The purpose of this review was to determine if treatment programs influence success rates in individuals with substance use disorders and if they are successful, which program(s) are the best. The research was based on the following patient, intervention, comparison, and outcome (PICO) question: What is the association between success rates and treatment programs for individuals with substance use disorders?

BACKGROUND

Altering levels of consciousness (LOC) is the driving force behind those who develop SUD [1]. By altering a person's LOC, perceptions and sensations are consequently changed. The common substances that have been used to alter LOC and inhibit perceptions and sensations in the past include herbs, alcohol, and drugs (see Figure 1). A problem develops in people who are unable to restrict themselves from using substances. This is frequently called addiction because the individual cannot gain control of their actions. Drug addiction is a disease that affects a person's brain and behavior. People with SUD develop an inability to function in day-to-day living activities due to an intense craving for the substance(s) used to achieve the desired effects. Continual use of a toxic substance can alter the functions and structures of the brain [1]. This in turn alters a person's personality and can elicit behavior changes that can become irreversible.

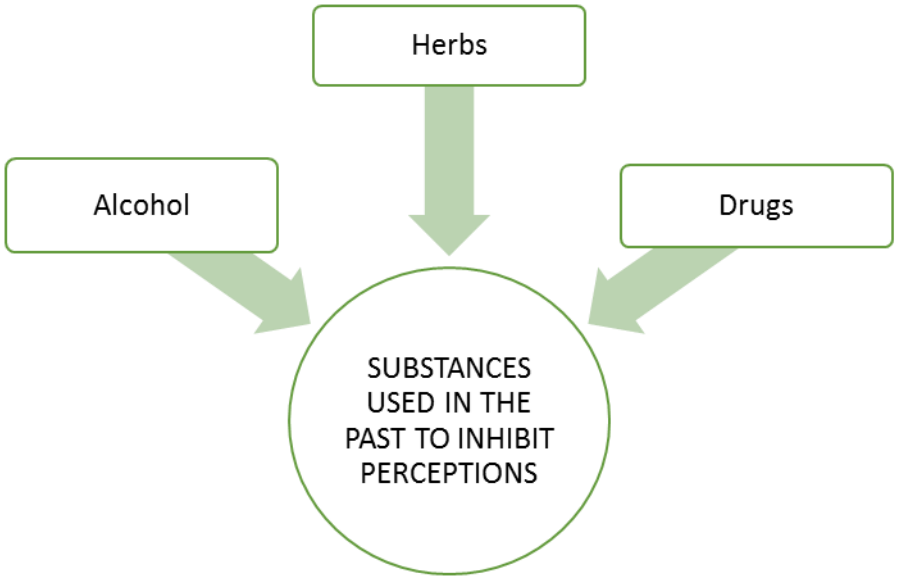

Figure No 1. Substances used in the past to inhibit perceptions and alter LOC

METHODS

This review of the literature on the association between success rates and treatment programs in individuals with substance use disorders was analyzed and inspected using one database. This review was conducted using the Cumulative Index of Nursing and Allied Health Literature (CINAHL). Key terms used for this research included: *treatment options for substance use disorders, therapy options for substance use disorders, and medication therapy for substance use disorders.* This search, using the keywords resulted in 4,459 peer-reviewed articles (see Figure 2). From the 4,459 peer-reviewed articles, an analysis was conducted and 4,443 were excluded. One additional peer-reviewed article was excluded due to the lack of hierarchical evidence leaving a total of 15 studies included in this review.

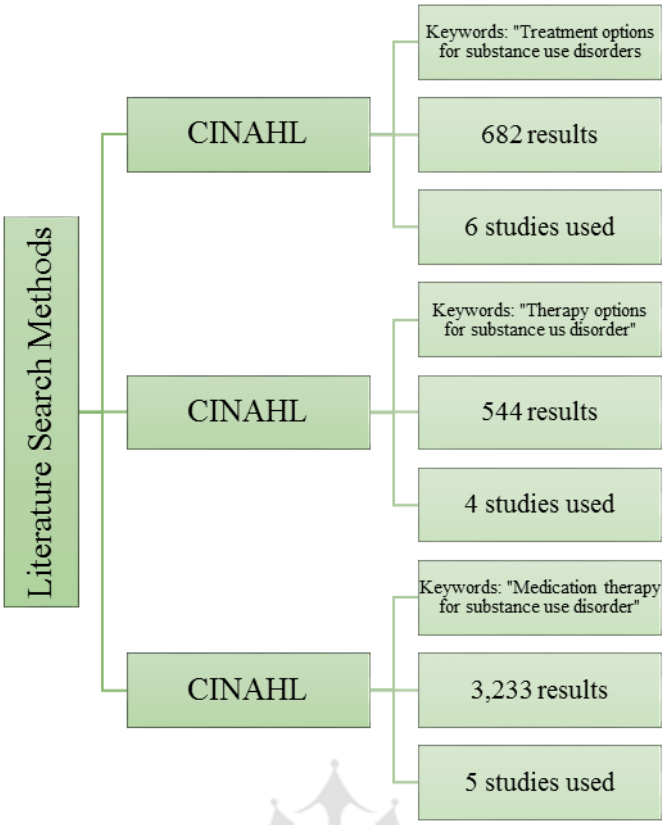

Figure No 2. Retrieval methods and results for the association between success rates and treatment programs in individuals with substance use disorders

Relevant Studies Chosen

The selected literature for review was published from the summer of 2016 through November 2021. The studies that were included in this review were analyzed for the level of evidence. The level of the hierarchy is classified as follows: Level I, systematic reviews of randomized control trials (RCTs), meta-analysis, and current EBP guidelines, Level II, randomized controlled trials, Level III, controlled trials without randomization, Level IV, cohort studies or case-controlled studies, Level V, a systematic review of descriptive studies, a systematic review of qualitative studies, and correlational studies, Level VI, single descriptive or qualitative studies, case series studies, case reports, and concept analysis, Level VII, opinion of authorities, reports of expert committees, manufacture's recommendation, and traditional literature reviews [4]. Level one is the highest level of hierarchy while level seven is the lowest. This is illustrated further in Figure 3.

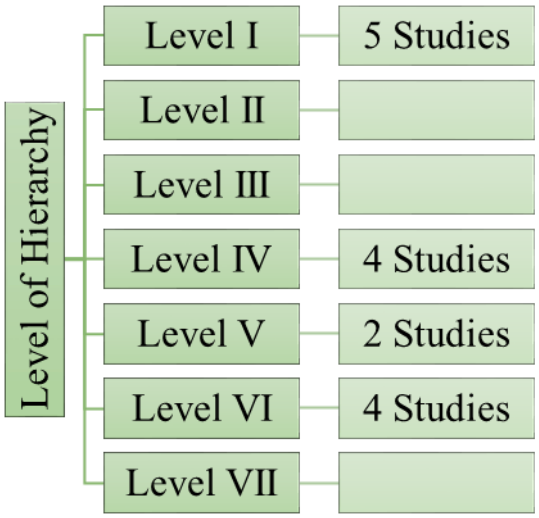

Figure No 3. Level of evidence for studies related to the association between success rates and treatment programs in individuals with substance use disorders

LITERATURE REVIEW AND FINDINGS

Through completing this review, the literature gathered similar themes. The themes related to the different treatment options and success rates in individuals with SUD. The themes related to treatment options were medication therapies, 12-Step programs for illicit drug users and alcoholics, and psychotherapy. The descriptions of the themes are discussed below.

Medication Therapy

Naltrexone vs. acamprosate vs. baclofen for alcohol addiction. There are different forms of medication therapy for the treatment of alcoholism that is used in the United States. Naltrexone is one of the medications used in medication therapy. Kumar *et al.* [5] acknowledged that alcohol consumption while taking naltrexone leads to lesser intoxicating effects of alcohol, and a decrease in the desire to drink more, leading to decreased craving and control over the drinking habits. A second medication used in medication therapy is acamprosate. Acamprosate has similar effects to naltrexone but is not the same. Allegedly, acamprosate tends to promote abstinence by counteracting or diminishing the physiological response to chronic alcohol exposure. The difference in this medication is that it can counteract the effects of drinking and not just diminish them. Baclofen is another common medication used in medication therapy. Baclofen suppresses

alcohol-induced dopamine release and the consequent dopamine-mediated alcoholism reinforcement and other associated alcoholism-related motivated behaviors [5]. All three medications work similarly to help promote alcohol cessation and abstinence (see Figure 4).

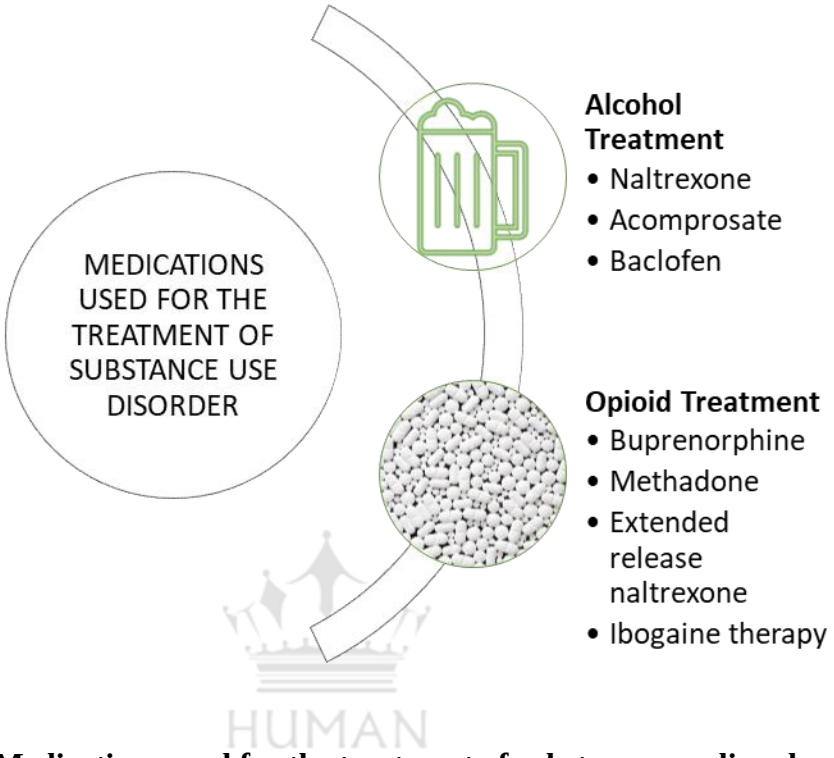

Figure No 4. Medications used for the treatment of substance use disorder.

The safety and efficacy of naltrexone, baclofen, and acamprosate were the focus of the study [5]. There were 30 participants for each medication group being studied, equaling a total of 90 participants. The study focused strictly on abusers of alcohol. Informed consent was obtained along with the participant's medical history, a mental exam, and a sociodemographic profile. Anybody with a mental illness or other comorbidities was excluded. Follow-ups on the patients were weekly for one month, and biweekly for the following five months. Relapse, side effects, liver function tests, and blood tests were assessed at each follow-up. Relapse enunciated by Kumar *et al.* [5] was taking four drinks for women or five drinks for men on an occasion or single day. Of the 30 participants in each medication group, 15 from the baclofen group, 12 from the acamprosate group, and six from the naltrexone group relapsed.

The study revealed naltrexone was the most effective medication, followed by baclofen, and then acamprosate [5]. Naltrexone was the most effective medication in decreasing craving and

drinking behavior. Baclofen showed the best results for liver function tests, and the least amount of side effects reported. The naltrexone group reported the least number of relapses but the most amount of side effects. The acamprosate group had the highest dropout rate [5].

Buprenorphine therapy for opioid use disorder. Opioid use and abuse are a rising problem in the United States because of how readily available and prescribed opioids care to patients. Addiction to opioids can lead to serious problems. There are different treatment options and/or treatment programs to help those addicted to opioids. One medicinal treatment is the use of buprenorphine. Buprenorphine is a semisynthetic, highly lipophilic derivative of the opioid alkaloid thebaine [6]. Buprenorphine is considered a partial opioid agonist. Therefore, it has limited effects on pain control and does not give a patient the feeling of being high or experiencing symptoms of euphoria. Before buprenorphine treatment is started, baseline urine drug tests are taken, informed consent is obtained, and a review of the treatment contract is completed [6].

Once treatment has begun, follow-up appointments are weekly. During the follow-up appointments, documentation of relapse, side effects, cravings, withdrawal symptoms, pill or wrapper counts, and urine tests are completed [6]. Patient dosing of buprenorphine is stable when opioid use is stopped, patient withdrawal signs and symptoms decrease in intensity, and the cravings to use opioids are minimized. There is no specified end date for the conclusion of buprenorphine treatment. Treatment is ongoing for the patient to enhance abstinence and recovery. Some of the most common reasons for patients discontinuing treatment are patients' preferences change, trouble arises in the access to treatment, or the patients' insurance change [6]. Overall, buprenorphine treatment is used to promote recovery until the patient no longer feels that they require treatment.

Opioid agonist therapy. Opioid agonist therapy is widely used in the United States for patients who suffer from opioid use disorder (OUD). There are many effective forms of treatment for OUD. The most effective treatment for OUD is referred to as medications for opioid use disorder (MOUD). Currently, there are three effective approved forms of MOUD which are methadone, buprenorphine, and extended-release naltrexone [7]. The first-line treatment of OUD consists of opioid agonist therapy (OAT), methadone, or buprenorphine [8]. OAT treatment reported higher retention rates in outpatient treatments compared to treatments that did not incorporate OAT.

In another study, Spithoff *et al.* [8] helped to determine access to OAT for those who were doing residential treatment for OUD. The study helped to report the difference in treatment outcomes for those taking OAT compared to those not taking OAT. Among the 1,910 patients with OUD, 56.8% of the patients completed the treatment program, and 43.2% of the patients left or were voluntarily discharged from the program. Patients taking OAT were as likely to complete treatment as those not taking OAT with a 53.9% vs. 57.5% completion rate [8].

Although patients taking OAT and patients not taking OAT have the same likelihood of completing residential treatment, it was shown that residential treatments can reduce mortality in patients addicted to opioids [8]. People who have undergone receipt of MOUD, residential treatment, or a combination of the two, have a reduced mortality rate compared to patients with no treatment at all. Reducing mortality in patients with OUD is a positive outcome. In turn, reducing mortality allows for the success of opioid agonist therapy [9].

Methadone maintenance treatment. Out of all the medications that can be used for OUD, methadone is one of the main treatments used in the United States. Methadone is an opioid agonist that eliminates withdrawal symptoms and helps to relieve drug cravings. Methadone maintenance treatment (MMT) has shown to be effective in improving health status and the quality of life for illicit drug users [10]. Patients with OUD should recognize that if they choose MMT, the effectiveness will depend largely on their adherence to the treatment [10].

Compliance rates, influencing factors, and the difference between public and private clinics were the driving forces behind the study [10]. In this study, 395 participants were included. Once the participants were chosen, they received a 30-day supply of methadone. After the 30-days were complete, the researchers gathered the data to review the results. During the time of research, 43.3% of the participants reported complete adherence to the MMT. The patients had higher compliance rates in private clinics compared to those in public clinics. Social support and adherence to MMT were the focus of another study [11]. The patients with good social support had a significantly higher rate of adherence to MMT. The success of methadone treatment depends on the social support the patient receives, combined with self-accountability.

Ibogaine therapy. Ibogaine therapy is a new treatment option that is being explored and studied for the treatment of SUD. Ibogaine is a psychoactive drug that induces hallucinogenic effects

[12]. The hallucinogenic effects adjust the brain's chemistry so that patients with SUD do not go through withdrawal symptoms or suffer from cravings. With the absence of withdrawal symptoms and cravings, patients with SUD will be more likely to stick with their treatment regimen, increasing the success rates of SUD treatments [12].

A study on ibogaine detoxification focused on comparing persisting effects, self-perceived challenges, and the potential benefits associated with positive outcomes of ibogaine detoxification [13]. The study was compromised of 73 participants who used heroin or opioids and used ibogaine detoxification as their primary treatment. All safety precautions were taken which included the participants receiving cardiac monitoring, intravenous (IV) saline and electrolytes, and other necessary medical monitoring during treatment. The participants were asked different questions surrounding their choice of substance that was being abused. They were also asked how long they have been an abuser and if they received any prior treatment. If they did receive prior treatment, how long did the treatment last, and what was most challenging for them during ibogaine treatment? Questioning the participants gave the researchers a method to measure how quickly ibogaine treatment affected the participants and helped to identify any side effects [13].

The results of the study pointed out that 26 participants reported never using opioids again, 33 participants reported decreased use, 11 participants reported no change in their opioid use, and three participants reported increased opioid use following ibogaine treatment. Thus, more than half of the participants were classified as treatment responders and had either never used opioids again or had decreased opioid use [13]. Brown and Alper [14] conducted a study on ibogaine detoxification and found similar results that Davis *et al.* [13] found. Ibogaine treatment is effective in participants who have previously failed other treatments for OUD [14].

The 12-Step Program

Alcohol. Alcohol Anonymous (AA) is a global community program that is known for promoting sobriety and abstinence for those addicted to alcohol. AA involves both men and women of all ages who try to form a community where people can share their stories and experiences with alcohol to try and help other recover or maintain sobriety. Two studies determined AA is one of the most effective treatments for obtaining and sustaining sobriety in alcoholics [15,16]. Some

have even argued that AA is a better pathway to abstinence compared to psychotherapy. Most of the studies that measured abstinence found AA was significantly better than other interventions, or no interventions [16]. As illustrated in Figure 5, the thought has been that AA is one of the better options for achieving and maintaining abstinence.

In another study, 12-Step programs and AA were considered for those suffering from alcohol use disorder (AUD). The effectiveness of AA and the twelve-step facilitation (TSF) compared to cognitive behavioral therapy (CBT) and motivational enhancement therapy was analyzed. There is high-quality evidence that manualized AA/TSF interventions are more effective than other established treatments like CBT for increasing abstinence in AUD patients. Therapy has been shown to help alcoholics, but AA/TSFis the most effective treatment for AUD patients. AA/TSF improved the rates of abstinence at the 12, 24, and 36-month mark versus the rates of abstinence for the therapy interventions [15].

The setting in which alcohol addiction treatment takes place is of high importance. A significant proportion of AUD patients access primary health care which presents an opportunity for earlier intervention [17]. Primary health care settings are low-cost and accessible to patients. Models of care in primary care settings have the promise to be beneficial in the management of AUD in terms of engagement [17]. To determine the efficacy of and cost-effectiveness of this type of care, further studies would need to be conducted. These further studies would need to include the identification of consistent outcome measures.

Figure 5. AA is one of the best options for maintaining abstinence from SUD.

Illicit drugs. Many treatment options are available for people with addictive behaviors. The 12-Step program is a well-known program that is also used for illicit drug users. The 12-Step programs are self-help groups aimed at promoting and supporting complete abstinence from the use of illicit drugs or alcohol [18]. Subsequently, Hardey *et al*. [19] described 12-Step programs as widely used treatment tools to help people understand the journey into, during, and after recovery. A basic principle of the 12-Step program is that individuals can help one another to achieve and maintain abstinence. Since the 12-Step program relies heavily on self-accountability while also supporting other members who are trying to recover or achieve abstinence, a strong support and peer group is essential [20].

Heroin is an illegal substance and illicit drug that is highly addictive due to its effects on the brain. Heroin affects people from all demographics and abuse of this drug is becoming an epidemic. Gamble and O'Lawrence [20] studied 814 participants who had participated in a 12-Step program. Out of 814 participants, 211 participants had used heroin within the last year while attending the program. There were 399 participants from the study who did not attend a 12-Step program. Of the 399 participants, 150 participants had used heroin during that year. The

findings of the study were not very conclusive but did find that abusers in 12-Step programs or self-help programs had a lower percentage of relapse [20].

The studies on patients with SUD and treatment options are limited because of limited participation by SUD patients because of the nature of the disease. It was noted that there was some evidence of a generally positive effect of 12-Step programs in reducing drug use [18]. Meanwhile, Gamble and O'Lawrence [20] suggested that 12-Step programs make a statistically significant difference in relapse prevention rates. While most studies end up with inconclusive results, or results that do not provide researchers with much beneficial information, these two studies allow researchers to propagate that some form of treatment is better than no treatment.

Psychotherapy

Cognitive-behavioral therapy (CBT), assertive community treatment (ACT), and contingency management (CM) programs are three different types of psychotherapies that can be used in patients diagnosed with SUD. CBT is a multisession intervention that targets cognitive, affective, and environmental risks for substance abuse. CBT is useful for training an individual to develop self-control skills that help to achieve and maintain abstinence or harm reduction [21]. ACT considers the impact mental illness can have on a patient diagnosed with SUD. ACT focuses on the rehabilitation of mental health in patients with SUD. ACT also promotes community involvement which allows the patients to network and form relationships to promote treatment adherence [22]. CM programs use positive reinforcement of good behavior, like drug abstinence to achieve the desired outcome of remaining abstinent from harmful substances [23].

Psychotherapies have been able to show some benefit(s) to patients diagnosed with SUD. There is a benefit that was associated with combined CBT and pharmacotherapy over usual care [21]. Treatment plans should include biological, psychological, and social interventions that target both the specific psychiatric and SUD symptoms [22].

CBT is the most common psychotherapy used when combined with pharmacotherapy in treating patients with SUD. The superiority of CBT compared to other behavioral treatments has yet to be determined [21]. Not including other types of therapies, psychotherapy is the largest treatment modality group in every study conducted [23]. While each of the studies discussed in this

literature review focused on a different form of psychotherapy, some form of psychotherapy whether in combination with pharmacotherapy or not is beneficial to SUD patients.

DISCUSSION

In consideration of the PICO question, best practice remains unclear, but some treatment options revealed better outcomes for patients with SUD. Some treatment options are better for certain types of SUD patients, while some treatment options have limitations. The three themes identified based on the literature reviewed influenced the success rates of treatment options and relapse in individuals with SUD (see Figure 6).

SUD is a very individualized disease. Individualization and the variety of treatment options currently available interfere with trying to determine what the best practice guidelines for treating patients with SUD should be. Many studies that have been conducted on patients with SUD are hard to compare with other similar studies. This is due to the lack of information surrounding the treatment of SUD. In many studies, the lack of standardized and/or identifiable outcomes, a lack of focus on specific interventions, or failing to compare other interventions available hindered results [7,15,16,18,21-23]. One recommendation would be to identify either a specific intervention or set of interventions to focus on the different studies conducted.

Not being able to define specific populations in the studies that have already been conducted on patients with SUD hinders the ability to determine what is best for a specific population. The population refers to those who use illicit drugs only, prescription drugs only, or those who use alcohol in combination with opioids to give examples. Not being able to define a specific population, categories are left very broad and is another limiting factor in conducting research [11,13,15,23]. Many of the studied populations consisted of white males only. Another recommendation is to include both sexes and different ethnic and racial backgrounds to identify what other factors can contribute to influencing treatment success rates. Each of the studies used in this review of the literature shows how the inconclusiveness and inconsistencies of the results have hindered the ability to develop best practice guidelines for the treatment of SUD.

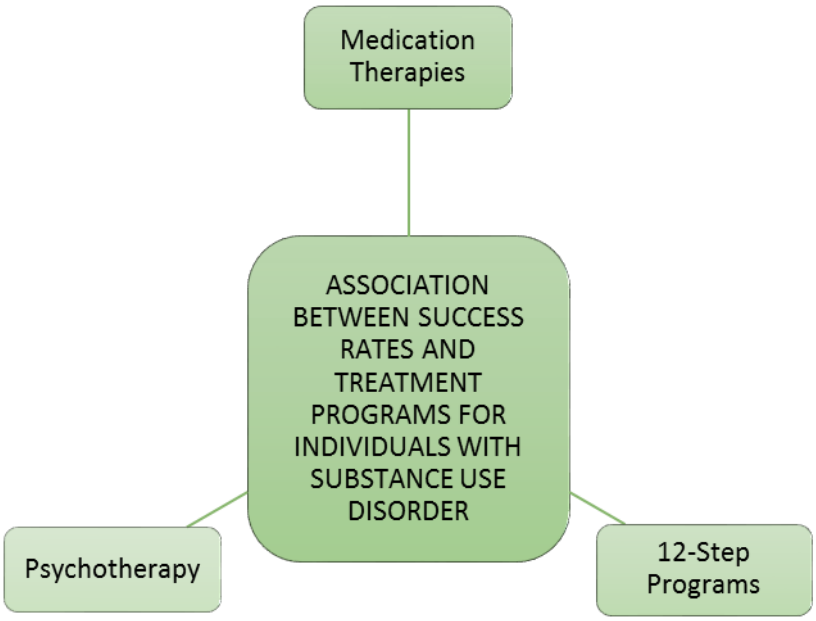

Figure no 6. The themes for the association between success rates and treatment programs for individuals with SUD.

Strengths

The main strength of this literature review was the vast treatment options available for individuals diagnosed with SUD. With the number of treatment options available, individuals with SUD have a better likelihood of finding a treatment option or program that best fits their needs. A second strength was the variety of research found namely, meta-analyses, cohort studies, case-controlled studies, systematic reviews of descriptive studies, systematic reviews of qualitative studies, case series studies, and concept analyses. Having a wide range of research allowed for less bias and more information about the future of evidence-based practice for treating individuals with SUD.

Weaknesses

The weaknesses that were discovered from this literature review were the inconclusiveness of some studies. In some studies, we were unable to identify treatment options that resulted in better outcomes as compared to other treatment options discussed in the specific studies. The

complexity of SUD also poses a barrier to many researchers. Noncompliance is one of the biggest limiting factors in individuals with SUD. This negatively interferes with the researchers who are trying to define the best treatment options or a combination of treatment options. Many individuals diagnosed with SUD fail to remain abstinent, thus relapse.

Recommendations

One recommendation is to conduct more research on the different treatment options and programs for individuals diagnosed with SUD to determine which one(s) can be considered best practices for clinicians. Broad studies with large populations are useful in determining which intervention has higher success, but smaller studies with a specific population should also be conducted. The smaller studies will help to determine if a specific intervention or group of interventions works better for a specific ethnic background or type of substance abuser. Reducing the stigma around substance use and allowing easier access to treatment could help to lower abuse rates and potentially increase abstinence and treatment success rates.

CONCLUSION

Substance use disorder is a growing health concern among the general population. Substances commonly abused include but are not limited to alcohol, prescription drugs, and illicit drugs such as heroin, cocaine, and marijuana. The three themes identified based on the literature reviewed influenced the success rates of treatment options and relapse in individuals with SUD. The themes were medication therapies, 12-Step programs for illicit drug users and alcoholics, and psychotherapy. There are both risks and benefits to each treatment option available. Withdrawal symptoms and intense cravings induce conflict and cause a patient to withdraw or be discharged from a treatment program. SUD is a unique disease because each patient presents very differently from the others. Medication therapies appear to be more successful than the other treatment options presented in this literature review. Treatment for individuals diagnosed with SUD must be individualized because of what must be done during the treatment.

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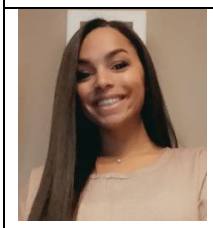	**Sydney A. Hill** *Bethel University School of Nursing, Mishawaka, Indiana, USA*
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