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Opioid Dependency and its Effects on Alcohol Consumption

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OPIOID DEPENDENCE AND ITS EFFECT ON ALCOHOL CONSUMPTION

by

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Table of Contents

List of Tables……..iii

Abstract……..iv

Introduction……....1

Literature Review……...2

Opioid Use Disorder……...2

Methadone……..3

Buprenorphine……5

Naloxone……6

Relationship Between Opioid Treatment and Alcohol Consumption……7

Rational of the Present Research……9

Hypothesis……..9

Method……9

Participants……..9

Materials……10

Procedure……...11

Results……...12

Participants Characteristics……....12

Primary Hypothesis Test……12

Discussion……..14

References……16

Appendix A. Tables……..21

Appendix B. Questionnaires…….22

List of Tables

Table 1. Means and Standard Deviations for Demographic, Covariate, and Outcome Measures……21

Abstract

OPIOID DEPENDENCE AND ITS EFFECT ON ALCOHOL CONSUMPTION

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Previous research has found dualistic effects on alcohol consumption with low doses of buprenorphine increasing alcohol and higher doses of buprenorphine reducing alcohol consumption in rats (Ciccocioppo et al., 2006). Other existing research on naloxone treatment and alcohol consumption in opioid use has demonstrated that alcohol consumption decreases after naloxone treatment in rats (Hyytia & Sinclair, 1993). Yet, no research has been conducted on either rats or humans on the effects of buprenorphine and naloxone medication combined. The effects of opioid maintenance therapy are controversial and the relationship between alcohol consumption and opioid dependency treatment are mainly based on literature review research and research conducted on rats. Although literature reviews and research on rats provide insight and inferences on possible outcomes in humans, further research on this topic is required and should be conducted on patients in opioid dependency clinics to conclude if the results from previous research on rats and literature reviews hold. The present study assessed alcohol consumption among individuals diagnosed with opioid use disorder, it specifically

assessed different opioid dependence treatment and their effect on alcohol consumption. In this study, it was hypothesized patients who use buprenorphine/naloxone will consume less alcohol than patients who use buprenorphine alone, even when controlling for pre-treatment drinking rates. Results demonstrated participants in the buprenorphine group reported binge drinking less frequently than participants in the buprenorphine/naloxone group alone, although when adjusting for pre-treatment drinking, the effect does not hold true.

Introduction

In the last few years, the United States has experienced an opioid epidemic with more people dying due to overdose than the number of people who died from HIV during the height of that epidemic (Dowell et al., 2017). Overdoses are the leading cause of injury death in the United States, accounting for one and a half times more deaths than motor vehicle crashes (Rudd et al., 2016). Many individuals who misuse opioids started with legitimate prescriptions of pain relievers and then became addicted following use (Kolodny et al., 2015). This paper will discuss the effect opioid treatment has on alcohol consumption by first discussing opioid use disorder, different treatment medications, what we know about alcohol consumption and opioid dependency, and lastly the results and implications of the study.

Literature Review

Opioid Use Disorder

Anyone can easily be exposed to opioids. Opioid use can begin at any age, but problems associated with opioid use are more commonly observed in the late teenage years or early 20s (American Psychiatric Association [APA], 2013). Rates of opioid use are higher in males than in females (0.49% vs. 0.26%) with male to female ratio for opioids other than heroin being 1.5:1 (APA, 2013). A study conducted by Han and colleagues (2017) found that after weighing the 2015 National Survey on Drug Use and Health (NSDUH) 91.8 million (37.8%) U.S civilian, noninstitutionalized adults used prescription opioids. Out of those 11.5 million (4.7%) abused them and 1.9 million (.8%) had a use disorder (Han et al., 2017).

Opioid medication is typically prescribed for individuals who are experiencing pain, because the chemicals relax the body, although some opioids can be used to treat other symptoms such as coughing and diarrhea, the majority of individuals are prescribed for pain relieve purposes (National Institute on Drug Abuse [NIDA], 2019). Patients who experience pain are not the only ones at risk of opioid use disorder, there are numerous healthcare providers with opioid use disorder who will often write themselves prescriptions or obtain them by diverting opioids that have been prescribed for patients (APA, 2013). Common opioid prescriptions are hydrocodone, oxycodone, codeine, morphine, oxymorphone, and fentanyl (Chen et al., 2016). When taken for non-medical reasons, individuals can feel very relaxed and high which is why opioids can be very addictive. Individuals who can no longer obtain prescribed opioids will usually try to obtain opioids from several physicians before using heroin (APA, 2013) or often referred to as “doctor shopping”. Heroin is one of the world’s most dangerous opioids (NIDA, 2019), and the

cheapest, it is never prescribed, individuals usually buy from the illegal market. Rates for heroin is higher in males than females with the ratio being 3:1 (APA, 2013). Possible effects of opioid use can include dry mouth, drowsiness, confusion, nausea, constipation, euphoria, slowed breathing (APA, 2013).

In the brain, opioids bind to and activate opioid receptors cells location in many parts of the brain such as the spinal cord, and other organs in the body, specifically to the parts of the body that involve feelings of pain and pleasure (NIDA, 2019). When they attach to the receptors, they block the pain and there is a large release of dopamine throughout the body (NIDA, 2019). The release of dopamine explains why individuals can become highly addicted and want to continue use. The euphoric feelings of opioid use can easily fade as tolerance develops, which leads to increased uncontrolled intake (Wang, 2019) which then increases the chances of overdosing. Although studies do show prevalence decreases with age, with the highest prevalence (0.82%) among adults age 29 years or younger and decreasing to 0.09% among adults who are 65 years of age and older (APA, 2013).

Opioid use disorder is a mental disorder characterized as a problematic pattern of opioid use leading to clinically significant impairment or distress in the past 12-month period. Criteria for Opioid Use Disorder stated by the American Psychiatric Association (2013) include a problematic pattern of opioid use leading to clinically significant impairment or distress, as manifested by at least two symptoms listed in the Diagnostic Statistical Manual Five (DSM-IV), occurring within a 12-month period.

Methadone

Methadone is the most widely used opioid agonist therapy in the world (Hser et al., 2014). It was first developed in Germany, in the 1960s, during the Second World War with

the purpose of treating pain (CAMH, 2012). Methadone blocks opioid receptors, which in turns prevents withdrawal symptoms and reduces cravings (Radfar et al., 2019). Methadone is made from chemicals in a lab, and a result it is considered a synthetic opioid (CAMH, 2012). Studies show methadone is associated with higher retention in treatment for opioid dependency than buprenorphine (Hser et al., 2014) due to individuals with opioid use disorder being held more accountable in taking their prescribed dose of methadone (Saloner et al., 2018). Methadone is a long-acting opioid agonist and very effective (CAMH, 2012). However, its use requires careful observance of the dose being prescribed and close monitoring because its long half-life increases the risk of overdose (Saloner et al., 2018). Illicit opioid use is reduced more by higher doses of methadone than buprenorphine (Kosten et al., 1993). Methadone if found to be more likely involved in overdose deaths than any other prescribed drug (Terpening & Johnson, 2007). Doses of methadone are in the range of 30 to 120 mg daily and individuals who take it must report to the clinic for an observed daily dose at the beginning of treatment (Wang, 2019). Studies have also found individuals with long term use of methadone perform poor than control groups on all neuropsychological functioning (Darke et al., 2000). Indicating there is cognitive decline due to use of methadone.

The effectiveness of opioid agonist medications such as buprenorphine and methadone as a long-term maintenance therapy is the reason why a lot of individuals with opioid use disorder seek out medicated treatment (Saloner & Barry, 2018). These medications help eliminate physiological symptoms of opioid use disorder, helps with cravings and withdrawal symptoms. Due to its great assistant and success in recovery, it is important to look into the effects of the medication when other substances are being used

in combination to the medication. For the purpose of this study, I focused on buprenorphine maintenance treatment at a clinic whom does not prescribe methadone.

Buprenorphine

From the late 1990s to the present, the opioid crisis in the United States has raised awareness of substance use disorders and has increased the number of medications used to treat opioid dependency (Wang, 2019). A relatively newer treatment option is buprenorphine which may increase safety among opioid-dependent patients (Kahan, Srivastava, Ordean, & Cirone, 2011). Buprenorphine is starting to become the go-to maintenance treatment due to it being safe enough to be prescribed a month's supply versus methadone which can be dangerous and must be given to every day (Saloner & Barry, 2018). Buprenorphine is a partial opioid agonist that relieves cravings and withdrawal symptoms for 24 hours or longer. Unlike methadone patients cannot overdose on it nor can they get high. Due to these reasons' buprenorphine is preferred for patients at high risk of methadone misuse, those with limited access to methadone treatment, and those who might need shorter maintenance treatment. It is recommended that patients start taking buprenorphine after they are in withdrawal or forty-eight hours after their last use of opioids. Buprenorphine can also be given in a formulation with naloxone that provides some protection against possible overdose if patient attempt to use again after starting treatment (Volkow, 2018). This is important because individuals who might use after starting treatment will not reach the same level of high due to the buprenorphine in their system which can result in individuals using more than before which then increases the chances of an overdose occurring.

Just like methadone, buprenorphine targets mu opioid receptors (MORs) in the brain to treat opioid dependence by reducing the withdrawal symptoms and well as the cravings (Wang, 2019). Mu are opioid receptor subtypes with common analgesic effects and has a unique effect and distribution in the brain. MORs in distinct brain regions, like the basolateral amygdala and nucleus accumbent, trigger the euphoria and incentive properties of rewarding stimuli. Since MOR triggers the reward center in the brain which plays an important role in goal-directed behavior this aids individuals in creating new habits that will prevent them from using again if winged off their medication (Wassum, 2009). When addictive behaviors develop then poor decision making and cognition impairments shift from the goal directed behaviors to habitual behaviors causing compulsive drug use. Medications for opioid dependency can be classified in three groups: full agonists, partial agonists, and antagonists (Breneau et al., 2018). While methadone is a full mu opioid agonist, buprenorphine is a partial mu opioid agonist, and naloxone is an antagonist (Wang, 2019). Therefore, buprenorphine does not stimulate MORs to the same degree as methadone does which makes it less likely to have respiratory depression and euphoria. Doses of buprenorphine start between 2 to 8 mg sublingually daily and individuals who take it are required to have a monthly visit at their clinic.

Naloxone

Naloxone is an antagonist treatment that has achieved the least penetration of all medications for opioid use disorder (Wang, 2019). Naloxone can be prescribed and administered by any prover in the USA and does not poses any risk of diversion or overdose. The effects of naloxone are due to the blockade of opiate receptors, there are an

increasing number of reports which indicate that naloxone may have pharmacological actions unrelated to opiate receptor blockade (Sawynok, Pinsky, & LaBella, 1979). However, there is limited research related to naloxone and some research suggest naloxone can provide the same result that buprenorphine can (Tanum et al., 2017). As mentioned before buprenorphine targets the mu opioid receptors (MORs) and naloxone targets mu, kappa, and delta opioid receptors to treat opioid overdose (Wang, 2019). It can also be combined with buprenorphine to decrease the chance of overdose. In fact, buprenorphine–naloxone treatment with patients who are dependent on heroin and prescription opioids is more efficacious than placebo and as efficacious as moderate doses of methadone (Fiellin et al., 2006).

Naloxone is often mistakenly thought to be the same thing as naltrexone because they are both antagonists (Wang, 2019). Naloxone is a non-selective and competitive opioid receptor agonist, and it is use for acute opioid overdose, and reversing mental depression caused by opioids (Goodrich, 1990). Naltrexone is used primarily to treat alcoholism or alcohol dependence (Wang, 2019). Buprenorphine-naloxone, also known as Suboxone, can be giving in doses of 2mg/0.5mg, 1mg/4mg, 8mg/2mg, and 12mg/3mg (Volkow, 2018).

Relationship between Opioid Treatment and Alcohol Consumption

Alcohol consumption is defined the amount of alcohol consumed on any single day and is not intended as an average over several days (CDC, 2018). Approximately one-third of individuals who receive opioid agonist treatment (OAT), such as buprenorphine or buprenorphine/naloxone for the management of opioid dependency also misuse alcohol (Soyka, 2015). Although it is known alcohol use is a risk factor for fatal

overdose among individuals prescribed opioids (Degenhardt & Hall, 2013), little guidance currently exists outlining effective management strategies for this patient population (Nolan et al., 2016).

It is difficult to estimate prevalence of alcohol misuse among opioid dependent individuals receiving opioid maintenance treatment is challenging. Previous research varies in the literature among patient populations and treatment settings being studied due to lack of standardization pertaining to alcohol use terminology and measurement of it. There is more research conducted on alcohol consumptions and methadone but there is less on buprenorphine or buprenorphine-naloxone.

A 12-month longitudinal study of individuals with both heroin addiction and alcohol dependence demonstrated both methadone and buprenorphine to be association with reduction in alcohol use, buprenorphine was more efficacious (Nava et al., 2008). Previous research on rats found buprenorphine has dualistic effects on ethanol drinking; low doses increase alcohol intake via stimulation of classic opioid receptors, whereas higher doses reduce alcohol consumption via activation of NOP receptors (Ciccocioppo et al., 2006). Alcohol preferring rats trained to drink 10% alcohol 2 hours/day were injected with buprenorphine (.03, .3, 3.0, or 6.0 mg/kg intraperitoneally) 90 min before access to ethanol (Ciccocioppo et al., 2006). Other research on naloxone has found that naloxone treatment alone decreases alcohol consumption (Saloner & Barry, 2018). Naltrexone, an antagonist like naloxone, appears to be an effective and safe strategy in alcoholism treatment. Even though the sizes of treatment effects might appear moderate in their magnitudes, these should be valued against the background of the relapsing

nature of alcoholism and the limited therapeutic options currently available for its treatment (Roesner et al., 2010).

Rational for Present Study

The effect opioid maintenance therapy on alcohol consumption is controversial and no clear pattern has emerged (Soyka, 2015). Most research has been conducted on rats or based of literature reviews. Buprenorphine has been found to carry a little risk of liver toxicity and research data indicated that brief intervention strategies may help reduce alcohol intake, but the existing evidence is still limited. The purpose of the study is to gain a better understanding of opioid dependency and its relationship with alcohol in terms of exploring the effect that opioid dependency medications has on the amount of alcohol patients. Due to the opioid epidemic, it is important for scientists to gain a better understanding of opioid use in order to better prevent, provide treatment, and gain understanding of its effects.

Hypothesis

Patients who use buprenorphine/naloxone will consume less alcohol than patients who use buprenorphine alone, even when controlling for pre-treatment drinking rates.

Methods

Participants

This study included 62 participants recruited from Foundation Medical Group an opioid dependency clinic in Dallas, Texas. Two of those 62 participants were eliminated from the study due to reporting they did not consume alcohol before starting treatment. Group categorization was determined by buprenorphine and buprenorphine/naloxone medication groups. The age range of participants was between 22 years of age up to 65 years of age. The study consisted of 38.3% female and 58.3% male. In addition, the

population was 78.3% White, 19% Hispanic, 6.7% African American, 3.3% American Indian, and 1.7% Native Hawaiian. There was no incentive given the participants for their participation.

A statistical power analysis was performed for sample size estimation, based on data from Ciccocioppo and his colleagues (2007), investigating buprenorphine dose and reduction of alcohol intake. The effect size (ES) in this study was considered to be small using Cohen's (1988) criteria. With an alpha = .05 and power = 0.80, the projected sample size needed with this effect size (GPower 3.1 or other software) was approximately N = 111 for this simplest between group comparison. Although I attempted to collect data from this number of participants, the clinic in which data collection took place shut down due to COVID-19. As such, the final sample size is approximately half of the proposed target number.

Materials

This experiment consisted of a 6-page paper survey (refer to Appendix A). The survey contained questions asking about their use of drugs (e.g. Alcohol, Opioids) and other background information. In addition, the survey included a Beck's Depression Inventory (Beck et. al.,1988), Beck's Anxiety Inventory (Bardhoshi et al.,2016), and Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). These measures were scored by using their standard scoring protocol. Specifically, scores on the Beck's Depression Inventory were calculated by adding their total score and then categorized by severity group. Scores on this measure can range from 0 to 63, with 20 indicating moderate depression. Scores on the Beck's Anxiety Inventory were calculated by their total score and then categorized by severity group. Specifically, scores on the Beck's

Anxiety Inventory were calculated by adding their total score and then categorized by severity group. Scores on this measure can range from 0 to 63, with 17 indicating moderate anxiety. In addition, scores on the Multidimensional Scale of Perceived Social Support were calculated by adding their total score and then calculating the mean. The scores were then categorized by level of support. Scores on this measure can range from 1 to 7, with 3 indicating moderate support.

In order to test my hypothesis, current alcohol consumption was assessed using two questions. The first addressed typical daily drinking habits (viz., "c*urrently, how many standard drinks containing alcohol do you have on a typical day?")* on a 0 (None) to 6 (10 or more) point Ordinal scale. The second question addressed typical binge drinking habits (viz., c*urrently, how often do you have six or more drinks on one occasion?)* on a 0 (None) to 5 (Daily or Almost Daily) Ordinal scale. Participants also answered a question about pre-treatment daily drinking habits (viz., *before starting treatment, ow many standard drinks containing alcohol do you have on a typical day?")* on a 0 (None) to 6 (10 or more) point Ordinal scale for use as a covariate. Lastly, a question was asked over which medication they were currently (buprenorphine or buprenorphine/naloxone). Each participant was given the survey after being checked in by the staff and were sent to the waiting room to be called in to see the doctor.

Procedure

Participants in the study were approached after being checked in the clinic. The check-in process consistent of paying for treatment, leaving a urine sample, and getting their blood pressure taken. After participants are checked-in they were required to sit in the second waiting from in where they were informed about the study and asked if they

would like to participate. The participants all received the same survey. They were asked to answer truthfully and informed that their responses would not be shared with their doctor. Lastly, they were debriefed upon turning in the survey.

Results

Participant Characteristics

To assess potential between-group differences in the sample, Beck's Depression Inventory, Beck's Anxiety Inventory, and Multidimensional Scale of Perceived Social Support were all subjected to independent-samples t-tests. All statistics are reported two-tailed. On the Beck's Depression Inventory, there were no differences between participants in the buprenorphine group (M = 9.26, SD = 7.54) and buprenorphine/Naloxone group (M = 12.17. SD = 8.07*)*, t (46) = 1.25, p = .56. On the Beck's Anxiety Inventory, there were no differences between participants in the buprenorphine group (M = 8.00, SD = 10.88) and buprenorphine/naloxone group (M = 8.19. SD = 8.67), t (41) = .06, p = 52. On the Multidimensional Scale of Perceived Social Support, there were no differences between participants in the buprenorphine group (M = 5.24, SD = 1.73) and buprenorphine/naloxone group (M = 5.12 SD = 1.57), t (45) = .23, p = .87.

Primary Hypothesis Test

To assess my hypothesis, I subjected the two drinking habit questions (daily drinking and binge drinking) to independent-samples t-tests. I predict that participants who used buprenorphine/naloxone will report less drinking than participants who use buprenorphine alone. The results do not support this hypothesis. Participants self-reported drinking frequency was no different in the buprenorphine group (M = 1.20, SD = .50)

than in the buprenorphine/naloxone group. (M = 1.17, SD = .71)., t (58) = .17, p = .87, Cohen's d = .63. However, participants in the buprenorphine group reported binge drinking less frequently (M = 1.16, SD = .63) than participants in the buprenorphine/naloxone group (M = 1.43, SD = .95), t (58) = 1.24, p = .03, Cohen's d = .83.

To assess the degree to which these outcomes are affected by drinking habits prior to treatment, I conducted set of ANCOVAS using frequency of daily drinking prior to treatment as a covariate. The results suggest that, when controlling for pre-treatment drinking habits, the frequency of daily drinking was no different in the buprenorphine group (M = 1.92, SE = .13) than in the buprenorphine/naloxone group (M = 1.18, SE = .11), F (1,57) = 1.29, p = .89, η_p^2 = .00. Similarly, when controlling for pre-treatment drinking habits, the frequency of binge drinking was lower in the buprenorphine group (M = 1.15, SE = .17) than in the buprenorphine/naloxone group (M = 1.43, SE = .14), F (1,57) = 1.50, p = .23, η_p^2 = .03 although not significant.

Discussion

Although previous research suggest that specific doses of the medications has an effect on alcohol consumption in rats (Ciccocioppo et al., 2006), for the purpose of this study the difference between medications and the effects it has on alcohol consumption was examined before taking the doses into consideration. Other existing research on naloxone treatment and alcohol consumption in opioid use has demonstrated that alcohol consumption decreases after naloxone treatment in rats (Hyytia & Sinclair, 1993). Yet, no research has been conducted on humans on the effects of buprenorphine medication and alcohol consumption nor on buprenorphine and naloxone medication combined. Buprenorphine has been found to carry a little risk of liver toxicity and research data indicated that brief intervention strategies may help reduce alcohol intake, but the existing evidence is still limited. In addition, the effects of buprenorphine in combination with naloxone and the effect the medication has on alcohol medication is also limited. Past research has been conducted on rats or presented in the form of literature review.

The purpose of the study is to gain a better understanding of opioid dependency and its relationship with alcohol in terms of exploring the effect that opioid dependency medications have on the amount of alcohol patients. The hypothesis that patients who use buprenorphine/naloxone will consume less alcohol than patients who use buprenorphine alone was not supported in this study. The results of this study found that people who took buprenorphine reported fewer drinks than people who took buprenorphine/naloxone. Although when adjusting for pre-treatment drinking the effect goes away.

There are many limitations of the present study, such as sample size; we originally aimed to gather 111 participants or more but due to COVID-19, our data

collection was paused. In addition, the measures rely heavily on self-report measures and is thus, subject to respondents' biases. Voluntary participants and convenience sampling pose the constraint that individuals who consume alcohol more heavily might not like to respond or participate in the study.

In conclusion, this study provides novel data about opioid use medication treatment and the effect it has on alcohol consumption in terms of the differences in effect that buprenorphine and buprenorphine/naloxone may have on human compared to rats in alcohol consumptions. Although, it should be interpreted with caution owing to the small sample size and the fact that individuals with opioid use disorder from multiple clinics were not represented in the sample.

A number of considerations must be addressed in order to improve this area of research. Future research should be conducted on individuals with a history of alcohol and opioid use and the effect opioid treatment has on their alcohol consumption. In addition, prospective studies should consider the effect of different doses of opioid use treatment medication and the effect it has on alcohol consumption.

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Appendix A

Table 1.

Means and Standard Deviations for Demographic, Covariate, and Outcome Measures

Medication	Buprenorphine		Buprenorphine/Naloxone	
	M	SD	M	SD
Beck's Depression Scale	9.26	7.54	2.17	8.07
Beck's Anxiety Scale	8.00	10.88	8.19	8.67
Perceived Social Support Scale	5.24	1.73	5.12	1.57
Pretreatment Daily Drinking	1.20	.50	1.17	.71
Pretreatment Binge Drinking	1.16	.63	1.43	.95
Current Daily Drinking	1.92	.13	1.18	.11
Current Binge Drinking	1.15	.17	1.43	.14

Note: *Beck's Depression Inventory is scored on a 0 to 63 scale. Beck's Anxiety Inventory is scored on a 0 to 63 scale. Multidimensional Scale of Perceived Social Support is scored on a 1 to 7 scale. Pretreatment daily drinking is the covariate in this study and is scored on a 0 (Never) to 6 (10 or more) scale. Current daily drinking is scored on a 0 (Never) to 6 (10 or more) scale. Current binge drinking is scored on a 0 (Never) to 5 (Daily or Almost Daily) scale. Scores within the same row with an asterisk are statistically different at p = .05 or less, two-tailed.*

Appendix B

Questionnaire Survey

Age: _____

Gender: ☐ Female ☐ Male

Race/Ethnicity:
☐American Indian/Alaska Native
☐Native Hawaiian or other Pacific Islander
☐White
☐Black or African American

Hispanic:
☐ Yes
☐ No

Marital Status. Check all that apply.

☐ Never Married
☐ Married
☐ Committed relationship
☐ Widowed
☐ Separated
☐ Divorced

Please indicate your highest level of education you have completed:
☐____ Grade ☐High School (12) ☐Associates degree(14) ☐Bachelor's degree (16)
☐Master's degree (18) ☐ Doctoral degree (20)

What is your current employment status?
☐Full time (40hrs/week)
☐Part-time (20hrs/week)
☐Full time student
☐Part time student
☐ Not employed

Do you have any children? If so, how many?
☐**Yes:**_____ ☐**No**

In general, would you say your health is:
☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor

Have you ever been diagnosed with ADHD and been prescribed medication for it?
☐Yes ☐No

Have you personally been prescribed pain medication? ☐ Yes ☐No

How long have you been in treatment with Foundation Medical Group? _____

What medication are you currently being prescribed? Check all that apply.

☐**Buprenorphine** ☐**Buprenorphine/Naloxone** ☐**Buprenorphine/Hydrochloride (Subutex)**

☐ **Other: _____**

What is the dose of your prescribed medication? _____

How long have you been taking this medication? _____

Do you currently take the medication:
☐Daily as directed ☐Twice a day as directed ☐More than directed ☐Less than directed
☐Inconsistently

In the <u>past month</u>, what substances have you used? Check all that apply.
☐Amphetamine ☐Barbiturates ☐Cannabinoids ☐Cocaine ☐Ecstasy ☐ Methamphetamine
☐Oxycodone ☐ Phencyclidine ☐Benzodiazepines ☐Fentanyl

Before starting treatment, what substances were used? Check all that apply.
☐Amphetamine ☐Barbiturates ☐Cannabinoids ☐Cocaine ☐Ecstasy ☐ Methamphetamine
☐Oxycodone ☐ Phencyclidine ☐Benzodiazepines ☐Fentanyl

Currently, how often do you have a drink containing alcohol?
☐Never ☐ Monthly or less ☐2-4 times a month ☐2-3 times a week ☐ 4 or more times a week

Currently, how many standard drinks containing alcohol do you have on a typical day?
☐ None ☐ 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7 or 9 ☐ 10 or more

Currently, how often do you have six or more drinks on one occasion?
☐ Never ☐Less than monthly ☐ Monthly ☐Weekly ☐Daily or almost daily

Currently, how frequently do you smoke tobacco?
☐Daily ☐Less than daily ☐Not at all ☐ Don't know

Before starting treatment, how often did you have a drink containing alcohol?
☐Never ☐ Monthly or less ☐2-4 times a month ☐2-3 times a week ☐ 4 or more times a week

Before starting treatment, how many standard drinks containing alcohol did you have on a typical day?
☐ None ☐ 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7 or 9 ☐ 10 or more

Before starting treatment, how often did you have six or more drinks on one occasion?
☐Never ☐Less than monthly ☐ Monthly ☐Weekly ☐Daily or almost daily

Before starting treatment, how frequently did you smoke tobacco?
☐Daily ☐Less than daily ☐Not at all ☐ Don't know

Before starting treatment, how depressed did you feel?
☐Not depressed ☐Somewhat depressed ☐Depressed ☐Very depressed ☐Extremely depressed

Before starting treatment, how anxious did you feel?
☐Not anxious ☐Somewhat anxious ☐Anxious ☐Very anxious ☐Extremely anxious

We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

1 = Very strongly disagree
2 = Strongly disagree
3 = Mildly disagree
4 = Neutral
5 = Mildly agree
6 = Strongly agree
7 = Very strongly

1.There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2.There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
3.My family really tries to help me.	1	2	3	4	5	6	7
4.I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5.I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6.My friends really try to help me.	1	2	3	4	5	6	7
7.I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8.I can talk about my problems with my family.	1	2	3	4	5	6	7
9.I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10. There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11.My family is willing to help me make decisions.	1	2	3	4	5	6	7
12.I can talk about my problems with my friends	1	2	3	4	5	6	7

Beck's Depression Inventory

1. Sadness

0. I do not feel sad.
1. I feel sad much of the time
2. I am sad all the time.
3. I am so sad or unhappy that I can't stand it.

2. Pessimism

0. I am not discouraged about my future.
1. I feel more discouraged about my future than I used to.
2. I do not expect things to work out for me.
3. I feel my future is hopeless and will only get worse.

3. Past Failure

0. I do not feel like a failure.
1. I have failed more than I should have.
2. As I look back, I see a lot of failures.
3. I feel I am a total failure as a person.

4. Loss of Pleasure

0. I get as much pleasure as I ever did from the things I enjoy.
1. I don't enjoy things as much as I used to.
2. I get very little pleasure from the things I used to enjoy.
3. I can't get any pleasure from the things I used to enjoy.

5. Guilty feelings

1. I don't feel particularly guilty.
2. I feel guilty over many things I have done or should have done.
3. I feel quite guilty most of the time.
4. I feel guilty all the time.

6. Punishment feelings

1. I don't feel I am being punished.
2. I feel I may be punished.
3. I expect to be punished.
4. I feel I am being punished.

7. Self-Dislike

1. I feel the same about myself as ever.
2. I have lost confidence in myself.

3. I am disappointed in myself.
4. I dislike myself.

8. Self-Criticalness

1. I don't criticize or blame myself more than usual.
2. I am more critical of myself than I used to be.
3. I criticize myself for all of my faults.
4. I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

1. I don't have any thoughts of killing myself.
2. I have thoughts of killing myself, but I wouldn't carry them out.
3. I would like to kill myself.
4. I would kill myself if I had the chance.

10. Crying

1. I don't cry any more than I used to.
2. I cry more than I used to.
3. I cry over every little thing.
4. I feel like crying, but I can't'.

11. Agitation

1. I am no more restless or would up than usual.
2. I feel more restless or would up than usual.
3. I am so restless or agitated, it's hard to stay still.
4. I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest

1. I have not lost interest in other people or activities.
2. I am less interested in other people or things than before.
3. I have lost most of my interest in other people or things.
4. It's hard to get interested in anything.

13. Indecisiveness

1. I make decisions about as well as ever.
2. I find it more difficult to make decisions than usual.
3. I have much greater difficulty in making decisions than I used to.
4. I have trouble making any decisions.

14. Worthlessness

1. I do not feel I am worthless.
2. I don't consider myself as worthwhile and useful as I used to.
3. I feel more worthless as compared to others.
4. I feel utterly worthless.

15. Loss of energy

1. I have as much energy as ever.
2. I have less energy than I used to have.
3. I don't have enough energy to do very much.
4. I don't have enough energy to do anything.

16. Changes in sleeping patterns

1. I have not experienced any change in my sleeping.
2. I sleep somewhat more than usual.

3. I sleep somewhat less than usual.
4. I sleep a lot more than usual.
5. I sleep a lot less than usual.
6. I sleep most of the day.
7. I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

1. I am not more irritable than usual.
2. I am more irritable than usual.
3. I am much more irritable than usual.
4. I am irritable all the time.

18. Changes in Appetite

1. I have not experienced any change in my appetite.
2. My appetite is somewhat less than usual.
3. My appetite is somewhat greater than usual.
4. My appetite is much less than before.
5. My appetite is much greater than usual.
6. I have no appetite at all
7. I crave food all the time.

19. Concentration Difficulty

1. I can concentrate as well as ever.
2. I can't concentrate as well as usual.
3. It's hard to keep my mind on anything for very long.
4. I find I can't concentrate on anything.

20. Tiredness or Fatigue

1. I am no more tired or fatigued than usual.
2. I get more tired or fatigues more easily than usual.
3. I am too tired or fatigues to do a lot of the things I used to do.
4. I am too tired or fatigues to do most of the things I used to do.

21. Loss of Interest in Sex

1. I have mot noticed any recent change in my interest in sex
2. I am less interested in sex than I used to be.
3. I am much less interested in sex now.
4. I have most interest in sex completely.

Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the <u>past month, including today</u>, by circling the number in the corresponding space in the column next to each symptom.

	Not At All	Mildly but it didn't bother me much.	Moderately - it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3
Dizzy or lightheaded	0	1	2	3
Heart pounding/racing	0	1	2	3
Unsteady	0	1	2	3
Terrified or afraid	0	1	2	3
Nervous	0	1	2	3

Feeling of choking	0	1	2	3
Hands trembling	0	1	2	3
Shaky / unsteady	0	1	2	3
Fear of losing control	0	1	2	3
Difficulty in breathing	0	1	2	3
Fear of dying	0	1	2	3
Scared	0	1	2	3
Indigestion	0	1	2	3
Faint / lightheaded	0	1	2	3
Face flushed	0	1	2	3
Hot/cold sweats	0	1	2	3