JADE

JOURNAL of ALCOHOL and DRUG EDUCATION

Volume 64, No.2
August 2020
ISSN 0090-1482

JOURNAL OF ALCOHOL and DRUG EDUCATION

Volume 64, No. 2 August 2020
ISSN 0090-1482

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EDITORIAL

Association Between Alcohol and Drugs and Juvenile Delinquency: Implications for Alcohol and Drug Education

In 2017, an estimated 809,700 arrests of juveniles under age 18 years (or cases of juvenile delinquency) were reported in the United States (Office of Juvenile Delinquency and Prevention, 2018). Of these, 94,830 (about 12%) were related to drug abuse violations (Office of Juvenile Delinquency and Prevention, 2018), Substance use is quite common in juveniles with almost two-thirds reporting use of alcohol by 12th grade (Johnson, O'Malley, Bachman, Schulenberg, & Miech, 2014) and 14% of high schoolers reporting illicit drug use (Centers for Disease Control & Prevention[CDC], 2018). There seems to be a bidirectional relationship between alcohol and drug abuse and juvenile delinquency. Alcohol has been found to be associated with aggression among adolescents, particularly males, which may contribute to delinquency (Siciliano, Mezzasalma, Lorenzoni, Pieroni, & Molinaro, 2013; White, Fite, Pardini, Mun, & Loeber, 2013). Alcohol use has also been linked with sexually violent offences (Brown & Burton, 2010). It has been documented that involvement with alcohol and drugs increases the likelihood of involvement with the juvenile justice system (Murray & Belenko, 2005). Stress is also a primary risk factor for juvenile delinquency which is also related to substance use making a triadic reciprocal linkage between these factors (Jeon & Chun, 2017).

A Canadian phenomenological study done with a sample of 62 participants (36 boys and 26 girls) recruited from youth centers, youth detention and addiction treatment centers, high schools, and from the streets of three cities in Quebec explored the deviant trajectories of youth using drugs (Brunelle, Cousineau, & Brochu, 2005). Based on a thematic analysis, the study proposed a five-stage progression of substance use and delinquency. The first stage was

the *occurrence stage* with occasional drug use that was triggered by curiosity, peer pressure, pleasure seeking, and other such factors. The second stage was the *deviant investment stage* with insistent deviant behavior but without the seriousness of a dependency. The third stage was the *sequential deviance stage* with increased drug use and delinquency. In this stage, the youth started engaging in delinquent acts. The fourth stage was the *compulsion stage* characterized by development of a serious drug problem and continued delinquency. The final stage was *total or temporary rehabilitation stage* in which the youth stopped or significantly diminished their drug use. Sometimes the final stage is not reached, and the problem of drug abuse and delinquency continues into adulthood.

A longitudinal study on adolescent predictors of alcohol use in adulthood identified low parent-child connection during late adolescence which in turn was responsible for delinquency and alcohol use (Lee, Brook, Nezia, & Brook, 2016). Murray & Belenko (2005) have identified four categories of risk factors that link substance use and delinquency. The first category consists of *individual risk factors* that include being self-centered, having hostility, having indifference to others, sensation-seeking, problems with impulse control, and having mental health problems. The second category consists of *peer-risk factors* that have a bidirectional effect. The third category is comprised of *family risk factors* that include familial conflict, ineffective supervision, physical and sexual abuse, poor conflict resolution or anger management skills, parental substance use, and parental anti-social values. The fourth category is that of *school or neighborhood risk factors* that include availability of drugs, poor school connectedness, and living in poor and disadvantaged communities.

Likewise, there are protective factors that protect children from falling into the trap of substance use and juvenile delinquency. Some of these include high self-efficacy, positive coping skills, intelligence, problem-solving ability, education, and regulation of emotions. Social bonding with peers, family, school, and community is also protective (Murray & Belenko, 2005). High degrees of self-control and peer support have also been found to be protective (Jeon & Chun,

2017). Research has documented that high-quality relationships with parents, school connectedness, and neighborhood collective efficacy are protective against juvenile delinquency (Wilkinson, Lantos, McDaniel, & Winslow, 2019).

There have been interventions that have been suggested to reduce substance use and juvenile delinquency such as CASASTART implemented in six cities in the US which was a school-centered, neighborhood-based program that targeted high-risk children aged 8-13-years, their families, and their associated communities, and was found to be successful (Murray & Belenko, 2005). Some of the success criteria that the program was able to achieve were reduction in use of drugs and alcohol among high-risk youth, reduction of violent crime, and continued funding support.

Based on the discussion of risk factors, protective fIn 2017, an estimated 809,700 arrests of juveniles under age 18 years (or cases of juvenile delinquency) were reported in the United States (Office of Juvenile Delinquency and Prevention, 2018). Of these, 94,830 (about 12%) were related to drug abuse violations (Office of Juvenile actors and interventions for addressing the issue of substance use and juvenile delinquency some implications for alcohol and drug education programs can be established. First, it is very important to identify high-risk youth and provide them with targeted interventions. Such youth are typically located in lower socio-economic neighborhoods and other disadvantaged sections of the community which should be primary targets for interventions. Second, such interventions should include a comprehensive approach that should target individual factors, peer factors, family factors, and neighborhood/community factors. It is imperative to address all four levels to maximize effects of the intervention. Third, evidence-based (theory-based) approaches should be used in designing interventions. Some newer fourth-generation behavior change models such as a multi-theory model (MTM) of health behavior change (Sharma, 2017) can be used to design such interventions. Finally, there is a need for policy support that promotes programmatic interventions in this regard. Sustained funding is vital for such efforts and dedicated financial sources need to be channeled for this purpose.

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COMMENTARY
Alcohol Consumption in COVID-19 Pandemic: Implications for Alcohol Education

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ABSTRACT

The COVID-19 pandemic is affecting all spheres of life worldwide. Besides health, the social and economic consequences of COVID-19 altered patterns of alcohol consumption warrants further elucidation. This commentary addresses the implications of COVID-19 on alcohol use and alcohol education. Alcohol drinking is a modifiable risk factor that increases the susceptibility and adverse consequences in COVID-19 patients. There is a bidirectional relationship between COVID-19 and alcohol-related problems. Alcohol use, especially heavy drinking, lowers the body's immunity to fight infections. One of the effects of COVID-19 has been on the enforcement of lockdowns as part of community-wide quarantine. There are differing reports about the impact of lockdowns on alcohol use. In the short term, generally decreased use and the manifestation of withdrawal symptoms in those suffering from alcohol use disorder have been noted. In the long term, due to distress and negative psychological sequelae associated with isolation, increased use is reported. Also, the myth of the preventive role of consuming alcohol in COVID-19 has resulted in adverse consequences including deaths in many parts of the world. This commentary advocates for the implementation of theory-based educational programs at primary, secondary, and tertiary levels to reduce alcohol use in the COVID-19 era.

Keywords: *COVID-19, alcohol, alcohol use disorder, health behavior, health education*

INTRODUCTION

Coronaviruses (CoVs) belong to a group of infectious agents that affect mainly the respiratory system (Rothan & Byrareddy, 2020). CoVs were reported to be the sources of some major historical outbreaks, including Severe Acute Respiratory Syndrome (SARS-CoV) and the Middle East Respiratory Syndrome (MERS-CoV) (Rothan, & Byrareddy, 2020; Testino & Pellicano, 2020). In December 2019, early clusters of pneumonia cases were reported from Wuhan, Hubei Province (China), which were later linked to COVID-19 by the World Health Organization (WHO) (Du Toit, 2020; Rothan, & Byrareddy, 2020; Testino & Pellicano, 2020). Since then this disease has become a pandemic and as of July 1, 2020 (at the time of writing this commentary) WHO (2020) reported 10,357,662 confirmed cases of COVID-19, including 508,055 deaths (please see the website in references for the latest estimates). Given these trends, the likelihood of this outbreak being contained remains questionable. This can be explained by the two critical aspects of transmission dynamics, one is the basic reproductive number (R0) of the COVID-19 virus, which ranges from 2 to 4 indicative of its greater transmissibility (Liu et al., 2020). The second aspect is the serial interval, which is defined as the time elapsed (mean serial interval of COVID-19 = 4 days) between the onset of symptoms of the primary (infector) and secondary (infectee) cases (Du et al., 2020).

The primary mode of transmission of COVID-19 is through person to person via respiratory droplets either inhaled or through contact or oro-fecal route with the typical incubation period ranging from 2-14 days (Singhal, 2020; Testino & Pellicano, 2020). It has become evident that the disease is highly contagious with a substantial number of infected people remaining asymptomatic (Rothe et al., 2020). The symptoms typically include fever, dry cough, sore throat, fatigue, loss of smell and taste, malaise, and later shortness of breath. Recently, the Centers for Disease Control and Prevention [CDC], added three more symptoms in the list, namely running nose, nausea, and diarrhea. In those with pre-existing comorbidities such as diabetes, heart disease, morbid obesity, chronic respiratory diseases, immunocompromised individuals, and those over 65 years of age,

it may progress to severe complications, such as pneumonia, acute respiratory distress syndrome (ARDS), multi-organ failure, and death (CDC, 2020; Singhal, 2020).

Alcohol and COVID-19

Whenever there is a major mass traumatic event, alcohol consumption increases along with the associated harms (Hobin & Smith, 2020). COVID-19 pandemic is one such unprecedented catastrophic life event, which has turned into a chronic stressor for several people globally. Therefore, its impact on alcohol use and ensuing negative sequelae are likely to happen. Alcohol drinking is a modifiable risk factor that increases the susceptibility and likelihood of adverse consequences among COVID-19 patients. Globally, about 2.4 billion people consume alcohol, of which 1.5 billion are men and 0.9 billion are women (Testino, 2020). The adult per-capita consumption of alcohol has increased from 5·9 L to 6·5 L globally during 1990-2017 and is expected to reach 7·6 L by 2030 (Manthey et al., 2019). In relation to COVID-19, chronic heavy drinking is associated with reduced immunity to bacterial as well as viral infections (Chick, 2020). Chronic heavy drinking is especially harmful as is supported by the data from Italy regarding COVID-19 in causing pneumonia (Testino & Pellicano, 2020). A meta-analysis on the consumption of alcohol and its association with community transmission of pneumonia found an 83% increase in its risk (Simou, Britton, & Leonardi-Bee, 2018). The heavy use of alcohol correlates with an increased risk of acquiring viral infections and can deteriorate the prognosis among COVID-19 patients.

Dubey and colleagues (2020) have suggested a bidirectional relationship between COVID-19 and substance use disorders. They suggest lockdown-related economic stress, loss of jobs, new-onset psychopathology, domestic and social violence, reduced availability of doctors/personnel in rehabilitation clinics, have attributed to craving, withdrawal, tolerance, relapse, and dependence on illegal substances. This has important implications for disadvantaged and marginalized strata of the society. This bidirectional relationship also holds true for COVID-19, alcohol use, and alcohol-related problems.

Effects of lockdowns

COVID-19 pandemic has resulted in lockdowns of communities worldwide as a means of community-wide quarantine measures (Wilder-Smith & Freedman, 2020). Long term effects of isolation on alcohol use and misuse are still elusive (Clay & Parker, 2020). Some researchers have reported an immediate decrease in alcohol consumption due to its restricted availability during lockdowns, however, an increase in alcohol consumption was found subsequent to the long term lockdown amidst pandemic (Reham et al., 2020). Data from the Office for National Statistics based in the UK revealed that after March 22, when the UK lockdown was instituted, alcohol sales increased by 31.4%. However, the number of people who had reduced drinking alcohol or stopped went up, which supports the hypothesis of reduced drinking immediately following the lockdown (The Lancet Gastroenterology Hepatology, 2020). In an internet-based cross-sectional study conducted in Italy, after lockdown, it was found that 36.8% of respondents reported a decrease in alcohol consumption, while 10.1% reported an increase in alcohol consumption (Scarmozzino & Visioli, 2020). A cross-sectional study done in China reported that 32% of regular alcohol drinkers, mainly from Hubei province, increased their daily usage amount during the lockdowns in the COVID-19 pandemic (Sun et al., 2020). A Polish cross-sectional study found an increase in alcohol consumption to 14.6% following lockdown with a higher tendency among those heavily habituated to alcohol (Sidor & Rzymski, 2020).

Another issue associated with alcohol overuse during lockdowns is drinking at home in the presence of children and family members. Drinking alcohol at home, which has become more pronounced during lockdowns associated with COVID-19, causes potentially bad modeling behavior for children and is also associated with child neglect and domestic violence (Colbert et al., 2020).

In India, the lack of availability of alcohol during lockdowns led to serious withdrawal symptoms among people dependent on it (Chick, 2020). Withdrawal symptoms typically consist of delirium tremens, seizures, and hallucina-

tions. A time-series data analysis done in Bangalore (India) between January 2020 and April 2020, indicated an average increase of alcohol withdrawal cases from 4 to 8 per day and the results were statistically significant ($p < 0.001$) (Narasimha et al., 2020). In the state of Kerala (India), six people committed suicide because of severe alcohol withdrawal manifestations (Varma, 2020). This led to the state government issuing new directives to medical doctors to prescribe "passes" to affected individuals to procure alcohol, which was later resisted by the medical association in the form of getting a stay order from the High Court. This dilemma in the medical community also raised ethical questions. In the UK, detox facilities and outpatient clinics serving those with alcohol use disorder had to be shut down, causing problems for patients (Chick, 2020).

The stress, boredom, and lack of socialization resulted from COVID-19 lockdowns have the potential to increase alcohol use, particularly among those with alcohol use disorder (Rehm et al., 2020; The Lancet Gastroenterology Hepatology, 2020). The tendency to relapse due to lack of social support has also been noted among heavy drinkers (Rehm et al., 2020; The Lancet Gastroenterology Hepatology, 2020). This interruption in social networks and social support due to COVID-19 is a putative factor in resorting to alcohol use. During the MERS-CoV outbreak in 2015, nearly 17,000 people were isolated, and it was discovered that anger, anxiety, depression, and post-traumatic stress disorder increased among health workers and those who were isolated (García-Álvarez et al., 2020). While population-based systematic studies have yet to be performed with COVID-19, based on preliminary data from China, negative sequelae, such as consumption of alcohol exacerbate during pandemic situations. Alcohol is often used as a self-medication agent by several people to cope with distress-related conditions. An Australian cross-sectional study found negative changes in alcohol intake, given higher levels of anxiety, depression, and distress associated with COVID-19 (Stanton et al., 2020).

Another aspect of alcohol's influence on the COVID-19 pandemic is the increased transmission rates due to parties organized under community lockdowns (Chick, 2020).

Many people, especially youth, do not heed public health directives, continue with socialization, and organize party events that involve alcohol, despite lockdown restrictions. Such parties have increased the spread of COVID-19. In Thailand and South Africa, the ban on alcohol sales has been applied to curtail socializing and thus prevent the spread of COVID-19 (Chick, 2020).

The myth about the preventive role of alcohol in COVID-19

Another critical aspect related to the COVID-19 pandemic and alcohol is the myth of its purported use in preventing COVID infection. Reports from Iran, Belarus, Thailand, Republic of Georgia, and other Eastern European countries have indicated misuse of alcohol by some sections of the community after relying on false beliefs about alcohol being protective against COVID-19 infection (Chick, 2020; Mungmungpuntipantip & Wiwanitkit, 2020). In Iran, because society does not permit the use of alcohol and criminalizes it, many people have died after consuming illicit alcohol (Shokoohi et al, 2020). As a result, the death toll due to methanol (illicit alcohol) surpassed the deaths caused by COVID-19 infections. Possibly, the lack of awareness coupled with fake news and spurious recommendations from social media must have fueled the consumption of illicit alcohol in Iran (Delirrad & Mohammadi, 2020).

Implications for educational interventions

Health education and health promotion interventions play a significant role in the COVID-19 pandemic especially as it relates to alcohol use. Such efforts need to be undertaken at all levels of prevention, including primary, secondary, and tertiary. For primary prevention of alcohol use, educational interventions must emphasize the adoption of activities, such as engagements in family time, home-based physical exercise, and participation in creative activities to combat falling into the trap of alcohol abuse during lockdowns. Likewise, social support for individuals through social media and other technological innovations must be tapped by educational programs. Social support is an empirically robust construct, which has been found to be associated with positive mental health outcomes (Sharma, Atri, & Branscum, 2013).

Furthermore, targeted social media messaging for reducing the consumption of alcohol and psychological distress needs to be utilized. Health promotion efforts should also work with media to ensure balanced media reporting and avoidance of sensationalizing the news reports to reduce distress among populations. Myths about the use of alcohol as a preventive measure for COVID-19 must be dispelled, particularly in developing countries with low literacy and health awareness levels. Healthy alternatives to alcohol use must be emphasized through educational interventions (Pickard, Ahmed, & Foddy 2015). Policymakers, media, and health professionals should incorporate messages about reducing alcohol consumption along with COVID-19 messages (The Lancet Gastroenterology Hepatology, 2020). Health promotion professionals should challenge the social norm that alcohol use is essential in society (Hobin & Smith, 2020). These primary prevention measures would be effective ways to reduce distress and potential abuse of alcohol associated with it. This is the right time to advocate and lobby for adopting and implementing effective strategies to reduce alcohol use. Excessive alcohol use has a deleterious effect on COVID-19 prognosis and treatment, and thus requires immediate attention during this public health emergency.

Secondary prevention of alcohol use during these COVID-19 times entails early diagnosis and immediate treatment. However, social distancing and lockdowns may pose challenges while implementing secondary prevention strategies. With a major shift from in-person healthcare services to Telemedicine, health care providers must be vigilant of excessive alcohol use among their patients and should take every effort to inquire about alcohol use from their patients at routine visits or interactions.

For tertiary level educational efforts, Ornell and colleagues (2020) suggest that health care and rehabilitation services for treating addiction care must be resumed instead of being postponed during the COVID-19 era. Such efforts will prevent the spread of COVID-19 and will help to improve the quality of life for those suffering from addictions. Telemedicine for alcohol counseling and management of addiction is a potential educational modality that needs

to be explored and adopted (The Lancet Gastroenterology Hepatology, 2020).

Finally, the educational interventions implemented at all levels of prevention must be based on robust theoretical approaches or evidence-based approaches (Sharma, 2017). Such theoretical approaches help in discerning measurable program outcomes, help in identifying methods for behavior change, adjust the timing of interventions, help in choosing the right mix of strategies, and foster replication.

CONCLUSIONS

The COVID-19 pandemic has significantly affected alcohol consumption patterns. Heavy alcohol use increases the risk of acquiring COVID-19 and may result in life-threatening outcomes among infected alcoholics. During the COVID-19 pandemic, several parts of the world instituted lockdowns, which have shown variable effects on alcohol consumption. In the short term, a decrease in alcohol use was reported. Subsequently, more cases of alcohol withdrawal among patients with alcohol use disorder occurred due to a lack of access to alcohol. In the long term, enforcement of lockdowns has led to an increase in alcohol consumption due to stress generated by prolonged social isolation. Theory-based or evidence-based alcohol reduction educational programs at primary, secondary, and tertiary levels must be implemented during the pandemic. Health promotion policy measures to reduce alcohol must also be pursued. Myths associated with the use of alcohol and its potential to prevent COVID-19 need to be dispelled.

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The Influence of Social Media on Illicit Drug Sale and Use among Undergraduates in Lagos, Nigeria

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ABSTRACT

Illicit drug use is a persistent health problem among Nigerian youths. Social media platforms currently facilitate online illicit drug markets in the sub-Saharan Africa state. The current qualitative study investigates the influence of social media platforms on the sale and use of illicit drugs among undergraduates in selected tertiary institutions in Lagos State, Nigeria. Thirty undergraduate students completed semi-structured interviews sharing their experiences with purchasing illicit drugs through social media platforms. Researchers analysed data using thematic content analysis. Participants mean age was 26.33 years (SD=5.13). Findings show that online drug accessibility is technical but easy with links from friends. The process is organized with the aid of online commerce. The commonly used social media networks were Facebook, Twitter, Instagram, and WhatsApp, while delivery is done with motorcycles, bicycles, and walking across the street without law enforcement agents being able to track them. However, there exist the possibility of victimisation both from vendors and platform administrators, because of the illegality. How social media owners and youth stakeholders will control these channels to impede criminal activities remains a challenge.

Keywords: *Social media, illicit drug, accessibility, illegal, friends, deviant behaviour*

INTRODUCTION

The illicit drug use epidemic

Illicit drug abuse is a major problem for every society and the menace has been steadily growing, particularly in developing countries. Illicit drug refers to the highly addictive and illegal substances such as opioids (including heroin), marijuana, cannabis, cocaine, and methamphetamine (Degenhardt, Whiteford, Ferrari, Baxter, Charlson, et al, 2013). Findings from the Global Burden of Disease Study 2010 found that the global burden of illness due to illicit drug use increased by 52 percent between 1990 and 2010 (Degenhardt et al, 2013). In 2015, about 5.3 percent of the global population used illegal substances (World Health Organization, 2018). Illicit drug use has destroyed lives and continues to endanger the health, social and mental stability of many young people in West-African countries, particularly in Nigeria, Ghana and Sierra Leone where the use of cannabis has increased in recent decades (Klein, 1999; Ellis, 2009). The first-ever, large scale national survey on drug use in Nigeria has revealed that nearly 15 percent of the adult population (about 14.3 million people) use psychoactive drug substances, at a rate much higher than the 2015 global average of 5.6 percent (United Nations Office of Drugs and Crime [UNODC], 2020).

Although the West-African sub-region including Nigeria is not new in the illicit drug trade, the advent of the internet and the relatively high level of urbanization in the sub-region has made the society vulnerable to this life-threatening phenomenon (Ellis, 2009). Information communication technology use has grown exponentially among the people in the West Africa region to include the purchase of illicit drugs via social media where the government is unable to effectively regulate drug production and use. Additionally, the advent of the internet has continued to expose millions of youths in developing countries to the illicit sale of hard drugs from other parts of the world (World Drug Report, 2018). The world has witnessed an increase in youth access to hard drugs in developing countries, particularly in Latin-America, Asia, and Africa where young people are routinely

socialized to adapt to new drug culture (World Drug Report, 2018). Although understudied, technology and mass media are believed to have influenced illicit drug use among students in sub-Saharan Africa (Okita, 2014).

Historically, illicit drug retail markets have operated in physical spaces, with associated practical limitations and boundaries (Aldridge and Décary-Hétu, 2014; Buxton and Bingham, Bybee, 2012; Décary-Hétu and Aldridge, 2015; Ellis, 2009). However, the growth of online commerce in virtual marketplaces with global reach have expanded the boundaries of drug supply and provided more opportunities for buyers (Ellis, 2009; Mounteney, Oteo and Griffiths, 2016). This affords online drug markets the opportunity to sell and buy from their own homes, avoiding the face-to-face encounters associated with offline markets (Phelps and Watt, 2014).

The evidence of selling illicit, psychoactive substances and counterfeit drugs online abound (Buxton and Bingham, 2015). According to Lavorgna (2016), the rapid development of easy online payment systems has been a major facilitator of the social phenomenon of online drugs. Online booking and online parcel tracking systems provide a safer way for criminals to arrange, track the supply process, and advertise their products (Lavorgna, 2016). This avails drug traders operating online the ease and lowered risk of contacting potential customers in a wide range of cyber-hotspots, taking advantage of the anonymity provided by the internet (Scammell and Bo 2016; Lavorgna, 2016). Their online reputation is unrelated to their identity in the physical world and the online payment systems used by customers hinder police detection (Lavorgna, 2016). Illegal online drug sellers use internet platforms to sell prescription medicines illegally, by including purchase links or web addresses of rogue internet drug outlets selling unapproved medications without a prescription (National Association of Boards of Pharmacy [NABP], 2018).

The Internet, drugs, and health

The internet has changed many aspects of healthcare. Virtual communities, chats, discussion forums, online social

networking services, and virtual libraries are tools that change the balance of knowledge between health professionals and the public, empowering patients to become more involved in decisions related to their health (Caudevilla, 2016). The internet is considered a powerful tool by professionals, clinicians, and researchers to increase their access to scientific publications, guidelines, and to receive updated information on the dangers of drug abuse for the modern society (Caudevilla, 2016). However, dissemination of inaccurate or inadequate messages can have negative health consequences on society, given the fact that it is sometimes difficult to evaluate the quality of such information online (Ventola, 2014; Pulido, Ruiz-Eugenio, Redondo-Sama, and Villarejo-Carballido, 2020). With illegal or recreational drugs, there are certain dramatic changes in drug information provided through traditional media (Nutt, 2015). Caudevilla (2016) reported that the media tends to focus on universal prevention, encouraging people to reject any use of illegal psychoactive substances, not differentiating between use, abuse, and dependence, and often exaggerating the negative aspects and consequences of use.

Illicit drug-related content on social networking sites

The growth of social media has revolutionized methods of communication and social interaction. A review of studies suggests that college-age students post drug-related content on social media platforms including YouTube, Instagram Myspace, Facebook, Twitter, Snapchat, Yik Yak (Steers, Moreno, and Neighbors, 2016). Other social media channels not specifically viewed as focused on picture or video sharing also provide users with opportunities to share illicit drug-related media (Thanki and Frederick, 2016). The majority of students perceive drug-related content to be humorous and/or view it favorably (Thanki and Frederick, 2016).

Positive social validation for illicit drug-related posts particularly conveyed through “likes”, shares, or comments could subsequently impact students’ normative behaviors and increase demand for drugs (Moreno and Whitehill, 2014; Kazemi, Borsari, Levine, and Dooley, 2017). Young people often use drug slang when purchasing illicit drugs via social media (Steers, et al, 2016; Thanki and Frederick,

2016). Extant research by Cavazos-Rehg, Krauss, Grucza, and Bierut, (2014) analysed the contents and demographics of the almost 1 million followers of a pro-marijuana Twitter handle ('handle' being Twitter jargon for a user's screen name). Many of the Twitter 'handle' followers were 19 years or under (73%) and 54 percent were females. The content of mainly cannabis discussions, were perceived as entertaining. Hanson, Cannon, Burton, and Giraud-Carrier (2013) conducted a qualitative analysis of tweets containing the drug name 'Adderall'. Hanson et al (2013) reported 213,633 Adderall-related tweets over six months, with a record high during the examinations period. Hanson et al. (2013) also highlights that social circles influence prescription drug abuse.

Studies have highlighted the need for more empirical and theoretical studies to examine how social media influences consumer health decisions, behaviors and outcomes, and to devise ways to prevent the harmful influences of social media on illicit drug use (Lau, Gabarron, Fernandez-Luque and Armayones, 2012; Steers et al., 2016; Kim, Marsch, Hancock, and Das, 2017; Hammond, Paul, Hobelmann, Koratana, Dredze, and Chisolm, 2018). Also, the literature identifies insufficient evidence about the role of social media in the supply of drugs (Thanki et al. 2016). This gap in the literature is what this article seeks to cover with empirical evidence. To the best of the researchers' knowledge, no study in Nigeria has explored how illicit drug users identify drug links on social media, the process of purchasing drugs, the commonly used social media platforms, and the process of illicit drug delivery to the final consumers. In this paper, we investigated social media links, online drug purchases, and the delivery of illicit drugs among undergraduate students enrolled in tertiary institutions in Lagos, Nigeria.

Theoretical Framework

This study adopts a meta-theoretical perspective by combining two major theories of the internet and substance abuse in modern society (Figure 1). Specifically, the study looks at the internet as a new system of a social relation that connects people around the world irrespective of their age, sex, class, creed, or political ideology. In this context, the study

offers the "Social Connection Theory" and the "Uses and Gratification Theory" to explain these borderless relations created and nurtured by the internet.

The Social Connection Theory of Drug Use and Addiction

The "Social Connection Theory" is a novel theory of drug use and addiction that links social media with the addiction problems in modern society (Hari, 2015). Before now, illicit drug use or drug addiction was often perceived as a moral or medical problem. Thus, it is common to assume that once drug addicts are diagnosed with their problem and treated, the addiction problem they have suffered will disappear (Hari, 2015). The rise in internet use has increased the extent to which people could access illicit drugs as well as master their use. While experiences vary across regions, research has shown more people in developing countries are continually exploiting the benefits of the internet and where social network regulation is weak, the youths exploit such access to bolster their social relations including access to pornography and other immoral behaviors that are a detriment to the health of the society (World Health Organization, 2018). The current study argues that the disease and moral ills of drug use and addiction are not enough to explain the problem of illicit drug use and addiction in developing countries, particularly in contemporary Nigeria. It, therefore, suggests the adoption of ***the Social Connection Theory*** of addiction proposed by Johann Hari in the book ''Chasing the Scream: The First and the Last Days of the War on Drugs'' published in 2015.

Hari (2015) noted that the internet has had a profound impact on the illicit use of drugs among young people around the world. The internet has provided many young people with the opportunity to connect with their peers and fill the physical vacuum left by society (Hari, 2015). In an increasingly urbanized society where people have lost touch with their traditional family bonds, social media provides a means for connecting with their friends who are involved in illicit drug use and other social vices. Hari (2015) noted that the global age is an age of competition where individuals and nations are struggling to compete for space in the development of humanity. As individuals continue to miss or lack the required social bonds needed to live a meaningful

lifestyle, they will continue to resort to illicit drug use or addiction to give their lives meaning (Hari, 2015).

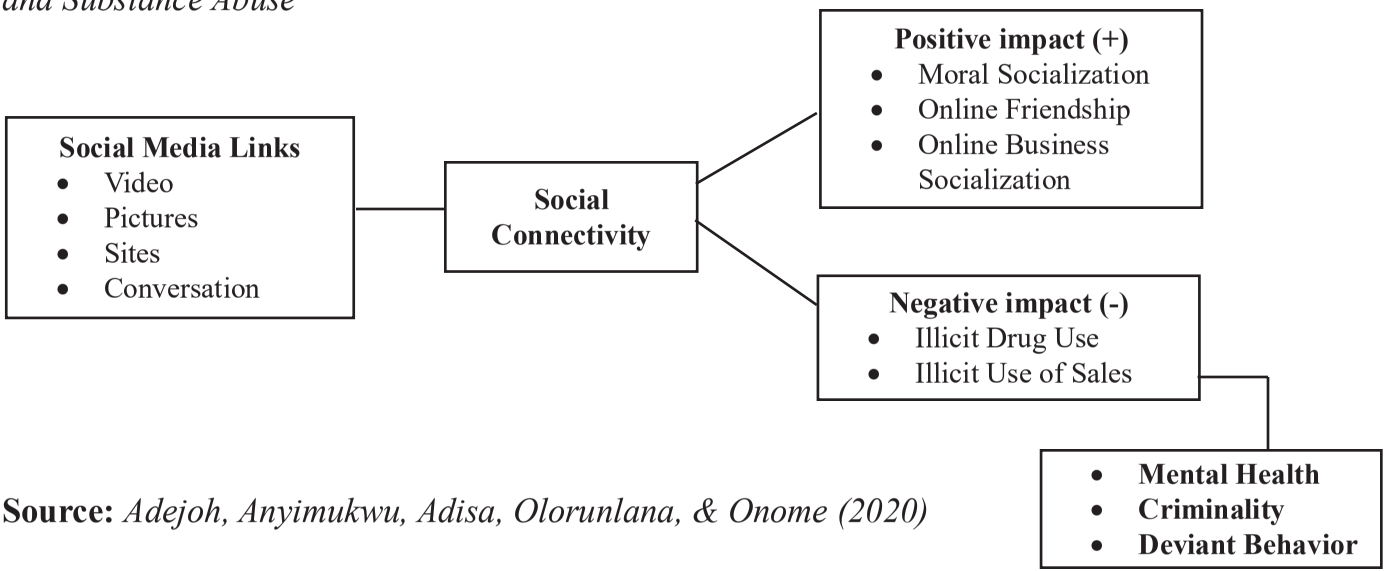
Although Hari's theory provides an acceptable basis for explaining why social media is considered a prime source of illicit drug use, the theory has not explained differentials in the use of the internet. For instance, why do some people choose Instagram while others choose Twitter? This question, which remains unanswered in the Social Connection Theory, is provided in Elihu Katz and Jay Blumler's "Uses and Gratification Theory". The theory assumes that the internet is a major step in the development of humanity, but it can be exploited for different purposes (Katz & Blumler, 1973; Matei, 2010). This implies that social media is a significant milestone in the development of humanity, but its deployment is a matter of individuals' choices. Using the rational choice model, the theory assumes that drug addicts can effectively use the internet to access their preferred websites based on the benefits the websites bring to them and how they can satisfy their needs at the time. Research has shown that, in developing countries, where internet usage is either poorly regulated or unregulated, young people who are involved in illicit drug use search for and use social media sites that expose them more to illicit drugs sale and use than those that discourage them from this subculture (Fittler, Vida, Káplár, and Botz, 2018). One of the lessons from this theory is that social media is a prime determinant of the use of drugs in developing countries, particularly in Nigeria. It then follows that social media networks that do not enhance individuals' access to drugs are not likely to be patronized by drug users, leaving drug merchants who use such sites unable to connect millions of their customers around the world. The conclusion of this theory has policy implications for the control of drugs in Nigeria.

METHOD

The qualitative research study utilized a phenomenological approach because it allowed the participants to give their life-course experiences, and narratives of a phenomenon which differ strongly from the data that may be obtained from a quantitative study. Samples were drawn from three selected tertiary institutions of higher learning located in the

FIGURE 1

Conceptual Framework Showing the Relationship between Social Media Links, Online Drug Sale and Substance Abuse



Source: *Adejoh, Anyimukwu, Adisa, Olorunlana, & Onome (2020)*

Yaba Local Government Area, Lagos, Nigeria. The study used both criterion sampling—a situation where the participants meet pre-determined criteria of importance, and snowball sampling—the selection of participants through referrals by previously selected participants (Polit & Beck, 2017). The eligibility criteria called for undergraduate students with adequate knowledge of the subject matter. In-depth interviews were conducted among 30 undergraduate students which are considered adequate since the study used the phenomenological approach, requiring 10 to 15 interviews (Moser & Korstjens, 2018; Cresswell & Poth, 2018). The study adopted face-to-face interviews using a semi-structured interview guide. We followed ethical guidelines, as participants were required to give consent verbally. Anonymity was guaranteed and confidentiality of information ensured. Participation was voluntary; the study goals were explicitly explained. No participants consented to be tape-recorded, hence interviewers wrote detailed notes as each participant spoke. We did not encounter any language barriers since all participants were literate. The interview notes were reviewed for accuracy before thematic content analysis. The coding began with organization of the data into categories and subcategories. This helped in identifying the main categories or themes, from where three major themes were identified.

RESULTS

Participants included 15 male and 15 females. Participants' ages were between 19 and 38 years with a mean age of 26.33 years (SD = 5.12). Two participants were in their first year, five in second year, nine in third year, 12 in fourth year and two in fifth year.

Theme 1: Drugs links identification on social media

Drug addiction is a sub-culture way of life among delinquent youth. They create meanings through symbolic interactions, and these meanings are not overt to those outside their in-group. For example, both drug buyers and sellers communicate through signs and symbols on social media. They share links and use specific terms. One participant called this 'network of friends':

> *"There is something we call network of friends. They keep sharing the link till it eventually gets to where they want it to get to. These people identify these links because there are some kind of symbols attached to it, for example they might put a symbol of withered leaf which stands for marijuana, such that when the consumers see these symbols, they immediately know that the link is from a real source, so they click on it and order for their drugs."* (IDI Female, 200 levels)

A male counterpart corroborated the view thus:

> *"The way the message is being composed; there is no how students who deal on drugs will not identify the links. These links don't just come; they come with technical messages with specific terms that only people who take drugs will understand."* (Male, 500 levels)

Similarly, another participant substantiated the view of how they were able to identify drug sales links on the social media, she said:

> *"We identify these links when people who send it to us are also into drugs; we believe they must have gotten the link from a reliable source that is just one sure way to identify these links."* (Female, 400 levels)

One participant said they do identify online links through other users:

> *"Those of us that are curious and interested in such activities always find out ways of identifying these links when we see them as we also seek ways of identifying them from our friends that partake in such activities."* (Male, 400 levels)

While another participant claims he only asked his friends to give him contact of online dealers:

> *"Well I don't know how to identify the links but I chat-up my friends to give me the number of an online dealer that is effective and they do it and I place my order."* (Male, 300 levels)

Theme 2: Process of purchasing drugs and the commonly used social media networks

The process of drug sales online could be said to be organized. Participants affirmed that payments are made in person, online or through bank transactions. Goods can only be delivered after evidence of payment; some technicality could be involved such as paying within a specific time frame, forwarding payment details like name, phone number and teller number to the seller.

Participants acknowledged the use of Facebook, Twitter, Instagram and WhatsApp as the major social media sites for online drug transactions. One of the participants said affirmatively:

> *"I know how drugs are sold online. The trending sites now are Facebook and Twitter. You could easily meet anonymous friends there who would refer you to places where you can get drugs. There are also some other business platforms on that site, so basically there is a network of friends on the internet who help people who consume drugs to locate nearby places where they can get drugs. These drug consumers surf their phone on the mobile site and when they pay using their ATM cards by entering your card details and pin and the money goes off your bank account. The drugs are being delivered to them within the space of hours."* (Male, 300 levels)

Another participant stated thus:

> *" I pay for my drugs online, the process can be sometimes very stressful when the network is bad but at least it makes a lot of sense, there is a way we pay online by filling our details and all and the money will be deducted in our account with*

> *assurance that our package will be delivered to us between 45 minutes to 1 hour."* (Female, 300 levels)

One participant confirmed the use of social media for drug transactions but claimed she does not buy drugs online. According to her, online sales take place:

> *"Sometimes in Instagram, I have even seen some videos and pictures of drugs on Instagram. I hear of people buying drugs from other social networks, but I have seen adverts of hard drugs on Instagram although I personally don't buy drugs online. People who buy these drugs see the adverts, call the people who sell, and they get their order delivered to them at their doorsteps."* (Female, 400 levels)

Some participants do not pay online or through the bank. This is because of the risk involved. According to one of them:

> *"Once I see my package, I go through it before I make payment. I always pay on delivery. I can actually do the transfer too, but it is payment on delivery. I don't like doing transfers because some of the people involved in this business are scammers, when you make transfers, they will not deliver your drugs to you and since the drug thing is illegal, there is no one you can report them to. So, it's better for me to be very careful."* (Female, 300 level)

A male participant agreed with her position, thus:

> *"I don't pay online because people can fail you, what I do is to wait till the drugs get to me before I pay, although I do my order online but I think it unwise of someone to pay for drugs online without even seeing the drugs he or she has paid for whether it is good or bad."* (Male, 500 level)

Theme 3: Process of drugs delivery to the final consumers

This is the last stage in the network of online drug purchase. Dealers delivered these drugs through motorcycles, bicycles and some only walked across the street. Participants said that the use of social media sites sometimes affords them the opportunity to identify a nearby site:

> *"The people that deliver these drugs are within the locality so once I am close by. It doesn't take more than an hour or thirty minutes for the package to get to me. The social media sites I use allow me to know nearby places where these drug dealers are, therefore making the delivery process faster."* (Male, 100 level)

One participant said the process may last between 30 minutes, depending on the location:

> *"It depends on the area in which the person to deliver the drugs is coming from, so I should say maximum, 30 minutes. The people who deliver these drugs come with motorcycles or bicycles and call their customer to meet them at a very secret place; they give these customers the packages (drugs), collect their money and leave."* (Female, 400 levels)

Another participant describes the process of delivery thus:

> *"The packages are always delivered inside a box where the buyer cannot see the drugs except, he has paid for it and they bring the drugs through a bike man. They also do pay on delivery, but most times people pay using their ATM cards."* (Male, 200 levels)

This was corroborated by another participant:

> *"My friends who order for drugs online get it quick and they always have all their supplies. There is a person who delivers it to my friends, and it comes really fast, trust me."* (Female, 400 levels)

When issues of how they were able to do this successfully without being caught came up, one participant said:

> *"Drugs are being delivered in an orderly manner and people who deliver these drugs are always very smart about the delivery, some of them know police officers and they 'settle' these police officers, so they don't have issues when they go around to deliver drugs."* (Female, 200 levels)

DISCUSSION

The growth of social media has revolutionized the means used by illicit drug users to identify drug links on social media, the process of purchasing drugs, the commonly used social media platforms, and the process of illicit drug delivery to the final consumers. Drug-related content exists across social media and virtual social networks provide opportunities for drug-related encounters and there is evidence that this is happening particularly among small groups. Participants affirmed that certain symbols and specific terms understood by their in-group are used; these communicate meanings to both buyers and sellers on social media as documented by Steers, et al (2016), and Thanki and Frederick (2016). Participants appreciate the ease of access, the quality, and range of products that online drug markets offer. This is in congress with Barratt, Ferris, and Winstock (2014), who also stated that customers perceive these markets as providing them with a higher level of security than street drug markets. Similarly, the emergence of online sales of illicit drugs has been detailed in Markov's description of marijuana transactions as far back as 1971 (Buxton and Bingham, 2015; Martin 2014), between students at Stanford University and MIT using technology at the artificial intelligence laboratories that became the foundation of the internet.

On the process of purchasing drugs online, participants believed it was well organized. This is because they could pay online, do a bank transfer, or pay at delivery. Some participants narrated that goods can only be delivered after evidence of payment; while others only pay for the goods after it has been delivered. A similar finding by Mounteney, et al., (2016) suggests that a sizeable number of illegitimate

online pharmacies are involved in the illicit supply of products. These sites are not registered with any accreditation system and do not abide by regulations and professional standards, making them operate illegally. Illegitimate online pharmacies may have a role in the supply of drugs for misuse (Mounteney et al, 2016). On the commonly used social media networks, participants identified Facebook, Twitter, Instagram, and WhatsApp as their commonly used websites or source. Twitter, Instagram, and Facebook were the most cited by scholarly articles (Steers et al, 2016; NABP, 2018). We are not aware of any studies that indicated WhatsApp. This could also be because WhatsApp is owned by Facebook and provides secure communication more than other social media platforms.

Delivery of illicit drugs to final consumers takes on different approaches; motorcycles, bicycles, and hand delivery were mentioned. Our participants denounced the likelihood of being arrested, because according to them, the seller had 'settled' the law enforcement agent. However, another study noted that the likelihood of arrest is substantially reduced through online markets (Van Hout and Bingham, 2014). Our study equally found out that the illegality of illicit drugs could lead to victimization as supported by Décary-Hétu and Aldridge (2015). They affirmed that because of the rudimentary security features of these online platforms, criminal operators could face a considerable degree of harassment both from vendors and platform administrators. The Ministry of Health, Ministry of Education, the National Drug Law Enforcement Agency, and the National Campaign against Drug Abuse (NACADA) could engage in appropriate interagency agreements to abate the influence of social media on illicit drug use among students.

Despite the significant findings, the study has some limitations. Using a convenient sample of undergraduate students in Yaba L.G.A., Lagos may limit the generalizability of the findings to the greater college-age population across Nigeria. Responses were self-reported and recall bias may have affected the results.

CONCLUSION

Social media has increased the use of technology by illegal drug sellers to supply illicit drugs in Nigeria. When compared to the traditional way of drug purchase, participants find it easier to purchase illicit drugs online. Our study highlights online payment and easy delivery of the package with a lesser risk of being caught by law enforcement agents. Facebook, Twitter, Instagram, and WhatsApp were implicated as sources where an online drug is being trafficked. The challenge remains doubtful on how social media platform administrators will control these channels used for illicit drug distribution. Educational stakeholders and law enforcement agencies should develop a streamlined practice for tracking these illicit drug distributions and support students with social and behavioral problems emanating from illicit drug use.

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Sexual Identity and Risk of Alcohol, Tobacco, and Other Drug Use Behaviors among a Representative Sample of Youth

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ABSTRACT

Research has found that adolescents who report being gay, lesbian, or bisexual (i.e., sexual minorities) are at higher risks for using alcohol, tobacco, and other drugs (ATOD). Although there are numerous studies that have identified health disparities among sexual minority youth as a whole, few have assessed whether teens who report bisexuality are at a higher risk for ATOD use. As such, the purpose of this study was to assess the relationship of bisexuality and ATOD use among high school students. Data for this study were derived from the 2015 Youth Risk Behavior Study (YRBS). A total of 15,624 participants completed the YRBS in 2015 with 6.6% being bisexuals. The results of this study found that students who reported bisexuality were significantly more likely to report ever use and current use of cigarettes and alcohol. Bisexuals were also significantly more likely to binge drink (OR= 2.69) and ever use inhalants (OR= 2.17. Our results add to the literature that seeks to understand behaviors specifically impacting individuals identifying as bisexual. More research is needed to better understand the factors that may contribute to such behavioral differences between bisexual- and heterosexual-identified teens.

Keywords: *bisexual, high school, ATOD*

INTRODUCTION

According to the Centers for Disease Control and Prevention (CDC), adolescent risk behaviors significantly affect the health and welfare of youth in the United States (2017). These risk behaviors may include such things as early use of alcohol, tobacco, and engaging in high risk sexual behaviors. The reasons why youth engage in using these various substances may be based on societal factors such as availability of alcohol, genetic factors such as family history of addiction, or individual factors such as sexual identity (Whitesell, Bachand, Peel & Brown, 2013).

Past research has indicated that adolescents who report bisexual identity are at a greater risk for using alcohol, tobacco, and other drugs (ATOD) as compared to their heterosexually identified counterparts. More specifically, Tomedi and colleagues found that bisexual youth were significantly more likely to be current cigarette and alcohol users compared to heterosexual youth (Tomedi, Oglesbee, & Padilla, 2017). These researchers also suggest that bisexual youth were more likely to binge drink as compared to heterosexually identified youth (Tomedi, Oglesbee, & Padilla, 2017). Other researchers have focused their attention on potential behavioral differences relative to the gender of bisexually identified youth. Johns and colleagues reported that male bisexual youth were more likely to have tried cigarettes, alcohol, marijuana and cocaine (Johns, Lowry, Rasberry, et al., 2018). Similarly, they also found that female bisexually identified youth were more likely to have tried cigarettes, alcohol, marijuana, and cocaine (Johns, Lowry, Rasberry, et al., 2018). Other researchers report similar findings, with bisexual youth significantly more likely to have tried alcohol or be a current alcohol user, and to have binge drank in the past 30 days as compared to heterosexual youth (Phillips, Turner, & Felt, 2019; Fish, Schulenberg, Russell, 2018). These results are alarming, as early substance use increases the likelihood of negative health outcomes later and compounds the risk for bisexually identified youth (Schulte & Hser, 2014; Dermody, Marshal, & Cheong, 2014; Marshal, Friedman, Stall, & Thompson, 2009).

There has been a call for increased studies specifically addressing bisexual youth in population health studies (Feinstein & Dodge, 2019). Although numerous studies have identified health disparities among sexual minority youth as a whole (i.e., gay, lesbian, bisexual), fewer have assessed whether teens who report bisexuality are at a higher risk for ATOD use in national studies (Phillips, et al., 2019; Fish, et al., 2018; Hughto, Biello, Reisner, et al., 2016; Corliss, et al., 2010; Ford, Jasinski, 2006). In fact, most quantitative studies to date have collapsed gay, lesbian, and bisexual into one distinct classification which may reduce our understanding of the unique risk factors of bisexual youth. As such, the purpose of this study was to assess the relationship of bisexuality and ATOD use among high school students.

METHODS

Procedures

Data for this study were derived from the 2015 Youth Risk Behavior Study (YRBS). A total of 15,624 participants completed the YRBS in 2015. This national study is conducted every odd year by the CDC and measures alcohol, tobacco, and other drug use, dietary behaviors, physical activity, sexual behaviors, unintentional injury and violence, and other health priorities such as mental health in order to determine health-risk behaviors among high school students. The YRBS is a cross-sectional survey administered among representative samples of students in the United States. The YRBS includes school-based national, state, and local data conducted among representative samples of students in grades 9–12. The sampling frame for the 2015 national YRBS consisted of all regular public and private schools with students in at least one of grades 9–12 in the 50 states and the District of Columbia (CDC, 2015). Data collection procedures were designed to protect students' privacy by allowing for anonymous and voluntary participation. Before data collection was administered, parental permission was obtained from a parent or guardian of the students. Students completed the self-administered questionnaire during one class period and recorded their responses directly on a computer-scannable booklet or answer sheet. The CDC's Institutional Review Board approved the protocol for the national YRBS (CDC,

2015). The current secondary research study was conducted to determine if a relationship existed between the variables of interest. Specifically, the researchers sought to determine whether high school students who self-reported bisexuality had higher risks of ATOD use.

Subjects

Participants for this study consisted of an almost equal distribution of grade with about 25% per grade. The sample was equal between sexes. Whites made up the majority of the sample (44.9%) followed by Hispanic (15.5%) and African-Americans (10.9%). The mean age was 15.4. Bisexuality was reported by 922 (6.6%) of the students and heterosexuality was reported by 12,954 (93.4%) of the students.

Measures and Data Analysis

First, in order to describe the sample, we conducted frequencies of all demographic variables. These items included race, gender, age, grade in school, and sexual identity. Sexual identity was assessed by the question, "Which of the following best describes you?" (response options: heterosexual; gay or lesbian; bisexual; not sure). Secondly, we conducted Chi-Square analysis of the variables of interest to determine prevalence rate differences between heterosexual and bisexual teens. These variables included ever and current use of cigarettes, alcohol, and marijuana, ever use of heroin, cocaine, inhalants, and consuming five or more drinks in one sitting (i.e., binge drinking) by sexual identity. These variables were dichotomous. Lastly, logistic regression was used to determine the relationship between sexual identity and ATOD use among high school students. In this analysis the dependent variable was sexual identity (i.e., heterosexual, bisexual) and the independent variables consisted of ATOD use.

RESULTS

Table 1 presents prevalence of ATOD use by sexual identity. The percentage of students engaging in ATOD use was higher among those who reported bisexuality compared to heterosexual youth for all variables assessed. Among those

TABLE 1

Percentage of ATOD use Behaviors among Heterosexual and Bisexual Students

	Heterosexual		Bisexual		
Variable	n	%	n	%	P-Value
Ever tried cigarettes	3723	32.4	423	51.7	0.00
Current cigarette use	1255	10.0	185	21.3	0.00
Ever tried alcohol	8002	63.4	693	78.1	0.45
Current alcohol use	3814	32.2	368	45.4	0.23
Drank 5 or more drinks in a row	2227	17.8	214	24.3	0.00
Ever tried marijuana	4918	38.8	495	55.6	0.13
Current marijuana use	2669	20.9	298	33.4	0.00
Ever tried heroin	202	01.6	40	04.4	0.00
Ever tried cocaine	638	05.0	86	09.5	0.00
Ever tried inhalants	745	05.9	158	17.6	0.15

students who reported bisexuality, 51.7%, 78.1%, and 55.6% had ever tried cigarettes, alcohol, and marijuana compared to 32.4%, 63.4%, and 38.8% respectively of those who reported being heterosexual. Among students who reported bisexuality, 21.3% and 55.6% were current cigarette and marijuana users compared to 10.0% and 38.8% of those who reported being heterosexual. Additionally, a greater percentage of bisexuals were binge drinkers compared to heterosexual youth (24.3%, 17.8%).

Table 2 shows odds ratio and 95% confidence intervals of the relationship between sexual identity and ATOD use among high school students. Students who reported bisexuality were significantly more likely to have ever tried cigarettes (OR=1.51, CI=1.22-1.86) and alcohol (OR=1.42, CI=1.13-1.77) compared to heterosexual youth. Additionally, bisexuals were found to be significantly more likely to be current cigarette and alcohol users with these students being 1.39 (CI=1.08-1.80) and 1.14 (CI=1.00-1.45) more likely to report the behavior. Bisexuals were also significantly more likely to be a binge drinker with these students being 2.69 (CI=2.53-2.90) times more likely to report the behavior. Lastly, a significant difference was found for inhalant use with bisexuals being 2.17 (CI=1.68-2.39) times more likely to report the behavior.

DISCUSSION

The purpose of this study was to assess the relationship of sexual identity and ATOD use among high school students. Of the sample of high school students, 6.6% reported being a bisexual. The results of this study found that bisexual students reported greater percentages of ATOD use behaviors compared to heterosexual students. Additionally, this study found a direct relationship between bisexuality and ever use of cigarettes, alcohol, and inhalants, and current use of alcohol and binge drinking. One study assessing differences between bisexual and heterosexual youth on ATOD use found similar results (Corliss, et al., 2010). Specifically, our study found that bisexual youths were more likely to have used a variety of drugs in the past year and consumed more than their heterosexual peers. Another study assessing sexual identity and ATOD use among college students found

TABLE 2

Odds Ratio and 95% C.I. of the Relationship between Sexual Identity and ATOD Use

Variable	Odds Ratio (95% C.I.)
Ever tried cigarettes	1.51 (1.22-1.86)*
Current cigarette use	1.39 (1.08-1.80)*
Ever tried alcohol	1.42 (1.13-1.77)*
Current alcohol use	1.14 (0.90-1.45)
Drank 5 or more drinks in a row	2.69 (2.53-2.90)*
Ever tried marijuana	1.21 (0.96-1.52)
Current marijuana use	1.12 (0.88-1.42)
Ever tried heroin	1.24 (0.64-2.39)
Ever tried cocaine	0.74 (0.50-1.08)
Ever tried inhalants	2.17 (1.68-2.39)*
Reference group = heterosexual * = significant at <.05	

that bisexuals, especially females, were significantly more likely to have used marijuana and illicit drugs compared to heterosexual college students. Specifically, these women were three times more likely to have used in the past 30 days and male bisexuals were more than twice as likely to have used illicit drugs compared to heterosexual students (Ford, Jasinski, 2006).

Bisexual youth may need more emotional and social support as they begin to understand their sexuality. Research has found that sexual minority youth experience a greater amount of stressors due to social stigma and discrimination in their lives compared to heterosexual youth (Mereish, Goldbach, Burgess, DiBello, 2017; Hatzenbuehler, Phelan, Link, 2013; Poteat, Mereish, DiGiovanni, Koenig, 2011) which may influence the greater use of various substances,

(Hughto et al., 2016; Marshal, Sucato, Stepp, et al., 2012; Frisell, Lichtenstein, Rahman, 2010) as was found in this study. It may be important for individuals working with bisexual youth to more intensely target their efforts in providing these youth opportunities to learn and engage in healthy stress management techniques. More research is needed to explore the emotional aspects of bisexuality to determine how best to address risk behaviors in these youth.

The results of this study must be considered in light of several limitations. First, the study was cross-sectional. Thus, the temporality of associations cannot be determined. Second, this study was based on self-reported behaviors of high school students. There is no way to ensure the accuracy of the responses such as under or over reporting behaviors, however, the questions have been shown to demonstrate good test-retest reliability (CDC, 2015). Lastly, these data apply to teens who attend school. They are not representative of all persons in the age group.

CONCLUSIONS

The results of this study found that bisexual teens were at a greater risk for using alcohol and other drugs. Our results add to the literature that seeks to understand behaviors specifically impacting individuals identifying as bisexual. Based on our results, we believe that it is important to emphasize to those who work with bisexually-identified youth that there is a need to focus on substance abuse counseling, as these youth who identify as bisexual may need more emotional and social support. These youth may be seeking out ATOD as a way to cope with their psychological needs. However, more research is needed to better understand the factors that may contribute to such behavioral differences between bisexual and heterosexual identified teens.

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The authors declare there is no conflict of interest.

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External Validity of the Adolescent Domain Screening Inventory – Short Form (ADSI-S) with an Older Adolescent Population

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ABSTRACT

The purpose of this replication study is to establish external validity of the ADSI-S. A convenience sample (n = 114) tested the validity of the ADSI-S with a population aged 18-20 years. Consistency reliability analysis was conducted, correlations were run to determine known-instrument construct validity and a logistic regression examined the predictive validity. A Chronbach Alpha of .719 was demonstrated. Known instrument construct validity showed a correlation of .616. ADSI-S correctly predicted substance use 85.1% of the time. Discussion: The hypotheses forming the rationale for this study were upheld, suggesting external validity.

Keywords: *SBIRT, assessment, substance use, risk and protective factors.*

INTRODUCTION

The Adolescent Domain Screening Inventory – Short Form (ADSI-S) was developed to serve as a potential brief screening instrument to be used when longer, more detailed instruments are not practical, such as in a physician's office or emergency room (Corrigan, 2017), in keeping with the Screening, Brief Intervention, and Referral to Treatment model developed by the Substance Abuse and Mental Health Services Administration (Inman, El-Mallakh, Jensen, Ossege, & Scott, 2020; Levy, Wiseblatt, Straus, Strother, Fluet, & Harris, 2020; Davoudi & Rawson, 2010).

As discussed in Corrigan (2017): "SBIRT is an assessment protocol, developed for use in settings such as in a primary care office or an emergency room. Screening is the first step and a universal implementation is recommended. There are several valid and reliable instruments that SAMHSA has gathered for this purpose that are available on the SAMHSA website.

Those patients that screen positive for alcohol or other substance abuse are then provided a brief intervention with an evidence-based intervention to attempt to assist that patient in beginning to make the changes that will lead to better health choices. However, a clinician must also decide, based upon this screening and brief intervention process, if further treatment is required. If so, the patient is referred for further assessment to determine an appropriate level of treatment" (page 38).

In initial development, the ADSI-S showed strong correlation to its parent instrument, the Adolescent Domain Screening Inventory (ADSI), at r = .87 and a moderate correlation to substance use at .652. The predictive validity test shows a 75% correct prediction rate. The ADSI-S demonstrated a Cronbach's Alpha of .804. These basic tests of reliability and validity suggested that the instrument could serve the purpose of an SBIRT model. The ADSI-S compares well with others of its kind; specifically, the CRAFFT, the AUDIT, and the CAGE, and offers another option for clinicians. However, it was developed on a dataset collected in the year 2000 with a population of adolescents aged 13-17

years (Corrigan, 2017). As this initial development relied upon a convenience sample, this replication study sought to extend the external validity of the ADSI-S for use with adolescents of any age, on data collected in 2015, potentially expanding its use from a high school population to be useful in college substance abuse prevention efforts. This author is not aware of other studies on the ADSI-S.

Many contemporary life course and human developmental theorists and researchers argue that the stage-related challenges and changes associated with adolescence continue into the early twenties (Corrigan, Forte, & Bulgaris, 2017). Alcohol and substance use continue to be problematic for developing persons in early, middle, and late adolescence. "In 2016, 28.6 million people aged 12 or older used an illicit drug in the past 30 days, which corresponds to about 1 in 10 Americans overall (10.6 percent) but ranges as high as 1 in 4 for young adults aged 18 to 25" (SAMHSA, 2017).

The purpose of this study is to test the reliability and validity of the Adolescent Domain Screening Inventory – Short Form on an older adolescent population to establish external validity. The ADSI-S is a brief screening instrument developed to identify adolescents at risk of using substances and those who have begun to do so (Corrigan, 2017). It was developed on a population aged 13-17. However, since the challenges associated with adolescence can continue well into one's 20s, testing this instrument on a college aged population (aged 18-20) will help determine if this assessment tool will be useful in identifying all adolescents that may be at risk of substance use, specifically traditionally aged freshman college students.

Specifically, it is hypothesized that the ADSI-S will perform in a similarly adequate way when tested upon adolescents aged 18-20 as it has on younger populations on known instrument construct and predictive validity, as well as internal consistency reliability.

METHODS

Design

This replication study is a secondary analysis. All analyses were conducted using SPSS, Inc., version 24. Reliability analysis was conducted to determine the Cronbach's Alpha value. Pearson product-moment correlations to determine known instrument validity were run comparing the ADSI-S and a last 30-day substance use variable for alcohol, cigarettes, and marijuana taken from the original dataset. Additionally, a logistic regression was conducted using the ADSI-S variable and dichotomous the last 30-day substance use variable to determine predictive validity.

Participants

Data used for this secondary analysis was collected from 114 students at a mid-Atlantic public University in the year 2015. IRB concerns limited the demographic data collected from students in the original study, thus, the only known demographic information is that the students were between the ages of 18 and 20 years old (Corrigan, Forte, & Bulgaris, 2017).

Measures

ADSI-S

The ADSI-S consists of 5 items, each with a 4-point Likert-scale response scored from 0 to 3, for a total possible 15 points. It demonstrated a Cronbach's Alpha of .804, showing adequate internal consistency. The ADSI-S shows strong correlation to its parent instrument at r = .87 and a moderate correlation to substance use at .652. The predictive validity test shows a 75% correct prediction rate (Corrigan, 2017).

The ADSI-S items are:

1) If you wanted to get some marijuana, how easy would it be for you to get some?

2) About how many adults have you known personally who in the past year have used marijuana, crack, cocaine, or other drugs?

3) How wrong do you think it is for someone your age to drink beer, wine or hard liquor (for example, vodka, whiskey, or gin) regularly?

4) How wrong do you think it is for someone your age to smoke marijuana?

5) How much do you think people risk harming themselves (physically or in other ways) if they smoke marijuana regularly?

Monitoring The Future

Included in the original dataset was a substance use subscale taken from the Monitoring The Future scale. It consists of 26 items asking about the use of 13 substances over both a person's lifetime and the previous 30 days (Johnston, O'Malley, & Bachman, 1999). The last 30-day use item was derived from this subscale to test both the predictive and known groups construct validity.

RESULTS

In replicating the tests conducted in the development of the ADSI-S (Corrigan, 2017), this study ran validity tests for internal consistency reliability, known instrument construct validity, and predictive validity as described below.

Internal Consistency Reliability

Using SPSS, Inc. – version 24, Scale/Internal Consistency function was utilized to determine the ADSI-S demonstrated a Chronbach Alpha score of .719, $p < .001$.

Known Instrument Construct Validity

Springer, Abell, & Hudson, (2002) discuss known instrument construct validity, a concept similar to known groups construct validity, which uses an instrument to judge the sta-

tus of an individual rather than another method, such as a clinical interview. To test for known instrument construct validity, the Monitoring the Future, or MTF, (Johnston, O'Malley, & Bachman, 1999) substance use sub-scale administered to the original sample was used to assess current substance use. A total last 30-day use variable was created by adding the appropriate variables from the MTF sub-scale. The ADSI-S items were added together to form a total ADSI-S score scale and was correlated with the total last 30-day use sub-scale. The analysis showed a correlation of $r = .616$, $p = .01$.

Predictive Validity

The ADSI-S items were added together to form a total ADSI-S score scale. This variable was then dichotomized, with 0 = the bottom 75% of respondents and 1 = the top 25% of respondents. Three items were selected from the MTF scale in the original data to represent current problematic substance use, last 30-day use of cigarettes, alcohol, and marijuana. A binary logistic regression was run using the current use variable as the independent variable and the total ADSI-S scale variable as the dependent. Table 1 presents the result of these analyses.

The ADSI-S correctly predicted 85.1% of substance users, with a p value of $p < .001$. Specificity for this data is 96.4%, and sensitivity 53.3%.

DISCUSSION

The hypotheses forming the rationale for this study were essentially upheld. The ADSI-S was shown as slightly varied, but similar results were in use with this older population as with the original 13-17-year-old sample upon which it was developed.

Both the internal consistency reliability and the known instrument construct validity analyses showed slightly weaker results than the original. The Chronbach Alpha in this sample registered a .719, while the original was .804. While the correlation of .616, as compared with the original .652 in the known instrument construct validity analysis, is

TABLE 1

Logistic Regression – Continuous Use/ADSI-S Dichotomous

Expected – Beginning Block		Last 30-day use - Predicted		Percentage Correct
		No	Yes	
Last 30 day use - Observed	No	84	0	100.0
	Yes	30	0	0.0
Overall Percentage				73.7
Observed – Block 1		Last 30-day use - Predicted		Percentage Correct
		No	Yes	
Last 30 day use - Observed	No	81	3	96.4
	Yes	14	16	53.3
Overall Percentage				85.1

Logistic Regression Significance Tests

B	S.E.	Wald	df	Sig.	Exp(B)
.547	.116	22.206	1	.000	1.727

not as strong of an internal consistency, this was still acceptable (Rubin and Babbie, 1997). The association originally shown between the ADSI-S and the measure for substance use appears to have held, indicating the ADSI is demonstrating known instrument construct validity.

The predictive validity was somewhat stronger than the original, with the ADSI-S correctly predicting substance use 85.1% of the time on this older population, while originally predicting 75% correctly in the original data. It appears That the ADSI-S will be useful for this purpose.

There are limitations with this study that merit discussion. The study was a secondary analysis of existing data. The original data was limited to a convenience sample, rather than a random selection of participants. While the ability to generalize is low with convenience samples (Fortune & Reid, 1999) this study was a replication study, validating the original developmental study, which adds to the generalizability of the results.

This was a cross sectional study, limiting the ability to assess characteristics over time. Finally, due to Institutional Review Board limitations, gender and race data were not collected, and we are unable to assess the stability of the ADSI-S for use among older adolescents across these factors. Further replication studies with new populations should be conducted to establish external validity with these populations.

It appears that the ADSI-S has shown adequate psychometric properties to be considered for use among older adolescent populations, as well as with the original 13-17-year-old population on which it was developed, as a brief screening tool. Specifically, this tool should prove useful in guiding colleges in implementing substance use prevention programming and for Health and Student Services interventions. A high score on the ADSI-S would indicate that further assessment is needed. A behavioral health practitioner could meet with an individual for an in-person assessment, or could ask the individual to complete a more thorough assessment instrument, perhaps the parent instrument, the Adolescent Domain Screening Inventory, to help determine if a brief intervention or referral to treatment might be helpful.

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Assessment of Psychosocial Interventions in Opioid Cessation: A Systematic Review

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ABSTRACT

Approximately 70% of 67,367 drug overdose deaths involved opioids with rates 4 times higher than in 1999. The purpose of this systematic review is to assess the effectiveness of psychosocial interventions in opioid cessation. The search criteria for this review were: (a) published in English language between 2014 and 2019; (b) indexed in MEDLINE/PubMed, CINAHL, AltHealthWatch, and SCOPUS. Articles were selected based on predetermined criteria. 11 interventions with a combined total of 916 individual and 52 dyad participants met the eligibility criteria. The present evidence indicates that psychosocial interventions may lead to opioid cessation and improved quality of life. More large scale, rigorous randomized control trials using behavioral health theories are needed.

Keywords: *Opioid, opioid cessation, drug misuse, drug overdose, psychosocial interventions.*

INTRODUCTION

Globally, nearly 35 million people use opioids including heroin (United Nations Office on Drugs and Crime [UNODC], 2017). In 2016 alone, a global estimate of 34 million people aged 15 to 64 years used opioids at least once (UNODC, 2017). Every day in the United States, 130 people die from an opioid overdose (Centers for Disease Control and Prevention [CDC], 2017). In 2017, nearly 70 percent of the 67,367 drug overdose deaths involved opioids with rates four times higher than in 1999 (CDC, 2018). Opioids are a class of drugs derived from the opium poppy plant or illegal synthetic similarities that produce both analgesic and euphoric effects (World Health Organization, 2018). Opioids include legally prescribed pain relievers (oxycodone [OxyContin®], hydrocodone [Vicodin®], codeine, morphine, methadone, and tramadol), illegal drug heroin and synthetic opioids such as fentanyl (Department of Health and Human Services, 2018). Over-the-counter opioids commonly misused by young people include loperamide, an antidiarrheal, and Dextromethorphan (DXM), a cough suppressant (NIDA, 2018).

Opioid use leads to substance dependence characterized by impaired control or strong desire towards opioid use, impaired judgment, disruptions in activities and responsibilities, increased tolerance, and withdrawal symptoms when discontinued (Kaye, Jones, Kaye, Ripoll, Galan, et al., 2017). Other consequences include constipation, drowsiness, slowed breathing, changes in heart rate, blood pressure, and/or mood to heart attack, stroke, psychosis, overdose, HIV/AIDS, mental illness, heart and lung disease and even death (Baldini, Von Korff, & Lin, 2012). Negative outcomes may be seen in education level, employment, housing, relationships, and criminal justice involvement (Kaye, et al, 2017). A review study reported that over a 4-year period, as poverty, unemployment increased and prescription opioid abuse increased, high school graduation rates decreased (Kaye et al, 2017).

Rates of opioid overdose are significantly higher among Whites when compared with Blacks (96.2% vs 3.8%), those who use heroin versus prescription opioids (95.2% vs 4.8%),

or had a friend who dies from an overdose (89.6% vs 10.4%) (Schiavon, Hodgin, Sellers, Word, Galbraith, Dantzler et al, 2018). The mean annual direct healthcare cost is estimated at $15,884 per patient compared to non-abusers ($1830), about 8.7 times higher in abusers (Kaye, et al, 2017). The U.S. annual estimated cost of nonprescription opioids is $55 billion and $78.5 billion for prescription opioids accounting for lost productivity, health care, and criminal justice expenditures (Kaye et al, 2017; NIDA, 2017).

The rise in opioid misuse is associated with greater pain relief particularly in chronic pain management, obesity, musculoskeletal disorders in elderly patients, increased survivorship post-injury and cancer, and growing rates of surgery (Dasgupta, Beletsky & Ciccarone, 2018); history of mental health-related visits, psychological distress, prior substance abuse, or hepatitis diagnosis (Dufour, Madekian, Pasquale, Schaaf, Andrews, et al., 2014); recent illicit drug use, drug and alcohol-related problems with the law (Hah, Sturgeon, Zocca, Sharifzadeh & Mackey, 2017). Patients who visit primary care physicians were also 1.83 times more likely than specialty physicians to report opioid use (Rasu & Knell, 2018). Patients less likely to receive opioids include privately insured patients and Hispanic patients, while publicly funded patients, having five or more medications, and from the southern states were more likely to receive opioids (Han, Compton, Blanco, and Jones, 2018).

Effective policy and practice interventions are currently being implemented to alleviate opioid misuse and abuse. Interventions include the use of drug monitoring programs (Dowell, Zhang, Noonan & Hockenberry, 2016) including the Medicaid Lock-In Programs (MLIPs) (Skinner, Ringwalt, Naumann, Roberts, Moss, et al, 2016); preoperative smoking cessation to reduce postoperative opioid use (Zhao, Chen, Wang, Han & Zhang, 2019); breastfeeding for infants with prenatal exposure to opioids (Wu and Carre, 2018); patient-provider education (Johnson, Porucznik, Anderson, and Rolfs, 2011). Opioid agonists commonly known as maintenance medications (methadone, buprenorphine or naloxone) and opioid antagonists (naltrexone) have been effective in treating opioid disorder and supporting patients through recovery without experiencing withdrawal symp-

toms (National Institute on Drug Abuse, n.d.). Medications have also reportedly reduced the risk of infectious disease transmission, overdose, and criminal behavior associated with drug use (Phillips, Ford, Bonnie et al, 2017). However, studies have reported risks and harm associated with the use and misuse of maintenance agonists (Crane, 2013). Emergency department visits resulting from buprenorphine increased from 3,161 in 2005 to 30,135 in 2010 due to an increase in availability (Crane, 2013). However, medications for treating opioid disorders produce uncomfortable side effects in more than 10 percent of the patients (Rogers, Mehta, Shengelia, and Reid, 2013). Side effects include blurred vision, dizziness, drowsiness, headache, constipation, nausea, vomiting, back pain, fast heartbeats, increased sweating, and insomnia (Rogers et al., 2013).

Psychosocial interventions have been approved as part of a comprehensive medical, social, and psychological treatment framework for opioid cessation. Psychosocial interventions help patients to cope with emotional discords and remain abstinent by controlling the desire to use drugs (Dugosh, Abraham, Seymour, McLoyd, Chalk, and Festinger, 2016). Psychosocial interventions can be delivered through counseling (O'Farrell, Murphy, Schumm, and Muchowski, 2017), cognitive behavioral therapy (Carroll, Kiluk, Nich, Gordon, Portnoy, et al. 2014; Garland, Froeliger, Williams, Manusov, Kely, et al., 2014a; Otto, Hearon, McHugh, Calkins, Pratt, et al., 2014; Pan, Jiang, Du, Chen, Li, Ling, and Zhao, 2015; Fiellin, Cutter, Buono, Barry, Fiellin, L. E., et al., 2016; Willner- Reid, Whitaker, Epstein, Phillips, Pulaski et al., 2016); family therapy (Pugatch, Knight, McGuiness, Sherritt, and Levy, 2014), social skills training (Garland, Froeliger, and Howard, M.O., 2014b), motivational interviewing (Coffin, Santos, Matheson, Behar, Rowe, Rubin, Silvis and Vittinghoff, 2017), and dialectical behavior therapy skills in people who smoke and have an opioid use disorder (Cooperman, Rizvi, Hughes and Williams, 2019). To the best of the researchers' knowledge, the most recent systematic review on 14 randomized control trials published in 2016 assessed the use of psychosocial interventions and medications in opioid addiction treatment (Dugosh et al., 2016). The systematic review reports that behavioral psychosocial interventions with medications are effective.

However, a gap exists on whether different approaches work better along the treatment continuum. Hence, the purpose of this paper is to provide an assessment of effective psychosocial interventions that can lead to opioid cessation. The review will address the following questions (a) Which psychosocial approaches are effective in opioid cessation? (b) Are the study designs sufficient to draw conclusions regarding the efficacy of psychosocial interventions in opioid cessation? (c) Based on the results of the process evaluation, can the interventions be adapted for future studies?

METHODS

A comprehensive systematic review was conducted using the PRISMA guidelines and the PIO (Population Intervention Outcome) framework. For this review, the population was "opioid misusers or abusers or addicts", the intervention was "psychosocial interventions" while the outcome was "cessation or reduction or abstinence". The inclusion criteria for selected studies included (a) tested one or more psychosocial interventions aimed at opioid cessation; (b) quantitative study; (c) original, peer-reviewed research articles; (d) participants currently use illicit substances; (e) enrolled in an opioid treatment facility or confirmatory opioid use via a validated urine sample test. Studies were excluded based on the following criteria: (a) non-use of quantitative design approach; (b) non-opioid patients; (c) no selected outcome measure; (d) non-voluntary participation e.g. prison inmates, court orders, etc.; (e) used only medications as a treatment modality. Grey literature was not searched for this study.

Search Methods

The search was conducted by the first author (C.A.) using PubMed and EBSCO host and reviewed by the second author (A.O). The literature search was conducted in February and March of 2019. The following databases were selected on EBSCO host: CINAHL (Cumulative Index to Nursing and Allied Health Literature) plus, Academic Search Complete, the Education Research Information Center (ERIC), PsycINFO, PsycARTICLES, and MEDLINE with Full Text (see Figure 1). Articles published from 2014 through 2019 were included to capture the most recent research.

Keywords were used to search titles, abstracts, and subject headings in all databases. Keywords and Boolean operators used include: "*intervention* or *treatment* or *therapy* or *psychological* or *psychosocial* or *counsel* or *cognitive behavioral therapy* or *CBT* or *behavioral intervention* or *12 step* or *twelve step*" AND "*opioid* or *opiate* or *heroin* or *methadone* or *morphine* or *oxycodone* or *oxycontin*" AND "*misuse* or *abuse* or *addiction*."

RESULTS

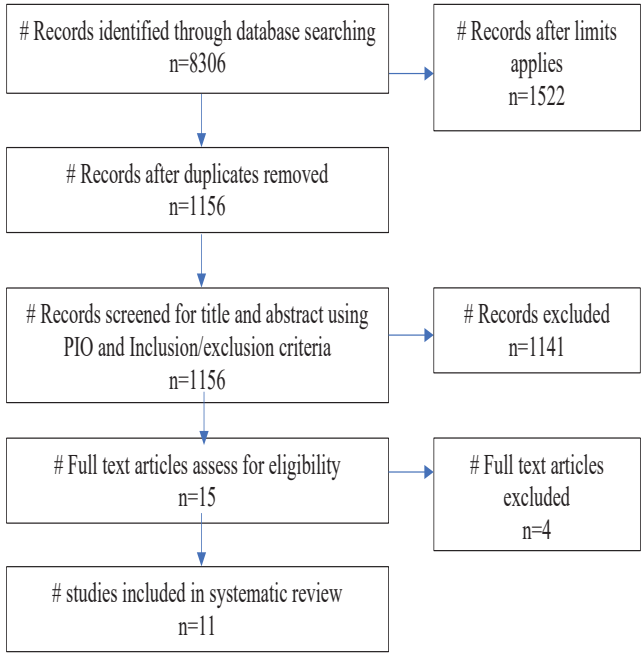
The database search retrieved 8306 peer-reviewed, academic articles with full text online. Additional limits were applied (English language and humans only) yielding a total of 1522 articles. Once duplicates were removed, a total of 1156 titles remained. The assessment of article titles based on the PIO framework yielded 156 articles. Abstracts were further screened based on the inclusion and exclusion criteria leaving 15 articles for full text screening. Four articles were removed after full text screening. Hence, a total of 11 articles with a combined total of 916 individuals and 52 dyad participants met the eligibility criteria (see Figure 1). Tables 1 and 2 present 11 reviewed studies in chronological and alphabetical order.

The majority of the articles (n=9) were published in the U.S.A., followed by China (n=1) and the U.K. (n=1). Eight articles utilized randomized control designs and three studies used factorial Latin square design, post-test only design, and pre- post-test design. Ten interventions utilized an adult population including one dyad group, only one was conducted with an adolescent population. The mean sample size was 102 excluding the dyad (n=61). Total sample sizes (n) were typically between 40 and 115, and three other studies had a sample size of 27, 140, and 240. Interventions were conducted at clinics or designated treatment facilities.

Type of psychosocial intervention used also varied among studies; however, Cognitive Behavioral Therapy and/or combination was used in six studies. The number of sessions of psychosocial treatment varied with the least session lasting for 45 minutes. The duration period for intervention varied from 8 weeks to 26 weeks with only one lasting for

FIGURE 1

Flow Chart of the systematic review



12 months. The most common outcome measure was the urine sample test (n=4), followed by pain intensity scales with Brief Pain Intensity scale as the most common. Besides urine and pain intensity measurement scales, two studies used the Timeline Follow-back (TLFB) procedure to record the day-to-day use of alcohol, opioids, cocaine, marijuana, benzodiazepines, methamphetamine, and other illicit drugs. The level of addiction was also measured by three studies using the addiction severity index (ASI). A summary of findings from the 11 studies demonstrated opioid cessation.

DISCUSSION

This systematic review reviewed 11 studies published from March 2014 to March 2019 to provide an assessment of effective psychosocial interventions that can lead to opioid cessation. The review addressed three questions. The first question is a) Which psychosocial approaches are effective

in opioid cessation? All studies utilized different approaches; conversely, they highlighted the positive impact of psychosocial approaches with the most common being Cognitive Behavioral Therapy (CBT) or CBT adapted mechanism (n=6). In a study by Carrol et al, 2014, cocaine-dependent individuals who were stabilized on methadone were randomly assigned to standard methadone maintenance (treatment as usual or TAU) or treatment as usual plus Computer Based Training for CBT (CBT4CBT) over a period of 8 weeks. CBT4CBT group had a greater reduction in cocaine use compared to the TAU group ($p<0.001$). CBT4CBT group was significantly more likely to attain 3 or more consecutive weeks of abstinence from cocaine (36% compared with 17%; p,0.05, odds ratio= 0.36). Follow-up data, collected 6 months post-treatment, indicate continued improvement for those assigned to the CBT4CBT group ($p<0.001$). Another study by Pan et al (2015), compared the effectiveness of cognitive behavioral therapy (CBT) plus standard MMT (CBT group, n=120) or standard methadone maintenance treatment (MMT) (control group, n=120) among opioid users. The CBT group had a higher proportion of opiate-negative urine tests at both 12 weeks (59% vs. 69%, $p<0.05$) and 26 weeks (63% vs. 73%, $p<0.05$). Another study by Moore et al., (2016), used CBT for 12 weekly, 50-minute manual-guided sessions. Primary prescription opioid use patients assigned to Physician Management-CBT (PM-CBT) had more than twice the mean number of weeks of abstinence for all drugs (7.6) than those assigned to PM only (3.6; p=.02).

Two studies (Garland et al, 2014a and Garland, 2014b) used an adapted CBT therapy, Mindfulness-Oriented Recovery Enhancement (MORE). MORE unites complementary aspects of mindfulness training, third-wave cognitive behavioral therapy (CBT), and principles from positive psychology into an integrative intervention strategy. In Garland et al. (2014a), compared to individuals who received basic Support Group (SG) intervention, MORE participants reported significantly greater reductions in pain severity ($p<0.038$) and interference ($p <0.003$) than SG participants, which were maintained by 3-month follow-up and mediated by increased nonreactivity and reinterpretation of pain sensations. Participants in MORE evidenced significantly less stress arousal ($p< .034$) and desire for opioids ($p< .027$) and

were significantly more likely to no longer meet the criteria for opioid use disorder immediately following treatment (p .05).

The second question assessed whether the study designs were sufficient to draw conclusions regarding the efficacy of psychosocial interventions in opioid cessation? With the exception of three studies, all studies used randomized control designs. Findings of these studies can be used to draw relatively positive conclusions, but some limitations should be addressed. To interpret the efficacy of psychosocial interventions in opioid cessation, one of the shortcomings identified in the studies included the small sample sizes identified in six studies. Only five studies had a sample size of 100 or more. Only two studies provided power calculations and justification of sample sizes. To the best of the author's knowledge, large scale studies have not been conducted to measure the efficacy of psychosocial interventions in opioid cessation. This may be due to the sensitivity of the topic or vulnerability of participants. However, following the widespread opioid epidemic, future research should look at the possibility of conducting large scale studies.

The third question is based on the results of the process evaluation. Can the interventions be adapted for future studies? All interventions except for one conducted process evaluation, however, only seven studies provided a process evaluation result. Based on the findings reported in Table 2, the interventions may be adapted for future studies. All sessions were either provided by a trained psychologist, or masters or doctoral level clinician trained to competently deliver and supervise intervention to maintain fidelity.

Limitations

This systematic review had several limitations. The studies included in this review had a varied duration of psychosocial interventions and different types of psychosocial treatments which resulted in inconclusive evidence to support a duration protocol. Some studies also utilized non-randomized control designs. Consequently, the review was unable to eliminate treatment bias in treatment assignment. The small sample sizes reduced the chances of the inferential statistics

to generalize from a sample to a population. The different outcome measures and varied measurements identified in various studies resulted in insufficient data to provide definite support for a given study or outcome measurement among studies. Although the intervention therapies may have been formulated using theories, there was a lack of behavioral health promotion and education theory-based approaches in the psychosocial interventions. The use of parsimonious theories in future studies will explain how various psychosocial interventions could serve as a promising scientific modality for opioid cessation.

CONCLUSION

Opioid use disorder is of global public health importance since it is associated with substantial health care costs, low productivity, reduced quality of life, and psychological distress. Psychosocial interventions have been used as part of a comprehensive approach for preventing opioid use and improving abstinence from opioid misuse. A total of 11 interventions from 2014 to 2019 presented findings based on use or single or integrated psychosocial intervention to reduce opioid abuse and misuse. All eleven interventions were able to find positive effects in physiological and/or psychological outcome measures related to opioid use disorder. Despite the study limitations, the current evidence indicates that psychosocial interventions can lead to opioid cessation. All drug abuse researchers and practitioners should include parsimonious health behavior theories when developing comprehensive psychosocial opioid cessation interventions.

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The authors declare that there is no conflict of interest, no funding and that ethical aproval is not requied.

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TABLE 1

Summary of studies with a focus on interventions

Study: Authors. Year, Country (In chronological order)	Population & Sample	Theory used	Design	Intervention description	Intervention duration	Salient findings
1. Brigham, G. S., Slesnick, N., Winhusen, T. M., Lewis, D. F., Guo, X., & Somoza, E. 2014 U.S.A.	n= 104 Treatment As Usual (TAU) n= 24 and Community Reinforcement and Family Training for Treatment Retention (CRAFT-T) n=28 Mean age TAU: 28.7, ±6.7 years CRAFT-T 29.5, ± 9.2 years All participants = Mean age 29.2 ± 8.1	No	Randomized Control Trial (RCT)	Opioid-dependent adults (i.e., identified patient - IP) enrolled in a residential buprenorphine-detoxification program and their identified concerned significant other (CSO). CRAFT-T consisted of 2 sessions with the IP and CSO together and 10 with the CSO alone, over 14 weeks. TAU for the CSOs was primarily educational and referral to self-help..	14 weeks	CRAFT-T resulted in a moderate but non-significant effect on treatment retention ($p = 0.058$, hazard ratio = 0.57). When the CSO was parental family, CRAFT-T had a large and significant effect on treatment retention ($p < 0.01$, hazard ratio = .040). CRAFT-T had a significant positive effect on IP opioid and other drug use ($p<0.0001$).
2. Carroll, K.M., Kiluk, B.D., Nich, C.A., Gordon, M.A., Portnoy, G.A. et al. 2014 U.S.A.	n= 101 participants who were randomly assigned to treatment (intention-to-treat sample) Computer Based Training for Cognitive Behavioral Therapy (CBT4CBT) n=47 and Treatment as usual n=54 Mean age: CBT4CBT 42.7 ± 9.5 years Mean age Treatment As Usual 41.3 ± 9.7	No	Randomized Control Trial (RCT)	Cocaine-dependent individuals who were stabilized on methadone were randomly assigned to standard methadone maintenance (treatment as usual) or treatment as usual plus CBT4CBT over a period of 8 weeks. Participants were offered standard treatment at the clinic which consisted of daily methadone and weekly group sessions.	8 weeks	CBT4CBT group had a greater reduction in cocaine use compared to TAU group ($p<0.001$). CBT4CBT group were significantly more likely to attain 3 or more consecutive weeks of abstinence from cocaine (36% compared with 17%; p,0.05, odds ratio= 0.36). Follow-up data collected 6 months after treatment termination indicate continued improvement for those assigned to the CBT4CBT group ($p<0.001$).

3. Garland, E.L., Froeliger, B., Williams, J.M., Manusov, E.G., Kely, A. et al. 2014 a U.S.A.	n= 115 Mindfulness-Oriented Recovery Enhancement (MORE) n=57 Support Group n= 58 Mean age 48 ± 14 years	No	RCT	MORE unites complementary aspects of mindfulness training, third-wave cognitive behavioral therapy (CBT), and principles from positive psychology into an integrative intervention strategy. Sessions were held in groups of between eight and 12 individuals, were 2 hours in length. The SG group: The active control condition in this study consisted of eight weekly, 2-hr conventional SG sessions involving between eight and 12 participants on topics pertinent to chronic pain and long-term opioid use that were selected to roughly match corresponding themes in the MORE intervention: the physical and psychological dimensions of pain experience; ways of coping with chronic pain; ways of coping with negative emotions; the impact of life events on pain; the stigma and experience of opioid craving; the relation between stress and craving; acceptance versus denial; and plans for the future.	8 weeks	MORE participants reported significantly greater reductions in pain severity ($p<0.038$) and interference ($p <0.003$) than SG participants, which were maintained by 3-month follow-up and mediated by increased nonreactivity and reinterpretation of pain sensations. Participants in MORE evidenced significantly less stress arousal ($p< .034$) and desire for opioids ($p< .027$) and were significantly more likely to no longer meet criteria for opioid use disorder immediately following treatment ($p .05$).
4. Otto, M.W., Hearon, B.A., McHugh, K, Calkins, A.W., Pratt, E. et al 2014 U.S.A	n= 78 Mean age 42.3 years ±9.9 CBT-IC (cognitive behavioral therapy for internal cues) n=41 Or to IDC (individual drug counseling) n=37	No	Randomized controlled trial	Treatment focused on using exposure to emotional and somatic cues to help patients accept and tolerate these negative emotional states and craving sensations and replace drug-use responses to these emotions and sensations with alternative, adaptive behaviors. IDC helps patients to achieve and maintain abstinence through restructuring of behavioral patterns. CBT-IC and IDC were both conducted in 12 weekly, one-hour sessions.	12 weeks	Examining proportion of positive toxicology swabs, a repeated-measures ANOVA revealed no significant main effects of time ($F (2, 116) = 1.19$, $p = .31$, partial $\eta 2 = .02$), condition ($F (1, 58) = .41$, $p = .53$, partial $\eta 2 = .007$). Non-insignificant increase in positive toxicology swabs between the baseline and treatment periods ($p = .94$). Pairwise comparisons revealed a significant reduction in ASI scores between baseline and treatment termination ($p < .01$) that was maintained at final follow-up. No significant effects for treatment condition ($\beta = -.10$; $t = -.22$; $p = .83$), sex ($\beta = -.09$; $t = -.57$; $p = .57$), or their interaction ($\beta = .19$; $t = .39$; $p = .70$) in predicting changes in anxiety sensitivity.

5. Pugatch, M., Knight, J.R., McGuiness, P., Sherritt, L., & Levy, S. 2014 U.S. A	n =42 Age mean 19 ± 1.5 years Range=16–22	NO	Post-test design	The adolescent-parent group curriculum consisted of thirteen 90-minute modules that utilized a variety of therapeutic modalities, including cognitive-behavioral therapy (e.g., completing "thought logs" as relapse prevention activities), contingency management (e.g., drawing prizes), motivational interviewing (e.g., completing a "pros and cons" or decisional balance exercise), and self-help strategies (e.g., listening to a young adult speaker from Alcoholics Anonymous share his/her story). Six modules of the adolescent curriculum focused on the adolescent's awareness of addiction and 6 sessions focused on recovery. The 13th session concentrated on the process of group termination.	13 weeks	Twenty-two (52%) adolescent participants reported abstinence from all substances on each of their weekly evaluations. Thirty-eight adolescents (91%) reported no needle use and 35 (83%) reported no DRWI throughout the duration of the group program. There was good to very good agreement between adolescents and parents in number of weeks with "no drug use," with a reported weighted kappa (95% CI) of .76 (.60, .87). There was no significant difference in agreement between male and female parents.
6. Garland, E.L., Froeliger, B., & Howard, M.O. 2014 b U.S.A.	n= 49 Mean age 46.6 ± 13.9 Mindfulness-Oriented Recovery Enhancement (MORE) n=20 Support Group SG n=29	No	Pre and Posttest design	The manualized MORE intervention involved training in mindfulness, cognitive reappraisal, and savoring skills integrated into a manualized eight-session group intervention designed to address pathogenic factors involved in chronic pain and prescription opioid misuse. Sessions were 2 hours in length and administered by a master's-level social worker who had practiced mindfulness for over a decade and had clinical experience delivering mindfulness training to persons with psychiatric.disorders. The active control condition in this study consisted of 8 weekly, 2-hour evidence-based support group sessions in which a master's level clinical social worker (different from the MORE facilitator) facilitated discussion and disclosure of emotions on topics pertinent to chronic pain and long-term opioid use.	8 weeks	MORE led to significantly greater pre- and post-intervention reductions in subjective opioid cue-reactivity (p=0.03). MORE individuals experienced greater reductions in HR from pre and post treatment (p=0.04). MORE individuals who exhibited larger decreases in using heart rate (HR) to pleasure cues experienced greater reductions in opioid craving over the course of treatment (r=−0.34, p=0.02) relative to participants in the SG. Participants in the MORE intervention exhibited significantly greater pre- and post-changes in HR response (i.e., deceleration) during attention to pleasure p=0.003,), opioid p=0.004, and pain cues p=0.02. Unable to obtain accurate opioid dosing data.

7. Pan, S., Jiang, H., Du, J., Chen, H., Li, Z., Ling, W., & Zhao, M. 2015 China	n=240 cognitive behavioral therapy (CBT) plus standard MMT (CBT group, n=120) or standard methadone maintenance treatment (MMT) (control group, n=120) Mean age of participants was 40.9 ± 8.5 years	No	RCT	The participants in both groups received standard MMT for 26 weeks. The participants in the CBT group received individual CBT weekly and group CBT monthly in addition to the standard care of MMT treatment for 26 weeks. The CBT was delivered by psychotherapists experienced in providing counselling or psychotherapy services for patients with SUDs and mental health disorders. Regular attendance in MMT clinics means attending MMT clinics to take daily oral methadone under staff supervision. Participants were permitted to have gaps of no more than consecutive 7 days with appropriate excuses in the study period.	26 weeks	Compared to the control group in standard MMT, the CBT group had higher proportion of opiate-negative urine tests at both 12 weeks (59% vs. 69%, p<0.05) and 26 weeks (63% vs. 73%, p<0.05).
8. Moore, B. A., Fiellin, D. A., Cutter, C. J., Buono, F. D., Barry, D. T., Fiellin, L. E., et al., 2016 U.S.A	n= 140 Opioid n=48. Mean age 32.4 ± 9.5 years Heroin n=93. Mean age 34.4 ± 9.6 Physician Management (PM) or PM plus Cognitive Behavioral Therapy (CBT)	No	RCT	PM sessions were approximately 15 to 20 minutes and were provided by internal medicine physicians experienced in providing buprenorphine. CBT consisted of up to 12 weekly, 50-minute manual-guided sessions. All sessions were provided by a masters or doctoral level clinician trained to competence in delivery of CBT and provided weekly supervision to maintain fidelity.	26 weeks	Primary prescription opioid use patients assigned to PM-CBT had more than twice the mean number of weeks of abstinence for all drugs (7.6) than those assigned to PM only (3.6; p=.02),

9. Willner-Reid, J., Whitaker, D., Epstein, D.H. Phillips, K.A., Pulaski. A.R. et al 2016 U.K.	n=27 The mean age was 40 years ± 9 years	No	Factorial 2 x 2 counterbalanced Latin-square design.	Participants attended clinic 7 days a week for up to 28 weeks, had weekly case-management meetings with a master's-level counsellor (except as described below), and provided urine specimens thrice weekly under same-sex observation for drug screening. In the seventh week of treatment, participants began 12 weeks of voucher-based CM to reinforce abstinence from heroin and cocaine; participants could receive up to $2,310 in vouchers (exchangeable for goods and services) for urine specimens negative for cocaine, opiates, or both. During the 12 weeks of CM, participants attended weekly individual therapy sessions based on the NIDA (National institute for Drug Abuse) CBT manual for cocaine addiction. At each session, the participant was given a written homework assignment to be completed daily for 7 days, and the counsellor and participant reviewed the homework from the previous week with the participant. After 20 weeks, participants could transfer to a community treatment program or receive an 8-week methadone taper.	12 weeks	a. Completion rates for simplified homework (73%) appeared slightly higher than those for standard homework (66%), but in regression models, the main effect of simplification was not significant, OR = 1.48 (95% CL 0.84–2.63). b. Cocaine craving was significantly lower during weeks of standard homework than during weeks of simplified homework (p = .004), or weeks in which the homework was not carried out (Tukey p = .0036). c. Heroin craving was significantly lower during weeks of standard homework than during weeks in which the homework was not carried out (Tukey p = .03). c. Both in the absence and presence of temptation, craving was significantly lower during weeks of standard homework than during weeks of simplified homework (absent Tukey p = .0264; present Tukey p = .0012) and during weeks when the homework was not carried out (absent Tukey p = .0207; present Tukey p = .0015). d. Model-adjusted percentages of cocaine-negative urines were 66% (SEM = 5%) during weeks of standard homework, 66% (SEM = 6%) during weeks of simplified homework, and 62% (SEM = 6%) during weeks when the homework assignment was not carried out p = .62. e. In the presence of either drug cues or negative-mood triggers, both cocaine and heroin craving decreased linearly over the three time periods (all eight p values .007 or lower), with the eight effect sizes ranging from r effect = .36 to r effect = .82 (median 0.65).

10. Coffin, P.O., Santos, G., Matheson, T., Behar, E., Rowe, C., Rubin, T., Silvis, J., & Vittinghoff, E. (2017) U.S.A.	n=63 Mean age 43 ± 11.70 years REBOOT Mean age: 43.6 ± 11.4 years Control: Mean age 42.6 ± 12.5 years	No	RCT	REBOOT (repeated-dose brief behavioral intervention addressing opioid overdose and related risk behaviors) was delivered by masters- and bachelors-level counselors trained by a clinical psychologist with expertise in motivational interviewing and behavioral interventions targeting substance use and HIV. Counselors delivered a 45-minute intervention based on the information-motivation-behavior skills model of behavior change. Counselors then discussed personal and witnessed overdose events in detail with the participant. Counselors then inquired as to interest in substance use disorder treatment, emphasizing the utility of medications such as methadone and buprenorphine to reduce the risk of overdose events. Counselors then assisted the participant in developing a plan to reduce the risk of future overdoses. Finally, counselors reviewed HIV and HCV risk behaviors and risk reduction strategies with the participant. TAU (Treatment As Usual) consisted of a packet of information provided at baseline and offered at follow-up visits including information about harm reduction sites and substance use disorder treatment programs, as well as an offer to assist with referrals to any services the participant requested.	12 months (administered at months 0, 4, 8, and 12)	Participants assigned to REBOOT were less likely to experience any overdose (incidence rate ratio [IRR] 0.62 [95%CI 0.41±0.92, p = 0.019) and experienced fewer overdose events (IRR 0.46, 95% CI 0.24 ±0.90, p = 0.023).
11. O'Farrell, T.O., Murphy, M.M., Schumm, J.A. & Muchowski (2017) U.S.A.	n=61 dyads IBT n=31 BCT n=30 Female: IBT 38.9 ± 10.0 years BCT 38.5 ± 10.4 years Male: IBT 43.2 ± 10.6 years BCT 42.3 ± 10.4 years	No	RCT	Married or cohabiting female drug-abusing patients and their male relationship partners were recruited from a substance abuse treatment program. They were randomly assigned to equally intensive treatments consisting of either (a) Behavioral Couples Therapy (BCT) plus 12-step oriented Individual Based Therapy (IBT) (i.e., BCT IBT) or (b) IBT only (i.e., IBT). The BCT+ IBT condition had 13 BCT sessions plus 13 individual counseling sessions, and the IBT condition had 26 individual sessions only. Five masters-level, licensed addiction counselors provided treatment in both BCT and IBT conditions.	13 weeks	No significant difference in urine drug specimens (p 0.94). On percentage days abstinent (PDA), percentage days drug use (PDDU, and substance-related problems, both BCT+ IBT and IBT patients showed significant (p - .01) large effect size improvements throughout 1-year follow-up On relationship outcomes, compared to IBT, BCT+ IBT had significantly higher male-reported Dyadic Adjustment Scale (p - .001, d - .57) and fewer days separated (p .01, d - .47) throughout 1-year follow-up.

TABLE 2

Summary of studies with a focus on methodology

Study: Authors, year	Outcome measures	Number of measurements	Whether sample size estimated	Whether measurement scales validated	Whether process evaluation done, if yes salient findings
1. Brigham, G. S., Slesnick, N., Winhusen, T. M., Lewis, D. F., Guo, X., & Somoza, E. 2014	Opioid and other drug use were key secondary outcomes. 1. Days to the identified patient's (IP's) first drop of 30 days or more from all treatment as recorded in the clinic's electronic health record. 2. Days of opioid use and any drug use. A Timeline Follow-back (TLFB) procedure was used to record the IP's day-to-day use of alcohol, opioids, cocaine, marijuana, benzodiazepines, methamphetamine, and other illicit drugs. 3. Urine samples were collected at each of the IPs research visits (weeks 1, 2, 14, 26, and 38) and were analyzed for opioids, cocaine, marijuana, benzodiazepines, methamphetamine using the Redi Test rapid screen system from Redwood Toxicology Laboratory.	6 times: baseline, weeks 1, 2, 14, 26, and 38	No	No	Yes, four therapists were recruited. Two had master's degrees with less than one year of post-graduate experience and two were non-degreed licensed drug abuse counselors with over ten years of experience. All therapists maintained acceptable fidelity with an overall compliance rating of 87%.
2. Carroll, K.M., Kiluk, B.D., Nich, C.A., Gordon, M.A., Portnoy, G.A. et al. 2014	1. Change in self-reported drug use over time (days of cocaine use by week) 2. Results of urine toxicology screens (operationalized as the percentage of drug negative urine samples collected during treatment) 3. Attainment of 3 or more weeks of continuous abstinence.	7: Baseline (before treatment); twice weekly during treatment; at the 8-week treatment termination point; and 1, 3, and 6 months after the termination point.	No	No	No

3. Garland, E.L., Froeliger, B., Williams, J.M., Manusov, E.G., Kely, A. et al. 2014	a. The Brief Pain Inventory was used to assess changes in pain severity and interference. b. Changes in opioid use disorder status were measured by the Current Opioid Misuse Measure. c. Desire for opioids: A single item "How much do you want your opioids right now?" anchored on a 10-point scale d. Self-reported opioid misuse: The Current Opioid Misuse Measure (COMM) e. Nonreactivity to distressing thoughts and emotions was measured with the seven-item nonreactivity subscale of the Five Facet Mindfulness Questionnaire f. Cognitive coping with pain by reinterpreting painful sensations as innocuous sensory experiences was assessed via the reinterpreting Pain Sensations subscale of the Coping Strategies Questionnaire g. Reappraisal was measured with the four-item Positive Reappraisal subscale of the Cognitive Emotion Regulation Questionnaire (CERQ) The 56-item Calgary Symptoms of Stress Inventory was used to assess affective and somatic symptoms of stress	2 Pre-Posttreatment Analyses	Yes, sample size was estimated based on power analysis conducted with G*Power software.	Yes, well validates measures were used. the authors also provided reference to the measures.	Yes, the researchers assessed participants' perceptions of the credibility of the treatment to which they were allocated using three items based on the Attitudes Towards Treatment measure by Borkovec and Nau (1972). The measure was administered at the end of Session 3 of each intervention condition, and a total perceived credibility score was computed (a .86).
4. Otto, M.W., Hearon, B.A., McHugh, K., Calkins, A.W., Pratt, E. et al 2014 .	1. Percentage of oral toxicology swabs that were positive for any illicit substance to screen for (opiates, methadone, cocaine, benzodiazepines, amphetamines, THC, and barbiturates) for each participant collected over three time periods: baseline, treatment, and eight weeks of follow-up. 2. The drug use composite score of the 1. Addiction Severity Index. evaluated treatment outcome in substance-abusing populations across a number of domains, including health, employment, social functioning, and drug use behavior 2. The Drug Use Motives Questionnaire (DUMQ) used to assess reasons for drug use. 3. Anxiety Sensitivity Index ASI to assess one's tendency to respond fearfully to anxiety-related symptoms.	3 baseline, treatment, and eight weeks of follow-up.	No	Yes, the validity and reliability scales have been reported in previous studies.	Yes, sessions to be rated were selected at random from the available sessions for each of the study therapists. For CBT-IC, 24 sessions were evaluated and provided an overall average adherence score of 25.7 from a possible score of 34, indicating 76% of session content goals. For the IDC sessions,17 sessions were evaluated and provided a mean quality score of 5.0 from a possible score of 7 (reflecting an overall rating of "good quality").

5. Pugatch, M., Knight, J.R., McGuiness, P., Sherritt, L., & Levy, S. 2014	Weekly Self-Reports of Drug and Alcohol Use and Other High-Risk Behaviors	2 During initial and follow-up engagement	No	No	Yes. Out of the 24 adolescents who completed 10 or more group sessions, 19 (79%) completed a final evaluation; and out of the 72 parents who attended group sessions, 32 (44%) completed a final evaluation. Ninety percent of adolescents and almost 80% of parents reported that adolescents increased their ability to say no to drugs after participating in the group. Rates of self-reported increase in knowledge were high (74%–94%) for all items. At least 90% of adolescents and 97% of parents reported increasing their knowledge of relapse prevention skills. One hundred percent of adolescents and parents self-reported that adolescents improved in a variety of domains of psychosocial functioning
6. Garland, E.L., Froeliger, B., & Howard, M.O. 2014	1. Self-reported measures A single item to assess current generalized opioid craving: "How much do you want your opioids right now?" anchored on a 10-point scale. 2. Brief Pain Inventory (BPI) to assess degree of opioid-induced pain relief. 3. Reward responsiveness (RR) measured using heart rate (HR) and heart rate variability (HRV) responses. 4. Opioid cue-reactivity	2 Pre and post	No	No, although they used documented and reliable scales, the authors were unable to highlight this in the paper.	Yes However, results were not reported.
7. Pan et al 2015	1. Treatment retention 2. Opiate-negative urine test results at 12 weeks and 26 weeks. 3. Addiction Severity Index (ASI) and 4. Total scores on the Perceived Stress Scale (PSS) at 12 weeks and 26 weeks.	3 – Baseline, 12 weeks and 26 weeks	Yes, the sample size was determined using NCSS PASS v11.0 on the basis of 60% retention rate estimated from a previous study and clinical data with statistical power at 80% and significance level at 0.05.	Yes, the measurement scales were translated to Chinese version and exhibited good validity and reliability (cronbach's alpha 0.44-0.76 and test-retest) reliability 0.68-0.84).	Yes, but findings were not reported.
8. Moore et al, 2016	1. Brief assessments (urine screen and Substance Use Calendar) were collected weekly 2. The ASI was used to assess substance use and related problems in seven areas (Medical, Employment, Alcohol Use, Drug Use, Legal, Family/Social Relationships, and Psychiatric	2	No	No, self-reported measure was used, and it was not validated.	Yes, but findings were not reported.

9. Wilner Reid et al., 2016	Within each 3-week block, participants completed three 7-day homework assignments: A functional analysis of cocaine use, a daily record of craving and coping, and a treatment-goals exercise. a. Homework completion and quality b. Homework, stress, craving, and drug-use triggers c. Urine-verified cocaine abstinence	4	No	Yes, they used reliable and validated scales from previous studies.	Yes, electronically prompted homework was rated higher in terms of participants' understanding ($p < .02$), although it tended to be rated lower in terms of quality ($p < .09$).
10. Coffin et al., 2017	Overdose event and number of events, collected by computer-assisted personal Interview (CAPI)	5 At enrollment and follow-up visits every 4 months (4, 8, 12- and 16-month visits)	No	No	Yes. Ninety-two percent of 315 possible visits were completed, with 93% of 172 possible counselling sessions completed among the intervention participants (90% if half-completed sessions are excluded). 87% of participants reported that they would definitely recommend the study to peers, were very satisfied with the amount of help they received from the study (87%), and would definitely come back to participate in a future study (81%). In regards to intervention fidelity, all assessed REBOOT counselling (n = 19) and TAU sessions (n = 36) were classified as excellent.
11. O'Farrell et al., 2017	a. Timeline Followback Interview (TLFB) uses a calendar and other memory aids to gather information about substance use over a specified period of time. b. Urine drug samples These were analyzed for presence or absence of cannabis, cocaine, opiates, oxycodone, barbiturates, amphetamines, benzodiazepines, methamphetamines, phencyclidine, and propoxyphene. c. Inventory of Drug Use Consequences; a 45-item self-report measure of adverse consequences of drug and alcohol use. d. Substance-related outcomes were percentage days abstinent (PDA), percentage days drug use (PDDU), Inventory of Drug Use Consequences. Relationship outcomes were Dyadic Adjustment Scale (DAS), Percentage Days Separated (PSEP) Measure of Relationship Stability. e. Client Satisfaction Questionnaire-8; CSQ-8 is an eight-item measure that was used to assess satisfaction with study-based treatment.	6 Administered to both partners at pre- and posttreatment and then again at 3, 6, 9, and 12 months following treatment.	No	Yes, all measures used were valid and reliable and had been used in previous studies.	Yes. Thirty-two individual counseling and 30 BCT sessions were rated, and 22 individual drug counseling and 23 BCT sessions were independently coded by both raters. For sessions coded independently by both raters, level of agreement between raters was moderately high, and the percentage of items that were rated within 1-point difference between raters were 94.0% individual counseling, and 76.1% BCT.

BOOK REVIEW

Research Methods for Alcohol and Drug Education

Jacobsen, K. H. (2021).
Introduction to health research methods. A practical guide.(3rd ed)
Jones & Bartlett Learning.
Review by Manoj Sharma, University of Nevada, Las Vegas

There are numerous books on research methods in health sciences but this book is quite useful as an introductory text for students and practitioners doing research in alcohol and drug education. The author of this book, Kathryn Jacobsen, is a Professor of Epidemiology and Global Health at George Mason University in Virginia and has written a very thoughtful and practical treatise on the subject of research methods. She has conducted hands-on research using primary data utilizing both quantitative and qualitative approaches, as well as studies based on secondary data analysis. She has published more than 180 peer-reviewed journal articles which speak about the volume of work that she has done in generating this experience-based manual to research.

The approach to the research described in this book is very pragmatic and easy to comprehend by beginner students, as well as more intermediate students. The book is about how to do research and not about the theory or philosophy of research which makes it practical. The book can be used both at the undergraduate and graduate levels of teaching courses in research methods. Students and practitioners pursuing an empirical inquiry in the field of alcohol and drug education will find this book to be user friendly and provide a step-by-step approach in helping them conduct their research. The book provides access to online course materials through Jones and Bartlett's Navigate System which is a plus.

The book is divided into five fundamental steps of the research process: (1) identifying a study question; (2) selecting a study approach; (3) designing the study and collect-

ing data; (4) analyzing data; and (5) reporting findings. Elaborating the first step are five chapters that deal with how to select a research question, how to conduct a review of the literature, how to develop specific aims of the research, how to develop oneself as a professional and what are the aspects for becoming an author or coauthor in a research study.

The second step about selecting a study approach has nine chapters. The first chapter in this section provides an overview of study designs. Following this, the case series design, the cross-sectional design, case-control studies, cohort studies, experimental studies, qualitative studies, quantitative studies and synthesis studies each have a chapter. The discussion of each study design is to the point and clear. The students and practitioners of alcohol and drug education may benefit a little more by the explication of educational experimental studies and unique aspects pertaining to those. The discussion on experimental studies is more clinical in its orientation.

The third step of designing the study and collecting data is divided into 12 chapters. The first chapter explicates the writing of research protocols followed by chapters on ethical considerations, the ethical review process, population sampling, aspects of sample size calculation, approaches to psychometric instrument development, ways of collecting quantitative data, ways of collecting qualitative data, additional assessments, secondary data analyses, conducting systematic reviews and meta-analyses, and writing grant proposals. This section is quite comprehensive and includes all aspects of different types of data collection commonly used in research pertaining to alcohol and drug education.

The fourth step of analyzing data is divided into six chapters. The first chapter is about data management. The second chapter in this section is about descriptive statistics. The third chapter is about comparative or inferential statistics. The next chapter includes details about regression analysis. This is followed by a chapter on qualitative data analysis. The final chapter explicates additional analysis tools. This section includes all the basics of data analysis for beginner students.

The final step of reporting findings is organized into nine chapters. These include chapters on preparing posters and presentations, developing manuscripts, correct ways of citing, ways to critically revise manuscripts, writing success strategies, reasons to publish, selecting target journals, the process of manuscript submission, and the peer-review process and publication.

From a pedagogical stand, the Figures presented in most chapters are helpful to the readers and are the strength of this book. A comprehensive glossary of all terms used in the book is also quite beneficial for the readers. It would have been sound to include chapter objectives at the beginning of each chapter and a chapter summary at the end of each chapter. It would also be helpful to have case studies that highlight important points addressed in each chapter. Perhaps the author will keep these aspects in mind for future editions of this book. For instructors of this book, detailed PowerPoint slides and test banks are available which make the book appealing for adoption in classroom settings. Overall, the book is a valuable resource for students and practitioners learning and conducting research.

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Journal of Alcohol and Drug Education

GUIDELINES FOR MANUSCRIPT PREPARATION

NOTE: Beginning January 1, 2020, all manuscripts and letters to the editor approved for publication will be charged a $50.00 administrative processing fee.

The Journal of Alcohol and Drug Education encourages submission of manuscripts based on empirical studies, reviews (including meta-analyses), theoretical propositions, methodological critiques, case studies, book reviews, and letters to the editor pertaining to alcohol, tobacco, and other drugs. Educational and ecological intervention studies are especially encouraged. Empirical studies, reviews, theoretical and methodological articles, and case studies receive blind peer-review by three reviewers; letters to the editor and book reviews are reviewed only by the editors. Manuscripts submitted to the Journal of Alcohol and Drug Education must follow these guidelines:

1. Manuscripts must be prepared in accordance with the Publication Manual of the American Psychological Association (7th edition).

2. Manuscripts based on empirical studies, reviews, theoretical and methodological articles, and case studies should not exceed twenty double-spaced pages with one-inch margins on all sides. This page length includes the tables and references but excludes the title page and the abstract page.

3. The letters to the editor should not exceed ten double-spaced pages including no more than 10 references. An abstract or cover page should not be submitted with a letter to the editor, and the letter must begin with "Dear Editor:" and must include a title. The name(s) and affiliation(s) of the writer(s) must be stated before the references in the letters to the editor.

4. The book reviews should not exceed more than five double-spaced pages including any references.

5. The preferred style of font, as suggested by the Publication Manual of the American Psychological Association, is 12 point serif (e.g., Times Roman or Courier) for text and sans serif (e.g., Arial or Franklin Gothic) for figures and tables.

6. Tables and figures must be camera ready.

7. The abstract should not be more than 120 words.

8. The Journal of Alcohol and Drug Education accepts only original articles. Simultaneous submissions to other journals are not permitted, and a statement confirming this must be included in the transmittal letter. Although submission and acceptance of a manuscript implies transfer of copyright to the Journal of Alcohol and Drug Education, a signed Consent to Publish and Transfer Copyright is also required.

9. Conflict of interest including financial support, any other colleagues' professional contributions, any earlier professional presentations, and any other relationships must be explained in the author notes section.

10. The manuscripts are sent for blind review to three reviewers based on the criteria of:

    a. Originality
    b. Level of interest to readers
    c. Format, organization, and adherence to guidelines
    d. Recent nature of work

11. The reviewers rate each manuscript based on the criteria of:

    a. Contribution to the field
    b. Methodology
    c. Scientific accuracy
    d. Writing style

12. The reviewers recommend:

    a. Acceptance
    b. Acceptance with minor revisions
    c. Acceptance with major revisions
    d. Rejection
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JADE is published in April, August and December, with three issues in each volume.

Subscription rates per volume in 2020, payable in U.S. funds, are $110 within the United States and $140 outside the U.S.

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