

# Differences between Opioid and Non-Opioid Users During and After Outdoor Behavioral Treatment

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Enviros Shunda Creek is an Outdoor Behavioral Healthcare (OBH) program treating young adult males with substance use disorders. There are no psychosocial treatments for use of specific drugs. Based on this and the ongoing opioid epidemic, the current study investigates whether OBH is equally effective for the treatment of opioid users compared to non-opioid users at Shunda Creek. This study found no statistically significant differences at intake, during treatment, discharge, and follow-up. Opioids served as a stronger predictor for severity of relapse than other drugs of choice,  $R^2 = 0.098$ ,  $F(1,73) = 7.930$ ,  $p < .001$ , 95% CI [0.118, 0.687].

*Keywords:* substance use disorders, young adults, opioids, relapse

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Opioid Use Disorder (OUD) is a current public health crisis in the United States and Canada. The rise of OUDs creates a need for extended research on effective treatment strategies (Liebling et al., 2016; Sokol, LaVertu, Morrill, Albanese, & Schuman-Olivier, 2018). Outdoor Behavioral Healthcare (OBH) is shown in numerous studies to be an effective treatment strategy for youth and adolescents struggling with Substance Use Disorders (SUD; DeMille et al., 2018). This study serves as a follow-up to Chapman et al. (2018), which demonstrated that OBH was equally effective for high and low SUD involved young adult males. Here, we examine treatment trajectories of clients who use opioids and clients whose drugs of choice do not include opioid use.

Despite the watchful eye and diligent work of numerous politicians, clinicians, and researchers in Canada since the early 2000's, nonmedical prescription opioid use (NMPO) has increased at a baffling rate (Liebling et al., 2016). In 2010 alone, the death toll from prescription opioid use exceeded 16,000, and the rate of heroin overdoses increased steadily from 2010 to 2013 (Dart et al., 2015). The Canadian Federal Health Minister officially declared the opioid problem a national public health crisis on August 31, 2017 (Health Canada, 2017). To reduce the stigma associated with drug-related deaths and raise awareness for the various treatment options available, the Prime Minister proclaimed an International Overdose Awareness Day in Canada. The United States has also declared a public health opioid crisis, demonstrating that the substance abuse issue knows no boundaries (Beletsky & Davis, 2017).

Currently, the psychosocial treatment of SUD is similar, if not the same for both opioid and non-opioid users (Mayet, Farrell, Ferri, & Davoli, 2004). Available psychosocial therapies include cognitive-behavioral therapy, 12-step programs, and motivational interventions, among others (Chapman, et al., 2018; Jhanjee, 2014).

The majority of modern medical treatments are centered around replacement therapy, which is the administration of a weaker opioid to addicts in order to avoid withdrawal symptoms and eventually curb cravings (Mattick et al., 2003). According to a double-blind study conducted by Fudala et al. (2003), buprenorphine, a partial opioid agonist, functions as an effective form of treatment both by itself and when combined with naloxone. Methadone, a mild opioid, has also been found to aid in the recovery of opioid abusers; however, a controlled trial in Canada found that injectable diacetylmorphine performed significantly better than methadone in the treatment of opioid dependence (Oviedo-Joekes et al., 2009). In the event of an overdose, an opioid antagonist called naloxone, often referred to as the life-saving drug, can also be safely administered to counteract

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the effects of the overdose (Tobin, Sherman, Beilenson, Welsh, & Latkin, 2009). Group Based Opioid Treatment (GBOT; Sokol et al., 2018) is a combination of office-based group counseling with the prescription naloxone. Compared to pharmacological treatment alone, the literature suggests that GBOT has the added benefit of group-based support where clients can feel more accepted. However, the inadequate number of studies cannot judge the overall efficacy of GBOT.

Current research suggests that mindfulness-based approaches to therapy show positive results in terms of reducing harm to clients. Garland, Froeliger, and Howard (2014) found that implementing a Mindfulness-Oriented Recovery Enhancement (MORE) intervention effectively aids in reducing the behaviors and cravings associated with opioid addicts. Additional research by Russell, Gillis, and Heppner (2016) studied the integration of mindfulness-based experiences (MBE) into the treatment process at an outdoor behavioral healthcare program for young adult males with SUD. Statistically significant changes were found in clients' Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) scores from pre- to post-treatment. Moreover, these changes were also significantly correlated with changes in clients' Outcome Questionnaire-45.2 (OQ-45.2; Lambert et al., 1996) scores. Analysis of these results highlight how the development of mindfulness skills helps clients to increase their awareness and cognitive control of unregulated cravings and triggers.

OBH is a treatment option for adolescents and young adults with SUD that are seeking a nontraditional treatment program (Russell, 2003). Russell, Gillis, and Lewis (2008) distinguish OBH from other residential treatment programs by its primary use of wilderness expeditions as a therapeutic milieu with the application of a clinical treatment model by licensed mental health professionals. OBH focuses on treating and strengthening the client's mental and emotional state, as well as their behavior by using MBE. Clients gain growth as an individual as they develop a better self-concept while also learning to interact with peers in a social setting.

According to Lewis (2018), OBH was an effective treatment alternative for treating SUD in the young adult population compared to traditional treatment settings. Lewis (2013) also identified that these changes were consistent in the adolescent population, with a reduction of symptomology maintaining statistical significance 12 months after discharge. Current literature suggests that OBH can also provide positive treatment outcomes for adolescents in terms of their family dynamic and relationship with both parents (Tucker, Paul, Hobson, Karoff, & Grass, 2017). Bettmann, Russell, and Parry (2013) examined the specific factors that contribute to the treatment progress and outcome in OBH. Their results

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( $N=189$ ) indicated that wilderness therapy (i.e., OBH) programs are effective in reducing mental health symptomatology through the use of abstinence-based coping methods. Additionally, the results suggested that readiness to change is not required for wilderness therapy to be effective. When applied correctly, OBH can create positive long-term effects within young adults throughout the treatment as well as the following months (Roberts, Stroud, Hoag, & Massey, 2017). This body of literature supports the case that OBH is effective in treating SUD in several age groups.

Chapman et. al (2018) studied treatment effectiveness at Enviros Shunda Creek in relation to clients' prior drug use. Clients completed the Personal Involvement with Chemicals Scales (PICS; Winters & Henly, 1989) at intake to measure their drugs of choice and frequency. To measure treatment outcomes, clients completed the Outcome Questionnaire-45.2 (OQ-45.2) (Lambert et al., 1996; Lambert & Finch, 1999) and the Five Facet Mindfulness Questionnaire (FFMQ; Baer, et al., 2006). The OQ-45.2 monitors treatment progress by administration every two weeks. One subscale of OQ-45.2 assesses Symptom Distress and was found to be positively correlated with PICS scores. This finding suggests clients that self-report higher drug use also report higher symptom distress. Results from the FFMQ's Acts with Awareness subscale were negatively correlated with PICS, suggesting that those with higher drug use report lower scores of awareness. The OQ-45.2 change scores (intake-discharge) were found to be significantly correlated with PICS scores at intake. These results suggest treatment is effective regardless of the differences in clients' drug use.

Chapman et al. (2018) encouraged progress monitoring of outcomes during treatment as well as recommended further examination of different drugs used prior to treatment. With the current opioid crisis affecting young adults, this study compared client outcomes between self-reported opioid and non-opioid users during and six months after treatment.

### Method

#### Treatment Program

Enviros Shunda Creek is a 10-bed, 90-day OBH program for individuals with SUD. The program is designed to treat adult males, ages 18-24. To increase awareness of substance use patterns, clients participate in MBE (Russell, Gillis, & Heppner, 2016). Through adventure in nature, clients initiate and prepare one to five-day outdoor experiences that are based upon the goals of treatment (e.g., canoe trips, river crossings, rock climbing, backpacking). The intentional

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relationships formed between the clients and staff emphasize the connections that are made between the outdoor experience and the treatment process. For example, fears that occur during a canoe trip may coincide with post-treatment social situations that elicit a drug relapse. Within their cohort, clients reflect “in the moment” and after in hopes of solidifying the significance of the experience. On average, clients participate in one trip per week of the 90-day program.

### Participants

The average age of clients was 21.7 years ( $SD = 2.15$ ) and the average length of stay in treatment was 87.8 days ( $SD = 17.85$ ). The current database for Shunda Creek includes 190 clients. This study consisted of clients ( $n = 75$ ) who completed the OQ-45.2 at intake, discharge and 6 months after discharge with the alumni survey. The alumni sample consisted of 41.8% who identified as White, 14.3% who identified as First Nation, 12.7% who identified as “Other,” and 31.2% whose ethnicity was “Unknown” at intake. Clients had the option to disclose their ethnicity. Those who declined were classified as “Unknown.” Participation in treatment was voluntary; therefore, clients could leave at any time. The top four drugs that clients reported prior to treatment were 1) alcohol, 2) marijuana, 3) cocaine, and 4) opiates. Of the participants, 52.1% acknowledge use of opioids and 47.9% did not acknowledge use of opioids.

### Measures

**Outcome Questionnaire 45.2.** The Outcome Questionnaire-45.2 (OQ-45.2; Lambert et al., 1996; Lambert & Finch, 1999) is a psychosocial self-report instrument that contains 45 questions and utilizes a Likert-scale for responses to compute a total score. Scores range from 0 to 180 with higher scores indicating low levels of functioning. The OQ-45.2 has three subscales: Symptom Distress, Interpersonal Relations, and Social Role performance. An example question for Symptom Distress is, “I feel no interest in things.”; for Interpersonal Relations, “I get along well with others.”; and for Social Roles, “I feel stressed at work/school.”

**Alumni Survey.** The Alumni Survey is a self-report instrument developed by Enviros Shunda Creek staff. It is administered six months after clients’ discharge. The survey contains 22 questions scored on a scale of 1-10 with 10 implicating the strongest level of agreement. This instrument assess how alumni are doing in current relationships, quality of life, and information about relapses. An example question asking about relationships is, “How satisfied are you with your relationships with your family of origin?” A question asking about relapse is, “How would you rate the severity of your relapse?”

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**Personal Experience Inventory (PEI).** Winters and Henly (1989) designed the Personal Experience Inventory (PEI) which has multiple scales to explore the frequency, duration, and age of onset for use of 12 categories of drugs. The Personal Involvement with Chemicals Scales (PICS) is one subscale that assesses drug use prior to treatment. The PICS is self-report and contains 29 questions that are answered on a scale of 1 (never), 2 (once or twice), 3 (sometimes), or 4 (often). The subscale asks clients how often they use drugs and/or alcohol for a variety of reasons, such as “to have fun” or “to get your mind off problems.” This instrument assesses the frequency, amount, and the reasons behind clients’ drug use from the last 90 days before admission into the program.

The Substance Use Frequency Scale (SUFS) is another subscale from the PEI. This instrument is a self-report and used to assess how severe a client’s drug use is prior to treatment, specifically within the last 90 days. It follows the PICS with 22 questions. An example question is, “In the past three months: Alcohol (Example: beer, wine, coolers, hard liquor, etc.)” and clients could answer with “Never, 1-2 times, 3-5 times, 6-9 times, 10-19 times, 20-30 times,” or “40 or more times.”

### Procedure

Clients at Enviros Shunda Creek were administered the PICS and SUFS at intake to assess the frequency and severity of clients’ drug use during the 90 days prior to treatment. These assessments are both self-report subscales of the PEI. The OQ-45.2 is administered at intake, biweekly during treatment, and at discharge. This instrument monitors clients’ treatment progress. The alumni survey was administered 6 months after discharge.

### Results

Table 1 shows the OQ-45.2 mean scores and standard deviations for non-opioid users and opioid users at intake, discharge, and follow up. A one-way analysis of variance was conducted to examine the differences in the OQ-45.2 scores of opioid and non-opioid users at Enviros Shunda Creek. The results indicated that there were no statistically significant differences at intake, ( $F(1,66) = 0.261, p = .611$ ), during treatment, ( $F(1,62) = 0.585, p = .447$ ), or at discharge ( $F(1,71) = 0.127, p = .722$ ). Additionally, no statistically significant difference was found between OQ-45.2 total change scores (discharge – intake) ( $F(1,61) = 0.038, p = .847$ ). When examining the length of treatment between opioid and non-opioid users, results indicated no statistically significant differences  $F(1,71) = 0.034, p = .854$ .

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Table 1						
<i>OQ-45.2 Total Score Means and Standard Deviations for Non-Opioid Users and Opioid Users at Intake, Discharge, and Follow Up</i>						
<u>OQ-45.2 Scores</u>	Non-Opioid User			Opioid User		
	<u><i>n</i></u>	<u><i>M(SD)</i></u>	<u>95% CI</u>	<u><i>n</i></u>	<u><i>M(SD)</i></u>	<u>95% CI</u>
Intake	29	82.41 (24.95)	[72.92, 91.90]	34	85.74 (18.88)	[79.15, 93.32]
Discharge	29	35.52 (21.64)	[27.28, 43.75]	34	41.76 (26.31)	[32.58, 50.94]
Follow Up	29	48.59 (23.40)	[39.69, 57.48]	34	51.65 (21.90)	[44.00, 59.29]

Table 2 shows the bivariate correlations between the top four drugs and severity of relapse. Clients' severity of relapse scores significantly correlated with high self-reported opioid use ( $r(73) = 0.313, p = .003$ ) and high self-reported cocaine use ( $r(73) = 0.213, p = .033$ ). However, no statistically significant correlations are found between severity of relapse scores and clients' self-reported use of alcohol or marijuana.

Based on the significance found in the bivariate correlations, a multiple linear regression predicted clients' severity of relapse based on their top four drugs of choice. As seen in Table 3, Model 1 includes opioid users alone and the regression is significant ( $F, (1,73) = 7.930, p = .006, 95\% \text{ CI } [0.118, 0.687]$ ), with an  $R^2$  of 0.098. When cocaine is added in Model 2,  $R^2$  increases to 0.01 ( $(F, (2,72) = 4.351, p = .016, 95\% \text{ CI } [-0.172, 0.451])$ ) with an  $R^2$  of 0.108. When alcohol and marijuana are added in Model 3, the change in  $R^2$  is only 0.004. There is no statistical significance.

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Table 2					
<i>Pearson Correlations and Significance Levels for Severity of Relapse, Opiates, Cocaine, Marijuana, and Alcohol</i>					
		<u>Severity of Relapse</u>	<u>Opiates</u>	<u>Cocaine</u>	<u>Marijuana</u>
Opiates	<i>r</i>	0.313			
	<i>p</i>	0.006			
	<i>n</i>	75			
Cocaine	<i>r</i>	0.213	0.343**		
	<i>p</i>	0.066	0.001		
Marijuana	<i>r</i>	0.144	0.355**	0.385**	
	<i>p</i>	0.216	0.000	0.000	
Alcohol	<i>r</i>	-0.046	0.000	0.269**	0.178
	<i>p</i>	0.698	0.997	0.007	0.078
Note. **< .01					

Table 3					
<i>Regression Models for Severity of Relapse, Opioids, Cocaine, Alcohol, and Marijuana Use</i>					
Severity of Relapse					
	<u>Model 1</u>	<u>Model 2</u>		<u>Model 3</u>	
Variable	<i>B</i>	<i>B</i>	95% CI	<i>B</i>	95% CI
Opioids	0.313	0.271	[0.04,0.67]	0.259	[0.01,0.66]
Cocaine		0.108	[-0.17,0.45]	0.118	[-0.19, 0.49]
Alcohol				-0.066	[-0.64, 0.36]
Marijuana				0.019	[-0.38, 0.44]
<i>R</i> <sup>2</sup>	0.098	0.108		0.112	
<i>F</i>	7.93	4.351		2.205	
$\Delta R^2$		0.010		0.004	
$\Delta F$		0.795		0.160	

### Discussion

Results demonstrate no statistically significant differences between opioid users and non-opioid users in OQ-45.2 scores at intake, during treatment, at

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discharge, or follow-up, indicating that OBH treatment at Shunda Creek is equally effective at treating SUD for both opioid and non-opioid users. Additionally, the results support the idea that clients with high self-reported opioid use predict more severe self-reported relapse.

Clients had the option to complete a question on the survey that asks how they define their relapse on a scale from 1-10 and were also asked to qualitatively define their relapse. For instance, a client commented, “I used but wouldn’t consider this a full-blown relapse” and provided a rating of four for his qualitative response. On the other hand, another client reported, “extreme use, happened within a week of leaving, new drugs tried, almost got a criminal record (charges dropped), most relapses were brought on by depression.” The relapse descriptions of the high self-reported opioid users support the prediction of severe self-reported relapse. For example, a high self-reported opioid user rated the severity of his relapse as a 10 and defined his relapse as “ignorance” and “didn’t want to use tools to deal with stress.”

Other questions on the alumni survey relating to friends, significant others, and family of origin also give insight into the potential influences of interpersonal relationships on opioid users. Whereas it may be obvious, this study suggests that the need for a positive community is imperative for less severe relapses. For example, a high self-reported opioid user who also reported high relapse severity commented on his satisfaction with his relationships with friends by reporting, “I don’t have any sober friends.” When asked how satisfied he was with the relationships with his family of origin, the same client reported, “there needs to be more work on this” and “I feel they don’t help out when it comes to addiction stuff.” However, another opioid user with low self-reported relapse severity reported his relationship with his friends as a “good care group – call me out when I need it.” When asked about his relationship with his family of origin, he indicated that he “became more of a family guy” and that he is “visiting family more.” These comments indicate that the quality of clients’ relationships with family and friends could also be related to the severity of relapse.

### Limitations

Limitations of this study include that all of the instruments are self-report measures, and no objective measures of drug use were utilized (e.g. drug screens). Similarly, severity of relapse was measured subjectively based on clients’ own opinions. At intake, clients report their prior drug use based on 12 categories. The various drugs are rated at the same time, on the same scale; therefore, it may be difficult for clients at intake to recall what they have used. Additionally, there is

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missing data that results from absence during home visits or lack of follow-up responses after treatment.

This study consists of one sample, so there is also no comparison group. The sample of this study was chosen by complete data sets. Because this sample was less than half of the total data set, there is a chance the results would be different with a more complete data set. Only 40% of clients with data from intake through follow-up were included in the study ( $n = 75$ ). Because of this, it is possible that results could be different if a higher percentage of the data set could have been used. The alumni survey also did not ask where the clients went after discharge limiting analysis of those who went back to their respective communities or into additional treatment. The probability for Type I error is high due to the large number of questions in the alumni questionnaire, increasing degrees of freedom.

There was also no qualitative analysis of the alumni survey; no mixed methods were used. To better understand a client's rating on the alumni survey scale, the clients' comments were used to provide more context for how they rated and defined their relapse. Descriptions of clients' settings after treatment was not collected to determine how it may have impacted relapses.

### Strengths

One strength of this study is its relevance to the public health crisis (Sokol et al., 2018). This study was able to analyze treatment outcomes for opioid users. This study serves as the first examination of the differences in opioid and non-opioid users in OBH treatment. Thus, it is a call to action for other OBH programs to further examine clients' drug histories. These findings provide evidence that OBH is an effective treatment option for those with SUD, regardless of their drug of choice.

### Conclusion

Literature suggests that psychosocial treatments are the same for opioid and non-opioid users (Mayet, Farrell, Ferri, & Davoli, 2004). This study supports the notion that OBH treatment programs such as Enviro's Shunda Creek are effective in increasing psychosocial outcomes with clients who use a variety of substances. This is supported by the idea that no statistically significant differences were found between opioid and non-opioid users' OQ-45.2 scores at intake, during treatment, at discharge, or follow-up. As mentioned, the purpose of this paper was answering Chapman et al.'s (2018) recommendation to investigate

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various drugs of choice and how they relate to treatment effectiveness at Enviros Shunda Creek. By investigating both specific drugs of choice as well as alumni's psychosocial outcomes (OQ-45.2), this study reinforces the effectiveness of OBH in improving psychosocial outcomes regardless of drug choice. Overall effectiveness of SUD treatment is difficult to measure, as relapse is a complicated statistic as "individual treatment outcomes depend on the extent and nature of the patient's problems, the appropriateness of treatment and related services used to address those problems, and the quality of interaction between the patient and his or her treatment providers (National Institute on Drug Abuse, 2000, "How effective is drug addiction treatment?" para 2).

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