MATCHING TREATMENT TO DEVELOPMENT:

EMERGING ADULTS AND SUBSTANCE-USE DISORDER

by © Kathryn Dalton, B.Sc. (Hons)

A thesis submitted

to the School of Graduate Studies in partial fulfillment of the

requirements for the degree of

Master of Science in Pharmacy

Memorial University of Newfoundland

October 2019

St. John's Newfoundland and Labrador

Abstract

Emerging adults (age 18-25) drop out of substance use disorder (SUD) treatment earlier than those age 26+. Retention in treatment is important as it is correlated to long-term sobriety. There is a gap in the literature on how to improve retention in emerging adults. Through a systematic review and qualitative study, this thesis explored the best options to improve treatment retention in emerging adults with SUD. The systematic review summarized the literature and identified the highest treatment retention is reported to occur with contingency management, cognitive behavioral therapy, and opioid replacement therapy. In the qualitative study, health care professionals (HCPs) were interviewed regarding facilitators and barriers of treatment retention. Four themes were identified: 1) the emerging adults' development, 2) their addiction and recovery, 3) the environment, and 4) SUD programing. Future recommendations include tailoring SUD programming to the developmental needs of emerging adults and involving HCPs in the design of SUD programming.

Keywords: Emerging adults, Substance Use Disorder, Development, Barriers, Facilitators, Treatment Retention

ACKNOWLEDGEMENTS

There are a number of people that made this thesis possible. First, I would like to express my endless gratitude to my co-supervisors, Dr. Lisa Bishop, and Dr. Stephen Darcy. Thank you both for your constant support, encouragement, and guidance throughout this master's program. I am fortunate to have supervisors who cared so much about my success. Thank you both for always being available to help me and going above and beyond to ensure I succeed. Thank you for not only guiding me in my master's but also helping me with job applications and guidance in post-master's career paths. More than my supervisors, I consider you both mentors, and I look up to you both immensely.

I would also like to extend a big thank you to my other supervisory committee members, Dr. Catherine de Boer and Dr. Victor Maddalena. Your insightful feedback and expertise in qualitative research have been extremely helpful. Thank you both for readily meeting with me, even when you were outside of the province, and for instilling a new passion in me for qualitative research. I am inspired by your work in qualitative research, and I look forward to my future experiences in this field.

Thank you to the health care professionals who participated in this research study. Your commitment to your patients is admirable. Thank you for taking the time out of your busy schedules to allow me to understand your experiences and ultimately help contribute to improving the lives of emerging adults with substance use disorder. I would also like to thank Eastern Health for allowing me to conduct research at these centers.

I would like to thank the School of Pharmacy for support throughout my masters. Also, I would like to extend a thank you to Michelle Swab who has been extremely helpful with the conduction of the systematic review, providing academic references, and

assisting in APA references. Thank you to Dr. Marshall Godwin for your informative course on systematic reviews and for continuing to guide me throughout this master's program to help me with systematic reviews.

I also feel very fortunate to receive funding for this research. Thank you to the School of Graduate Studies and NL Support. Thank you, NL Support, for also funding travel opportunities to disseminate my research and network, as well as introducing me to the benefits of patient-oriented research. As such, I would also like to extend a thank-you to the patient partner of this research. Thank you for sharing your lived experiences to help inform this research which will better help other emerging adults with substance use disorder.

I would also like to extend profound gratitude to my family and friends. Thank you to my parents for your love, support, encouragement and who went above and beyond to help me during this process. Thank you both for instilling a strong work ethic and encouraging me to pursue my goals. A special thank you goes out to my mom who consistently kept me up-to-date on media involving mental health and addictions. To conclude, I would like to thank my best friends for your love and encouragement throughout the last few years.

Table of Contents

ABSTRACT ii

ACKNOWLEDGEMENTS iii

Table of Contents v

List of Tables x

List of Figures xi

List of Abbreviations and Symbols xii

List of Appendices xiii

Chapter 1: Introduction and Overview 1

Background 1

Overview of Chapter 1

Overview of the Need for the Research 1

Emerging Adulthood 3

Substance Use Disorder 6

Treatment for Substance Use Disorder 8

Emerging Adulthood and Substance Use Disorder 9

Why Focus on Treating Emerging Adults with Substance Use Disorder? 9

Literature Review 11

Demographic Differences 11

Treatment Retention in Emerging Adults 13

The Current Study 14

Statement of the Problem 14

Objective of the Thesis 15

Research Questions 16

Conceptual Framework 17

Philosophical assumptions. 17

Theoretical foundation. 18

Emerging adulthood as a stage in the life course. 18

Research Paradigms. 21

Chapter 2 (systematic review). 21

Ontology. 22

Epistemology. 22

Methodology. 22

Methods (research design and data collection). 23

Reliability and validity. 23

Chapter 3 (qualitative Study). 24

Ontology. 24

Epistemology. 24

Methodology. 25

Methods (research design and data collection). 25

Trustworthiness. 29

Reflexivity. 30

Ethics Statement 32

Overview of the Thesis Structure 33

References 35

Co-authorship Statement 43

Chapters 2: An Evaluation of Behavioural and/or Pharmacological Interventions that Lead to the Greatest Treatment Retention for Emerging Adults with Substance Use Disorder: A Systematic Review 44

Abstract 45

Introduction 46

Methods 49

Methodology 49

PICO Question and Study Registration 50

Inclusion and Exclusion Criteria 52
Search Strategy 52
Screening 54
Data Collection 55
Risk of Bias 55
Synthesis of Results 64
Results 64
Search Results 64
Characteristics of Included Studies 64
Treatment Retention Rates 65
Evaluation of cannabis and alcohol use disorders. 65
Evaluation of opioid use disorders. 67
Risk of Bias Within Studies 70
Discussion 70
Conclusion 74
Acknowledgments 75
References 76
Chapters 3: Piecing Together The Puzzle of Success: Attending to the Developmental Needs of Emerging Adults in Substance Use Disorder Programming 83
Abstract 84
Introduction 85
Methodology and Methods 89
Methodology 89
Methods 90
Participants and setting. 90

Recruitment and data collection procedure. 91
Data analysis. . 92
Results 93
Description of Participants ..93
Themes .93
Theme 1: Developmental stage. 95
Impact of developmental stage in success. 95
Emerging adults differing needs.. 96
Theme 2: Addiction and recovery. 97
Lack of understanding. 98
Intrinsic versus extrinsic motivation. 99
Theme 3: The environment. 100
Treatment center environment. .. 101
Post-discharge environment. . 102
Theme 4: Substance-use disorder programming. 102
Pre-treatment. 103
Design of treatment programming. 103
After-care. . 106
Overall Summary 107
Discussion 107
Conclusion 115
References 116
Chapter 4: Summary 123
Overview of Chapter 123
Background of Studies 123
Development of Research Question and Objectives 123
General Approach and Methods 124
Conceptual Framework 125
Summary of Findings 126
General Findings 126
Detailed Findings 128

Tailored programming. 128
Flexible programming. 128
Staff and family education. 129
Combination therapy for opioid use disorder. 129
SUD programming environment. 130
After-care. 130
HCPs frustration in program design. 131
Future Recommendations 131
Policy Recommendations 131
Recommendation for Tailored Programming 132
Recommendation for Flexible Programming 133
Recommendation for Staff and Family Education 134
Recommendation for Emerging Adults with Opioid Use Disorder 135
Recommendation for SUD Programming Environment 135
Recommendation for Implementing After-care 136
Recommendation for Involving HCPs in Program Design 136
Cost-Effectiveness of Recommendations 137
Future Research Directions 137
Questions for Future Research 137
Strengths and Limitations 138
Strengths 138
Limitations 139
Implications 140
Conclusion 141
Final Reflection 142
References 144
Full List of References 150

***List of Tables**

Table 1.1 Phenomenological Designs Adapted from Creswell and Poth's (2018) Criteria 27

Table 2.1 Search Strategy as Performed in MEDLINE (via EBSCO) 53

Table 2.2 Details of Studies Included in the Systematic Review 56

Table 3.1 Script of Interview Questions 92

Table 3.2 Facilitators and Barriers to Treatment Retention 94

Table 4.1 Policy Recommendations 132

***List of Figures**

Figure 1.1 Conceptual Framework 18

Figure 1.2 Theoretical Foundation of the Conceptual Framework 19

Figure 2.1 PRISMA Study Selection Flowchart 51

Figure 3.1 The Puzzle of Success: Emerging Adults in SUD Programming 94

*Disclaimer: Tables and Figures in the stand-alone manuscripts have been renumbered to reflect chapter number in the thesis to avoid confusion of multiple figures/tables with the same number.

List of Abbreviations and Symbols

Centre for Addiction and Mental Health [CAMH]

Cognitive Behavioral Therapy [CBT]

Community Reinforcement Approach [CRA]

Contingency Management [CM]

Diagnostic and Statistical Manual of Mental Disorders V [DSM-V]

Drug Counselling [DC]

Health Care Professionals [HCPs]

Human immunodeficiency virus [HIV]

Motivational Enhancement Therapy [MET]

Newfoundland and Labrador [NL]

Preferred Reporting Items for Systematic Reviews and Meta-Analysis [PRISMA]

Sexually transmitted infections [STIs]

Substance Use Disorder [SUD]

The Health Research Ethics Authority [HREA]

The Mental Health Commission of Canada [MHCC]

The Personal Health Information Act [PHIA]

The Research Proposals Approval Committee [RPAC]

The Substance Abuse and Mental Health Services Administration [SAMSHA]

The US Preventive Services Task Force quality rating criteria [USPSTF]

Tri-Council Policy Statement [TCPS-2]

List of Appendices

Appendix A: Recruitment letter email script and project summary 165

Appendix B: Interview questions script 171

Appendix C: Letter of approval from Health Research Authority (HREA) of Newfoundland and Labrador ………………………………….…173

Appendix D: Letter of approval from Research Proposals Approval Committee (RPAC) of Newfoundland and Labrador ……………………….175

Appendix E: Consent form cover letter and consent form 176

Chapter 1: Introduction and Overview

Background

Overview of Chapter

In this opening chapter, the reader is introduced to the rationale for conducting the research involved in this thesis, followed by some important definitions regarding emerging adulthood and substance use disorder (SUD)/addiction. Secondly, the reader is informed about the importance of focusing on emerging adults with SUD and a summary of the literature on treatment for this population. This is followed by an introduction to the conceptual framework and the two studies that comprise this thesis. This chapter closes with a brief overview of what is to come in the following chapters.

Overview of the Need for the Research

In Canada, the economic burden of mental health and addiction is estimated at $51 billion annually, which includes health care costs, lost productivity, and reductions in quality of life (Centre for Addiction and Mental Health (CAMH) 2018). Approximately six million Canadians met the criteria for a SUD in 2012, compared to 3.5 million who met the criteria for a mood disorder such as depression or bipolar disorder (Pearson, Janz, & Ali, 2013). Even more troubling is the fact that those between the ages of 18-25, also referred to as emerging adults (see below), have the highest rate of SUDs compared to any other age group (Adams, Morse, Choi, Watson, & Bride, 2017).

Treatment for emerging adults (those age 18-25) with SUDs is complex due to the unique issues this age group faces. In 2017, Newfoundland's All-Party Committee on Mental Health and Addictions released a report addressing the changes to be made in this

province to address mental health and addiction issues. Of particular importance, the report mentioned that individuals age 16-25 face unique challenges as they move from the child mental health system into the adult system. Additionally, a prominent problem faced by emerging adults with SUDs is retention in treatment. For example, emerging adults typically remain in treatment at a 22% lower rate in comparison to those age 26+ (Schuman-Olivier, Weiss, Hoeppner, Borodovsky, & Albanese, 2014a). These rates are consistent in Newfoundland and Labrador (NL) as well; both residential SUD centers in NL show a similar finding regarding emerging adults' retention in treatment. In a NL residential treatment center, over two months, retention was 64% for emerging adults and 76% retention for those age 26+. In a NL residential detoxification center, emerging adults remained in the program for fewer average days and dropped out more often after one day (emerging adult: 40% drop out after one day, versus age 26+: 35%) (Program managers, Personal Communication, September 11 & September 25, 2018).

Treatment retention is important because it correlates to a range of outcomes related to long term sobriety, such as a reduced drug use, higher social functioning, and a higher quality of life (Feelemyer, Des Jarlais, Arasteh, Abdul-Quader, & Hagan, 2013; Timko, Schultz, Cucciare, Vittorio, & Garrison-Diehn, 2016). Improving retention in treatment for emerging adults will ensure they are receiving the best possible care for their level of development. This will ultimately improve the lives of this population by increasing their quality of life and enhancing the likelihood of long term sobriety.

Improving the lives of emerging adults with SUDs is essential because untreated SUDs lead to a higher risk for problems such as early school drop-out, unemployment, involvement with the justice system, and bullying (Mental Health Commission of Canada

(MHCC), 2015). In the long term, this can lead to more severe mental health issues, underemployment, and a lack of work-force participation, leading to an increase in the overall economic burden of mental health problems (MHCC, 2015).

Emerging Adulthood

There is a growing consensus that emerging adults should be viewed as a distinct population separate from their older and younger counterparts (Mason & Luckey, 2003). Over the last few decades, the average lives of 18-25-year old's have changed dramatically. Since the middle of the twentieth century, the typical ages of marriage and beginning parenthood have risen; in 1960, the average age in the United States for women to get married was 20.3 and 22.8 for men (Arnett, 2015). By 2010, the average age for women has risen to over 26 and over 28 for men, and the increase ages of beginning parenthood have followed a similar trend (Arnett, 2015). There has also been a change between education and careers (Arnett, 2015). Individuals are spending more time in post-secondary education, and therefore, prolonging financial stability (Smith, 2017). This delay in marriage, careers, and parenthood, has created a life-stage gap between the late teens and late twenties, referred to as "emerging adulthood" (Arnett, 2015). This term was first proposed by Arnett (2000) in an article published in American Psychologist. This article has been highly influential, and according to Google Scholar, cited over 16,000 times. Arnett (2000) argues that the later stage of life milestones has ultimately created a new life stage and this period is neither adolescence nor adulthood. This new life stage is defined by five features that are distinct to the emerging adult, which include (1) identity exploration, (2) instability, (3) self-focus, (4) feeling in-between, and (5) possibilities/optimism.

Arnett (2015) discusses the identity exploration feature as the point where emerging adults are exploring possibilities in love and work, and by doing so, they clarify who they are and what they want, ultimately forming an identity. The instability feature goes hand in hand with the identity exploration feature. Emerging adults are attempting to figure out what works best for them in love and work - and with that comes changes and instability (Arnett, 2015).

The third feature is referred to as self-focus, which means emerging adults are now required to do all the thinking for themselves and answer the tough questions (Arnett, 2015). In adolescence, it is typical to have parents/guardians or at least one parent enforcing household rules and standards to follow, and if an adolescent breaks those rules, they experience the consequences from parents or teachers. In the late 30s when most people have a job, they answer to their employer, and if they break those rules, they face consequences. However, in emerging adulthood, there are few ties that require these commitments, which in turn, makes the emerging adult deal with all the tough decisions on their own such as going to college, working full-time, determining what degree to pursue in college/university, deciding who to pursue in a relationship, and choosing roommates (Arnett, 2015).

The fourth feature is “feeling in-between” adolescence and adulthood (Arnett, 2015). When emerging adults are asked if they feel like an adult, many are hesitant to say yes, but also hesitant to say no. This is because research shows that emerging adults typically consider three criteria are required to be considered “an adult”, which include: accepting responsibility for yourself, making independent decisions, and becoming

financially independent. Therefore, as most emerging adults are usually in the process of developing these qualities, they feel they are "in-between" (Arnett, 2015).

The final feature is possibilities/optimism (Arnett, 2015). In this feature, emerging adults are at a point in life filled with possibilities. They now have the opportunity to become independent of their parents' images and influence (Arnett, 2015).

In addition to these features, emerging adults undergo a period of neurodevelopment and immense social, cognitive, and psychological development (Halfon & Forrest, 2018). Neurodevelopmentally, the brain is continuing to undergo structural change and is not fully developed until the mid-twenties (Arain et al., 2013). During this process, the executive functions such as self-regulation, delay of reward, impulse control, and planning and anticipation of future consequences are developing (Casey & Jones, 2010; Henin & Berman, 2016). The brain region responsible for these executive functions undergoes delayed maturation, while the brain regions sensitive to novelty and reward-seeking behavior develops earlier (Casey & Jones, 2010). The brains ongoing structural changes during this time supports the conclusion that emerging adults' behaviors may be directly influenced by ongoing brain development (Casey & Jones, 2010). Collectively, the life style differences and the varying stages of development (social, cognitive, psychological, and neurodevelopment) that occurs in emerging adulthood highlight the importance of viewing emerging adults as their own distinct population separate from their older and younger counterparts (Arnett, 2015; Casey & Jones, 2010; Henin & Berman, 2016).

Emerging adulthood is a period of unprecedented change and can be challenging for most. This age group has the greatest likelihood of experiencing varying life

trajectories such as marriage and parenthood or experiencing prominent life problems such as alcohol and illicit drug use, unplanned pregnancies, and sexually transmitted infections (Bergman, Kelly, Nargiso & McKowen, 2016; Henin & Berman, 2016; MHCC, 2015; Smith, 2017). Although some of those problems are related to high-risk involvement in emerging adulthood and are usually resolved over time, some issues remain as lifelong battles, such as SUDs.

Substance Use Disorder (SUD)

SUD is a chronic relapsing brain disease characterized by a compulsion to seek and consume a drug, loss of control in limiting drug intake, and the occurrence of a negative emotional state when access to the drug is prevented (Koob & Volkow, 2010). SUD is classified in the Diagnostic and Statistical Manual of Mental Disorders V (DSM-V) as a cluster of cognitive, behavioral, and physiological symptoms which leads an individual to continue using a substance despite significant substance-related problems (American Psychiatric Association, 2013).

The DSM-V breaks down each drug into a cluster of ten separate classes of drugs: alcohol; caffeine; cannabis; hallucinogens; inhalants; opioids; sedatives, hypnotics, anxiolytics; stimulants (amphetamine-type substances, cocaine, and other stimulants); tobacco; and other (or unknown) substances (American Psychiatric Association, 2013). An individual will typically be diagnosed with the specific substance; for example, an individual may be diagnosed with alcohol use disorder as opposed to the broad term of a SUD.

The severity of each SUD ranges from mild to severe, based on a list of 11 criteria (American Psychiatric Association, 2013). A mild SUD is diagnosed as exhibiting two to

three criteria, moderate is four to five, and severe is six or more. The criteria, as referenced from the American Psychiatric Association (2013), are listed below:

1. The individual may take the substance in larger amounts or over a longer period than was originally intended.
2. The individual may express a persistent desire to cut down or regulate substance use and may report multiple unsuccessful efforts to decrease or discontinue use.
3. The individual may spend a great deal of time obtaining the substance, using the substance, or recovering from its effects. In some instances of more severe SUDs, virtually all of the individual's daily activities revolve around the substance.
4. The individual may experience craving, which is defined by an intense desire or urge for the drug that may occur at any time but is more likely when in an environment where the drug previously was obtained or used.
5. Recurrent substance use may result in a failure to fulfill major role obligations at work, school, or home.
6. The individual may continue substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance.
7. Important social, occupational, or recreational activities may be given up or reduced because of substance use. The individual may withdraw from family activities and hobbies in order to use the substance.
8. Recurrent substance use in situations in which it is physically hazardous.
9. The individual may continue substance use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance. The key issue in evaluating this criterion is not the existence of the problem, but rather the individual's failure to abstain from using the substance despite the difficulty it is causing.
10. The individual may experience tolerance, which is signaled by requiring a markedly increased dose of the substance to achieve the desired effect or a markedly reduced effect when the usual dose is consumed. The degree to which tolerance develops varies greatly across different individuals as well as across substances and may involve a variety of central nervous system effects.
11. The individual may experience withdrawal, which is a syndrome that occurs when blood or tissue concentrations of a substance decline in an individual who had maintained prolonged heavy use of the substance. After developing withdrawal symptoms, the individual is likely to consume the substance to relieve the symptoms. Withdrawal symptoms vary greatly across the classes of substances, and separate criteria sets

> for withdrawal are provided for the drug classes with some classes not requiring withdrawal for the diagnosis (American Psychiatric Association, 2013, Section II Substance-Related and Addictive Disorders).

Neurobiologically, SUD is composed of a cycle with three distinct stages, which include (1) binge/intoxication, (2) withdrawal/negative affect, and (3) preoccupation/anticipation (craving) (Koob & Volkow, 2010). The first stage comprises the ventral tegmental area and ventral striatum brain regions and involves behaviour such as binging on the substance (Koob & Volkow, 2010). The second stage involves the extended amygdala and exhibits behaviors such as the persistent desire to obtain the drug and taking the substance in larger amounts than expected (Koob & Volkow, 2010). Stage three comprises multiple brain regions such as the prefrontal cortex, orbitofrontal cortex-dorsal striatum, basolateral amygdala, the insula, the cingulate gyrus, hippocampus, dorsolateral prefrontal, and the inferior frontal cortices (Koob & Volkow, 2010; Robbins, Everitt, & Nutt, 2010). This stage involves the most prominent signs of addiction, which include tolerance, withdrawal, and neglecting important social and occupational activities.

During the three stages, neuroplasticity occurs in each of these aforementioned brain regions and ultimately disrupts normal brain functioning. This disruption creates long term changes to the brain and highlights how challenging recovery from SUD can be. However, with proper care, individuals with SUD can recover.

Treatment for Substance Use Disorder

According to the Substance Abuse and Mental Health Services Administration (SAMSHA), standard care for patients with SUDs includes individual and group counseling, inpatient and outpatient treatment, medication, recovery or peer support, and

12-step treatment. Some interventions that fall within these categories include cognitive behavioral therapy (CBT), contingency management (CM), motivational enhancement therapy (MET), peer-to-peer support, and medications for opioid use disorder such as methadone, buprenorphine, and naltrexone. Individuals may not need all of these interventions but each one plays a role in sobriety (SAMSHA, 2010).

Emerging Adults and Substance Use Disorder

Approximately 21% of emerging adults meet the diagnostic criteria for a SUD, in comparison to only 9% for 12-17-year old's and 7% for those age 26+ (Davis, Sheidow, Zajac, & McCart, 2012). Many factors may contribute to the higher onset of SUDs in this population (Smith, 2017). For example, a failure to meet and adjust successfully in this transitional stage could result in emerging adults coping with these challenges by turning to substances (Smith, 2017). Also, the imbalance between brain regions, marked by increased risk-taking and need for social approval, may partially explain the higher prevalence of drug and alcohol use among this population. Genetics may also play a role in emerging adult's substance use as they are at an elevated risk if one or more parents have alcohol use disorder (Smith, 2017). There is also evidence to suggest that early signs of delinquency or aggression are associated with emerging adult substance use (Smith, 2017).

Why Focus on Treating Emerging Adults with Substance Use Disorder?

Adults with SUDs have generally been offered similar treatments regardless of age (Helgeson et al., 2013; Mason & Luckey, 2003). This "one size fits all" approach to addiction medicine ignores recent insights into the unique differences and challenges of the emerging adult. In addition, emerging adults have the highest likelihood of developing

a SUD and typically have worse treatment outcomes as they are more difficult to engage in treatment and drop out of treatment much earlier than their older counterparts (Bergman et al., 2016; Mason & Luckey, 2003; Schuman-Olivier et al., 2014a; Smith, 2017).

Emerging adults are difficult to engage in treatment because their unique features leads to lower abstinence motivation, lower readiness to change, higher psychiatric comorbidity, higher social pressures, instability in environment and scheduling, frequent moves and transitions, and self-and peer-directed identity exploration (Satre, Mertens, Areán, & Weisner, 2003; Satre, Mertens, Areán, & Weisner, 2004 Schuman-Olivier et al., 2014a; Smith, Cleeland, & Dennis, 2010). This is equally problematic because engagement is shown to be predictive of attendance (Garnick et al., 2012). The Washington Circle of Engagement measures how many people return to treatment after the first session with the idea that in order for a patient to have greater retention in treatment, that initiation and engagement in treatment must first occur (Garnick et al., 2012). However, as previously mentioned, treatment retention is important because it is correlated to a range of outcomes related to long term sobriety (Feelemyer et al., 2013; Timko et al., 2016). Retention in treatment is also the most common outcome measure used in SUD studies and through evidence-based research. Additionally, focusing on improving retention in treatment for emerging adults with SUDs has a range of benefits, which include an increased quality of life by enhancing long term sobriety, reducing problems related to unemployment or crimes, and reducing economic burden related to mental health and SUD problems.

Literature Review

Emerging adults are different from their younger and older counterparts, but research on emerging adults with SUD is limited. Research is especially limited regarding ways to improve treatment retention for emerging adults with SUD. The majority of the research consists of quantitative studies that examine demographic and/or treatment retention differences between age groups or studies that compare treatments that leads to the greatest retention in emerging adults.

Demographic Differences

A study by Morse and MacMaster (2015) examined differences between emerging adult (18 to 25-year old's) and older adult (26+) opiate users and the impact of differences relative to treatment motivation, length, and outcomes. They found that older adults with a history of opiate use present at treatment with higher levels of severity for alcohol, medical, and psychological problems, while emerging adults present at treatment with greater drug use and more legal issues. Interestingly, this study reported no difference in treatment retention between the younger and older age group.

Adams et al. (2017) examined the differences between young adults (age 18-25) and adults age 26+ with substance use and mental health issues receiving residential treatment. They indicated that older adults were more likely to have greater severity of alcohol and medical problems, and over half were employed 30 days prior to admission. In contrast, the younger adults were less likely to be employed in the 30 days prior to intake and were also less likely to have used alcohol, but more likely to report using cannabis, opioids, or multiple drugs within 30 days prior to treatment (Adams et al., 2017). Unlike the Morse and MacMaster (2015) study, this study reported that the

younger adult age group remained in treatment longer than the 26+ age group. In both age groups, females were more likely to leave treatment compared to males, and older adults with dementia were more likely to leave treatment and had greater severity on the psychiatric composite subscale of the Addiction Severity Index (Adams et al., 2017). They reported the greater treatment retention in the younger population could be explained by older adults needing to return to their social and employment responsibilities since the older adults had a greater likelihood of being employed (Adams et al., 2017). Another explanation is that emerging adults had greater involvement with the legal system, and this could have motivated emerging adults to stay in the program longer. Their third explanation is that emerging adults probably have more social influences that support or pressure them to stay in the program, such as friends or parents (Adams et al., 2017).

A study by Mason and Luckey (2003) examined psychosocial and behavioral differences between emerging adults and older adults. In this study, emerging adults were more likely to live in a high-risk environment, such as with those using alcohol and/or illegal drugs. Emerging adults were more likely to have a conflict with family, three times more likely to experience hallucinations, more likely to have thought about or attempted suicide, and more likely to have been admitted overnight to a hospital for mental health treatment (Mason & Luckey, 2003). Finally, more than half of these emerging adults experienced cognitive impairments such as issues with understanding, concentrating, and remembering. Mason and Luckey (2003) also found retention rates were lower in emerging adults and claimed that the differences in psychosocial factors could be directly related to treatment retention.

This literature confirms that emerging adults differ in demographic factors and in treatment outcomes. Although the aforementioned studies state inconsistencies in treatment retention, the majority of the literature consistently indicates retention in treatment is lower in emerging adult populations (Bergman et al., 2016; Mason & Luckey, 2003; Schuman-Olivier et al., 2014a; Smith, 2017). For example, emerging adults who received the same treatment interventions as those 26+ remained in treatment at a 22% lower average compared to those 26+ (Schuman-Olivier et al., 2014a).

Treatment Retention in Emerging Adults

A number of studies exist evaluating interventions that lead to the greatest treatment retention for emerging adults in SUD programs. Some of the studies that examined interventions for cannabis and alcohol use disorder demonstrate the highest treatment retention is achieved with interventions such as CM, MET, and CBT. Esposito-Smythers et al. (2014) examined an outpatient integrated CBT/CM intervention for emerging adults with human immunodeficiency virus (HIV) and alcohol and/or cannabis use disorder. Retention in substance abuse treatment was 82% at four months. Carroll et al. (2006) examined eight-week retention rates for combinations of therapies. Their findings indicate the following retention in treatment rates: MET/CBT plus CM: 69.7%, drug counseling (DC) plus CM: 66.7%, MET/CBT without CM: 63.68% and DC without CM: 39.4%. Interventions that lead to lower retention in treatment results include standard DC with 39.4% and a peer-enhanced community reinforcement approach with 11% (Carroll et al., 2006; Smith, Davis, Ureche, & Dumas, 2016).

Treatment for opioid use disorders is typically different than other SUDs and usually involves opioid replacement therapy (ORT) or withdrawal management therapy

(Bruneau et al., 2018). Some studies that evaluated treatment retention for emerging adults with opioid use disorder found high retention rates with CBT paired with withdrawal management. Two studies that examined retention in treatment with withdrawal management and psychosocial therapy had retention rates of (1) 56% at 13 weeks and (2a) 65% at 12 weeks and (2b) 40% at 24 weeks (Schuman-Olivier et al, 2014a; Vo, Robbins, Westwood, Lezama & Fishman, 2016). Dayal and Balhara (2017) examined buprenorphine maintenance treatment (ORT) with counseling and rehabilitation services. Retention rates were 33.8% at 90 days. Emerging adults with opioid use disorder that received youth specific tailored residential treatment with MET, CBT, and buprenorphine detoxification remained in treatment 83.9% at 35 days (Schuman-Olivier, Claire Greene, Bergman & Kelly, 2014b). Another study with high treatment retention involved buprenorphine-naloxone for eight weeks along with group CBT. Emerging adults were stratified by type of opioid use (heroin vs. prescription opioid use), and retention at eight weeks was 82.5% for the prescription opioid group and 64.7% for the heroin group (Romero-Gonzalez, Shahanaghi, DiGirolamo & Gonzalez, 2017).

The Current Study

Statement of the Problem

The aforementioned interventions (i.e., CBT, withdrawal management, ORT, psychosocial therapy, counseling and rehabilitation services) are shown to be the most effective in the adult population, but retention rates are still lower in emerging adults (Dutra et al., 2008; Schuman-Olivier et al., 2014a; Timko et al., 2016). Collectively, this suggests that more research regarding how to improve retention in treatment for emerging adults SUD is needed.

Emerging adults have the highest rate of SUD compared to any other age group (Adams, Morse, Choi, Watson, & Bride, 2017). Further, treating emerging adults with SUD is complicated due to their unique developmental and socioeconomic issues. For example, emerging adults often drop out of treatment earlier than those age 26+ (Schuman-Olivier et al., 2014a). Improving treatment retention leads to long term sobriety, higher social functioning, and a higher quality of life (Feeleymer et al., 2013; Timko et al., 2016). There is a gap in the literature regarding the best ways to improve treatment retention for emerging adults with SUD.

Objective of the Thesis

Building on the gaps in the literature, the objective of this thesis was to investigate the best options to improve treatment retention in emerging adults with SUD. This was attempted by means of two complementary studies: a systematic review (chapter 2) and a qualitative research study (chapter 3). The first study (chapter two) attempted to investigate ways to improve treatment retention for this population through a systematic review which involved summarizing the literature evaluating treatment interventions for emerging adults (age 18-25) with SUDs that leads to the highest treatment retention. The second study (chapter 3) attempted to investigate ways to improve treatment retention for this population through a qualitative study, which involved gathering a rich set of qualitative data regarding facilitators and barriers that leads to the highest treatment retention from the perspectives of health care professionals (HCPs) at two SUD treatment centers.

Research Questions

The overarching research question of this thesis was: what are the best options to improve treatment retention in emerging adults with SUD? The two complementary studies answered this overarching research question through specific research questions appropriate to each study.

The research question for chapter 2 (systematic review) was as follows: What are the treatment interventions that lead to the greatest treatment retention for emerging adults with SUD? The rationale for conducting a systematic review instead of a traditional thesis' literature review is because emerging adults in SUD programs is such an understudied topic and I wanted to go a step beyond a standard literature review and understand the entirety of what the literature says about emerging adults in SUD programs. Typically, systematic reviews are a more limiting process. However, in this case, since there is so little literature on emerging adults with SUD, and the search strategy was designed to be broader to capture all research on emerging adults with SUD, this process retrieved more research compared to a standard literature review or a standard systematic review. Systematic reviews are a more rigorous process than a conventional literature review, and require full manuscript write-ups, hence its own chapter and own manuscript submitted for publication.

The research questions for Chapter 3 (qualitative Study) includes: (a) What do HCPs perceive to be facilitators of retention encountered by emerging adults who attend residential SUD programs? (b) What do HCPs perceive to be barriers to retention encountered by emerging adults who attend residential SUD programs? The results from the systematic review included a small number of studies which helped inform the second

study (qualitative study). As stated by Morse and Field (1995) "If an extensive library search reveals very little previous information about a research topic, the topic is probably not developed enough to use quantitative methods, and an exploratory, descriptive study using qualitative methods should be conducted" (pg. 13).

Conceptual Framework

The research within this thesis can be conceptualized by its underlying theoretical foundations paired with specific philosophical underpinnings.

Philosophical assumptions.

Philosophical assumptions are the ideas and beliefs that inform research. In this section, I will attempt to make these assumptions explicit. The assumptions are largely enacted or played out in the paradigms and theories that have informed the study. Although each study is based on distinct paradigms, they share the same theoretical foundation, specifically the life course perspective. Hence it will be discussed first followed by a delineation of the paradigms associated with each study. In a broad sense, a conceptual framework is an analytical tool which can help to convey how the philosophical assumptions fit together (Jabareen, 2009). In this thesis, the conceptual framework includes the theoretical foundation and the four components from each of the paradigms associated with each study (Figure 1.1).

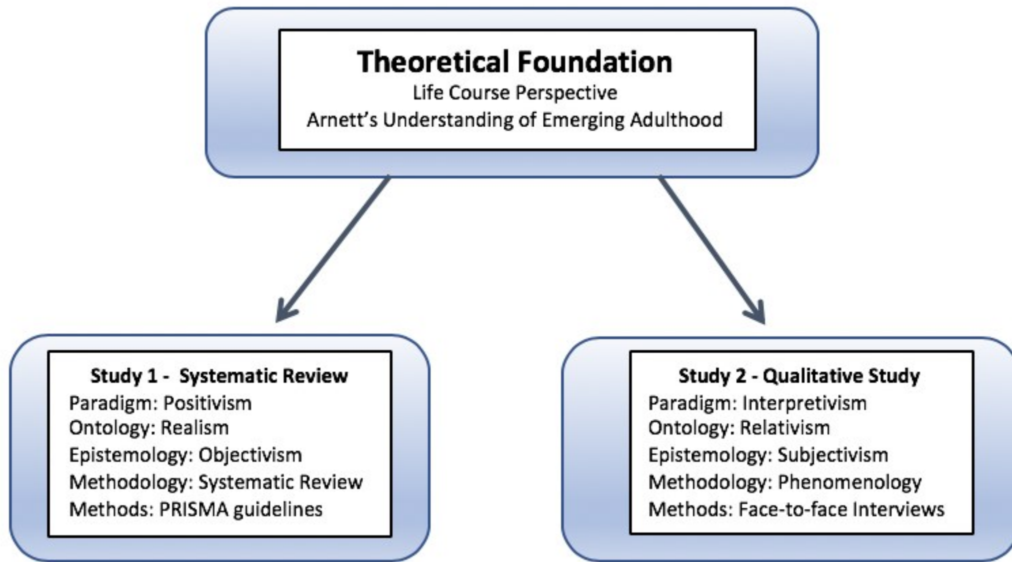


Figure 1.1. Conceptual Framework

Theoretical foundation.

A theoretical foundation is a lens in which research can be viewed and informed. For this thesis, the theoretical foundation is rooted in Arnett's (2000) understanding of viewing emerging adults as their own distinct population, and in the life course perspective, which is defined as "an approach to human behavior that looks at how biological, psychological, and social factors act independently, cumulatively, and interactively to shape people's lives from conception to death and across generations" (Hutchinson, 2019, p. 471).

Emerging adulthood as a stage in the life course.

It is relevant and appropriate for the life course theory to inform this thesis. This thesis focuses on the idea of treating emerging adults with SUDs as a different population separate from their older and younger counterparts. Figure 1.2 below visually displays the

theory within this conceptual framework, and the following section explains each component in detail.

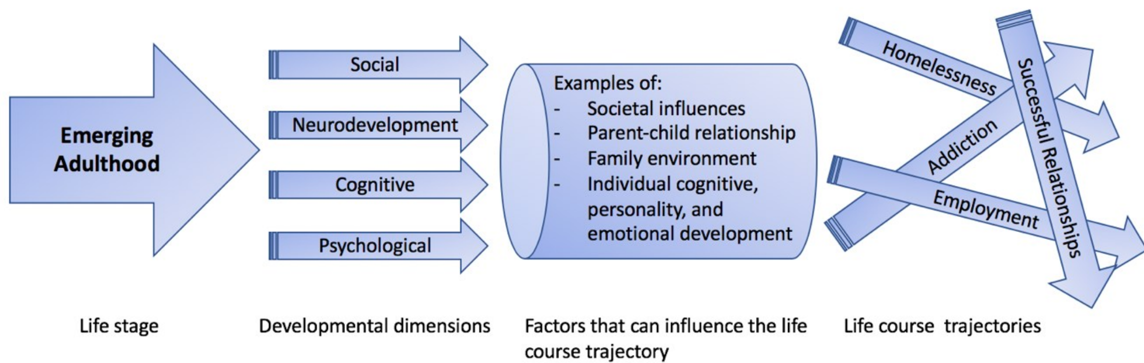


Figure 1.2. Theoretical Foundation of the Conceptual Framework

Furthermore, viewing emerging adulthood as a stage in the life course is appropriate as it can explain the neurodevelopment and the social, cognitive, and psychological development that occurs during this life stage (Halfon and Forrest, 2018). Emerging adulthood (age 18-25) is a unique developmental stage separate from adolescence and later adulthood (age 26+) and is considered to be a stage within the life course. The life course conceptual framework for the study of human behavior and experiences recognizes the importance of time, timing, and temporal processes during an individual's lifetime (Hser, Longshore, & Anglin, 2007).

The supports, opportunities, and experiences that occur during emerging adulthood can greatly influence the ultimate outcome of this stage and the life trajectory into young adulthood. Multiple factors can influence emerging adults transition throughout the life course and includes factors at the macro level such as historical and societal influences, at the meso-level such as parent-child relationships, family

environment, and socioeconomic status, and factors at the microlevel which includes individual cognitive, personality, and emotional development (Hser, Longshore, & Anglin, 2007). Trajectories are long term patterns of stability and change and are defined as pathways of development during the life span such as work life, parenthood, or criminal behavior (Hser, Longshore, & Anglin, 2007). Adapting to life events is crucial because the same event or transition, followed by a different adaption could lead to a different trajectory (Hser, Longshore, & Anglin, 2007). For example, Smith (2017) states that a failure to meet and adjust successfully in emerging adults transitional stage in life could result in life-impacting problems and in response, emerging adults may cope with the challenges of a new life stage by turning to substances (Smith, 2017). Various trajectories that occur during this life stage are multiple and intersecting and could include factors such as homelessness, addiction, employment, and successful relationships.

Ultimately, the goal of this research is to improve the lives of emerging adults with SUDs, and therefore, Arnett’s (2000) understanding of viewing emerging adults as their own distinct population as well as the life course perspective is an appropriate conceptual framework for this research for multiple reasons. Firstly, it highlights the importance of viewing emerging adults as a unique life stage separate from their older and younger counterparts. Secondly, it compassionately recognizes the fact that emerging adults’ unique developmental differences can influence various life trajectories such as SUDs.

Research Paradigms.

Within the conceptual framework are the two specific research paradigms. Rehman and Alharthi (2016) state that there are four components of a research paradigm, which include ontology, epistemology, methodology, and methods. Ontology refers to "the nature of our beliefs about reality" and is characterized by the idea that there are multiple understandings of reality, all informed by differing perspectives (Creswell & Poth, 2018; Rehman & Alharthi, 2016, p. 51). Epistemology refers to "the branch of philosophy that studies the nature of knowledge and the process by which knowledge is acquired and validated" (Rehman & Alharthi, 2016, p. 52). It is rooted in what is capable of being known from those being researched, therefore, the researcher relies on what they discover from those being researched as knowledge (Creswell & Poth, 2018). Methodology is "an articulated, theoretically informed approach to the production of data" (p.52) and guides the researcher to determine which type of data is required for their study and what type of tools are the most appropriate to conduct the study. Methods are the specific means of collecting and analyzing data and includes examples such as questionnaires and open-ended interviews (Rehman & Alharthi, 2016). The following section explains each of the two studies research paradigm and its four components in detail.

Chapter 2 (systematic review).

The systematic review in Chapter 2 provides an understanding of SUD treatment interventions from the literature that leads to the highest treatment retention for emerging adults.

Ontology.

The systematic review follows a positivist research paradigm. Positivism follows a strict cause and effect and assumes reality exists independently of human interpretation with the ontological assumption of realism (Creswell & Poth, 2018; Suri, 2013). This is the view that objects have an existence independent of the knower, and therefore, reality can be discovered independently of the researcher (Anti & Kasim, 2015; Rehman & Alharthi, 2016). Collectively, this is consistent with the systematic review.

Epistemology.

Positivism follows an epistemological position of objectivism, where researchers are objective observers while they study a phenomenon that exists independently of them and they do not disturb what they are researching. This was aligned with the systematic review.

Methodology.

The methodology involved in the systematic review is aligned with the positivist paradigm. Rehman and Alharthi (2016) state "empirical evidence is gathered; the mass of empirical evidence is then analysed and formulated in the form of a theory that explains the effect of the independent variable on the dependent variable" (p.54). Positivist paradigms discuss the use of the scientific method and the goal is to create new knowledge through *deductive* methods such as comparison of groups. This is consistent with the systematic review as the *objective* evidence and comparison *among studies* informed the results (knowledge) of this study.

Methods (research designs and data collection).

The research design for chapter 2 is a descriptive statistics (narrative) systematic review. A systematic review is an essential tool for summarising evidence accurately and reliably (Liberati et al., 2009). Some of their benefits include helping clinicians keep up to date, providing a starting point for clinical practice guidelines, and gathering together and summarizing research for patients. The choice to have a descriptive statistics (narrative) systematic review without a meta-analysis is because of the limitability of the research. There were only ten studies obtained that examined emerging adults with SUD and I have chosen to include all ten, however, it was not possible to combine these ten studies in a meta-analysis as each study had varying intervention and control groups. The methods and specific means of collecting and analyzing the data are aligned with the specific steps in the PRISMA guidelines (McInnes et al., 2018). The data collection for the systematic review followed the PRISMA guidelines, and Medline, PsycInfo, CINAHL (all via EBSCO), and Embase were systematically searched for articles evaluating treatment interventions for emerging adults with SUD that leads to highest treatment retention. The data was analyzed based on the organization of highest to lowest retention rates and a deeper inquiry to the reasoning for the specific retention rates.

Reliability and validity.

Positivists use criteria such as validity and reliability to validate findings (Antwi & Hamsa, 2015). The systematic review followed the 27-item PRISMA checklist which provides specific guidance for reporting of systematic reviews. Following the guidelines facilitates the transparent reporting of reviews and may assist in the evaluation of validity and applicability, enhance replicability of reviews, and make the results from systematic

reviews of diagnostic test accuracy studies more useful (McInnes et al., 2018). In addition, the systematic review is registered in PROSPERO, which is an international database of prospectively registered systematic reviews. PROSPERO provides transparency in the review process by helping counter publication bias and/or reporting bias ("PROSPERO", 2019).

Chapter 3 (qualitative study).

Chapter three is a qualitative study that used semi-structured qualitative interviews with HCPs who work very closely with emerging adults with SUD. This study provides an understanding of the perspectives of HCPs perceptions on facilitators and barriers to retention for emerging adults in SUD programs.

Ontology.

Chapter 3 follows an interpretivist research paradigm. Interpretivism rejects the idea that a single, verifiable reality exists independent of our senses (Rehman & Alharthi, 2016). Interpretivism is rooted in the ontological belief of *relativism*. This means reality is subjective and differs from person to person and is mediated by our senses. Further, this view is rooted in the idea that reality is individually constructed, and there are as many realities as there are individuals (Anti & Kasim, 2015).

Epistemology.

The epistemological stance in interpretivism is subjective in that reality cannot be directly accessible to observers without acknowledging the influence of their worldviews, concepts, and backgrounds, etc. (Rehman & Alharthi, 2016). Creswell and Poth (2018) state within the epistemological assumption, conducting qualitative research means researchers attempt to get as close as possible based on individual views. Therefore,

subjective evidence is assembled based on individual views and reality is constructed between the researcher and the researched and is shaped by individual experiences. The participants experiences have been articulated to me and I have interpreted them based on my own experiences. The results derived from the interviews are based on my understanding of the HCPs experiences with emerging adults with SUD.

Methodology.

The methodology that underlies interpretivism requires understanding through the eyes of the participants rather than the researcher (Rehman & Alharthi, 2016). Interpretivists create knowledge through an *inductive* method such as interviewing, observing, and analyzing texts. This is consistent with the qualitative study in this thesis as the *subjective* evidence from the semi-structured interviews informed the results (knowledge) of this study.

Methods (research design and data collection).

Interpretivist researchers collect mostly qualitative data. Examples of data collection methods include open ended interviews, observations, field notes, personal notes, documents, etc. (Rehman & Alharthi, 2016). The research design for chapter 3 is a phenomenological qualitative study. In phenomenology, perceptions are viewed as the primary source of knowledge, the source that cannot be doubted (Moustakas, 1994). This is appropriate for my research as I was trying to answer the question: What do HCP *perceive* to be facilitators and barriers to retention encountered by emerging adults who attend residential SUD programs? Moustakas (1994) states the following about phenomenology:

> According to Kockelmans (1967, p. 24), the term phenomenology was used as early as 1765 in philosophy and occasionally in Kant's writings, but only with Hegel was a well-defined technical meaning constructed. For Hegel, phenomenology referred to knowledge as it appears to consciousness, the science of describing what one perceives, senses, and knows in one's immediate awareness and experience. The process leads to an unfolding of phenomenal consciousness through science and philosophy 'towards the absolute knowledge of the Absolute' (Kockelmans, 1967, p. 24) (pg.25).

As cited by Creswell and Poth (2018), the foundations of phenomenology are rooted in the work of the German philosopher Husserl. His work was carried on by Heidegger, who described the basic structure of the life-world, focusing on the lived experience. Experience is considered to be one's perceptions of his or her presence in the world at the moment when things, truths, or values constitute (pg. 152). As cited by Moustakas (1994), Husserl asserted,

> For me the world is nothing other than what I am aware of and what appears valid in my cognitions …. I cannot live, experience, think, value, and act in any world which is not in some sense in me, and derives its meaning and truth from me. (pg. 3)

Husserl further stated that only knowledge that emerged from internal perceptions and internally justified judging satisfied the demands of truth (Moustakas, 1994). This study is aligned with phenomenology as I am trying to understand perceptions of a phenomenon experienced by a group of individuals with a shared experience. Furthermore, according to van Manen (1990), the "essence" of the phenomenon is not immediately accessible to outsiders but through phenomenology we can learn about their lived experience. The phenomenology of interest is HCPs perceptions on barriers and facilitators to treatment retention encountered by emerging adults who attend SUD programs. The shared experience is that they are HCPs working with emerging adults.

A phenomenological research design for the qualitative study in this thesis is appropriate for a number of reasons. First, unlike a grounded theory approach, where the goal is to generate theory, phenomenology focuses on providing an accurate description of the phenomenon being studied (Morse & Field, 1995). Secondly, Creswell and Poth (2018) state, "phenomenology provides a deep understanding of a phenomenon as experienced by several individuals. Knowing some common experiences can be valuable for groups such as therapists, teachers, health personnel, and policymakers" (pg. 80). This is appropriate because the results of this study were created with the intent of sharing with therapists, health personnel, and policymakers. The following table (Table 1.1) further rationalizes the appropriateness of using a phenomenology design for the qualitative study.

Table 1.1.

Phenomenological Designs Adapted from Creswell and Poth's (2018) Criteria

Step	**Location in Thesis**
Determine if the research problem is best examined using a phenomenological approach.	The rationale for using a phenomenological approach is described in chapter 1.
Identify a phenomenon of interest to study and describe it.	The phenomenon of interest were HCPs perceptions of emerging adults success in treatment programs.
Distinguish and specify the broad philosophical assumptions of phenomenology.	These are described in detail in chapter 1.
Collect data from the individuals who have experienced the phenomenon by using in-depth and multiple interviews. Creswell and Poth (2018) state researchers should interview 5-25 participants and ask two broad, general questions and open-ended questions may be asked but two focused questions will generate the best understanding of the phenomenon.	Data collection involved semi-structured interviews conducted one-on-one in a private setting at two residential SUD facilities. In the qualitative study, I interviewed 9 HCPs and there was a list of open-ended questions to get to the main two questions of "what are the facilitators to success…" and "what are the barriers to success …"

Generate themes from the analysis of significant statements.	The process involved in the qualitative study is aligned with Moustakas (1994), as cited by Creswell and Poth (2018), process of horizontalization and developing of “clusters of meaning” from the significant statements into themes. Of note, during the analysis we felt we reached saturation, but we did not make this the determining factor to end data collection. Hale et al (2007, p.7) as cited by Saunders et al. (2017) states “saturation is not normally an aim in interpretative phenomenological analysis, owing to the concern to obtain ‘full and rich personal accounts’, which highlights the particular analytical focus within individual accounts in this approach, and van Manen dissociates saturation from phenomenological research more generally.”
Develop textural and structural descriptions.	This is described in the manuscript (chapter 3).
Report the essence of the phenomenon by using a composite description.	This is described in the manuscript (chapter 3).

In chapter three, the data described was collected through semi-structured interviews. It was felt semi-structured interviews were appropriate and sufficient to answer the research question (“what are the perceived facilitators and barriers to treatment retention”). Further, they allow in-depth insight into individuals’ experiences of the emerging adults in the SUD programs. Semi-structured interviews are used when the researcher knows most of the questions to ask but cannot predict the answers, and it is useful because it ensures the researcher obtains all information required without forgetting a question, while at the same time gives a participant freedom to respond and illustrate concepts (Mores & Field, 1995).

Trustworthiness.

Interpretivist paradigms use trustworthiness and credibility to validate findings (Antwi & Hamsa, 2015). The qualitative study followed Lincoln and Guba's four criteria to ensure trustworthiness which includes credibility, transferability, dependability, and confirmability (Korstjens & Moser, 2018). Credibility in qualitative research is the same as internal validity in quantitative research and is concerned with the aspect of the truth of the research findings. Credibility requires the researcher to have "persistent observation" and I believe I ensured credibility because I constantly read and reread the transcripts, analyzed them, and revised my interpretations accordingly (Korstjens & Moser, 2018). The concept of transferability refers to the degree to which the results of the qualitative study can be transferred to other contexts (Korstjens & Moser, 2018). To ensure transferability, I made the methods section as clear as possible so that if it were to be replicated, it could easily be done. I provided descriptive data, described the program settings, sample, sample size, sample strategy and recruitment (Appendix A), demographics, inclusion and exclusion, and the interview questions (Appendix B). Dependability is concerned with the participants' evaluation of the findings, interpretation, and recommendations of the study such that all are supported by the data (Korstjens & Moser, 2018). I ensured dependability by reporting the results of the participant's experiences and ensuring I was transparent in my description of all steps taken from the start of the project to the reporting of the findings. Confirmability involves the degree to which the findings of the research study could be confirmed by other researchers (Korstjens & Moser, 2018). The first three authors (KD, LB, SD) read all of the transcripts and independently coded two of the most information-rich transcripts.

From here, these first three authors met for a discussion about the codes and themes. The involvement of multiple researchers on this project ensures confirmability of the results.

Reflexivity.

The concept of reflexivity was a continual process throughout this research and has helped me expand on my personal beliefs and knowledge of this research topic. Referencing my understanding of reflexivity, I am using the definition of Creswell and Poth (2018), as defined as:

> ... the writer engages in self-understanding about the biases, values, and experiences that he or she brings to a qualitative research study. One characteristic of good qualitative research is that the inquirer makes his or her 'position' explicit … the researcher first talks about his or her experiences through work, schooling, family dynamics, and so forth. The second part is to discuss how these past experiences shape the researcher's interpretation of the phenomenon (p.229).

To start by making my position explicit, I will begin by introducing my motivation for this research. From childhood to adulthood, my dream was always to work in a medical field and help people. I grew interested in psychology and the brain and I decided to pursue an undergraduate degree at Carleton University in neuroscience and mental health. Throughout my undergraduate degree, I learned about the various types of mental health issues. When I learned about addiction, one of my professors said addiction is a mental illness that is poorly understood by society. The professor said that the majority of society is not as empathetic towards those suffering from addiction and while most mental illnesses are losing their stigma, addiction continues to hold a significant amount of stigma. This broke my heart because those with addiction are evidently suffering. This is also a mental illness that requires significant financial expenses, therefore, forcing many of those with addictions into homelessness. Therefore, they are

not only suffering, but suffering in the public eye, and exposed to harsh criticism. My compassion for this population led me to seek out more knowledge outside of my education. I read *In the Realm of Hungry Ghosts: Close Encounters with Addiction* (Maté, 2008). This book changed my life. From here, I decided my goal in life will be to contribute to helping this population and contribute to reducing the stigma. I feel very blessed to have had this opportunity in my master's degree. I also became interested in emerging adulthood because this is a point in life filled with opportunities and excitement and an unprecedented degree of freedom to set the groundworks for the future.

Secondly, my position in this research gives me a unique insight and has inspired some motivation for the topic as well. I am an emerging adult and I began this research at the mid-range of emerging adulthood. I was 23 years old and, I always had an idea 18-25-year old's were their own separate entity. My sister is seven years younger than me, and I consistently noticed the life differences between the both of us. I also have relatives and some friends in their 30's, whom I also have noticed life differences between them and I as well. However, for the most part, I was surrounded by similar emerging adults - those who work hard at building a future for themselves. As I started to read literature on the topic of emerging adulthood, I realized I was a lot luckier than I thought, as this is a point in life that can be encompassed with an immense struggle for some, specifically struggles with SUDs.

Furthermore, I would like to give a brief background as to why I could conduct this research and discuss how my experiences as an emerging adult may have shaped this research. I was the primary investigator of the two studies. I strongly believe I had the skills and educational background required to conduct this research. I acquired the skills

through masters level qualitative course work, reading the literature, and speaking with those who have SUDs. My undergraduate degree also gave me a thorough understanding of brain development, SUDs, and mental health. Also, I feel as though my experience and understanding of emerging adult shaped my interpretations of the findings.

I conducted the qualitative interviews, and, I believe my relationship with the participants did not hinder any of the data collected. Given that I was a student and I conducted the interviews with successful HCPs, I believe that there were no conflicting experiences due to a power struggle or power difference. I was reflexive during the research process and noticed the majority of the participants were empathetic towards emerging adults, recognizing any of their issues as related to development.

Ethics Statement

Ethics was not required for the systematic review but was obtained for the qualitative study. The qualitative study was approved by the Health Research Ethics Authority (HREA) of Newfoundland and Labrador (Appendix C) and the Research Proposals Approval Committee (RPAC) (Appendix D). The HREA is a non-profit agency in NL responsible for the general supervision of all health research involving humans conducted in this province. RPAC approves and monitors research projects that occur in Eastern Health, therefore, I obtained RPAC approval since my study took place at two Eastern Health centers (Grace Center and the Recovery Center). All research that takes place with Eastern Health is required to have both Health Research Ethics Authority (HREA) and RPAC approval.

Consequences for breach of confidentiality were clearly understood by the research team through the completion of the Personal Health Information Act (PHIA)

(Government of Newfoundland and Labrador, 2019). All measures were taken to ensure the ethical conduct of research involving humans by following the Tri-Council Policy Statement (TCPS-2) framework (Canadian Institutes of Health Research, 2014). Such measures included ensuring participants were exposed to as limited risks as possible but having resources in place if a participant needed support, obtaining consent prior to conducting the interviews (Appendix E), ensuring participants privacy and confidentiality was protected, ensuring no identifiable information was reported, and finally keeping the data in a securely locked space.

Overview of the Thesis Structure

This manuscript-style thesis is divided into four chapters, references, and appendices. The four chapters consist of an introduction chapter, two stand-alone, complementary research studies, and a concluding summary chapter. The appendices are supporting documents pertaining for the two stand-alone studies. Repetition in the chapters was unavoidable due to the nature of the two stand-alone studies.

1. This beginning chapter is introductory to the thesis and provides the reader with a brief and clear presentation of the background of the research, the conceptual framework, the research question, and the thesis objectives.
2. Chapter two is the systematic review, which provides an understanding of SUD treatment interventions from the literature that leads to the highest treatment retention for emerging adults. This study is currently submitted for publication in the Canadian Journal of Addiction.

3. Chapter three is the qualitative study, using semi-structured qualitative interviews with HCPs who work very closely with emerging adults with SUD. This study provides an understanding of HCPs perceptions on facilitators and barriers to retention for emerging adults in SUD programs. This study is currently being prepared for publication in Drug and Alcohol Dependence.
4. Chapter four is the summary chapter, which is a culmination of the research project that ties together chapter two and three and addresses the overarching aim of the thesis.

References

Adams, S., Morse, S., Choi, S., Watson, C., & Bride, B. (2017). Substance use and mental health treatment retention among young adults. *Global Journal Of Addiction & Rehabilitation Medicine, 1(3),* 10.19080/GJARM.2017.01.555564

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing. https://doi.org/10.1176/appi.books.9780890425596

Anti, S., & Kasim, H. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management, 7(3),* 217-225

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., Sandhu, R., … Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric disease and treatment*, *9*, 449-61.

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469-480. doi: 10.1037//0003-066x.55.5.469

Arnett, J. (2015). *Emerging adulthood*. New York: Oxford Univ. Press.

Bergman, B., Kelly, J., Nargiso, J., & McKowen, J. (2016). "The age of feeling in-between": addressing challenges in the treatment of emerging adults with substance use disorders. *Cognitive And Behavioral Practice*, *23*(3), 270-288. doi: 10.1016/j.cbpra.2015.09.008

Centre for Addiction and Mental Health (CAMH) Mental Illness and Addictions: Facts and Statistics. (2018). Retrieved from https://www.camh.ca/en/driving-change/thecrisis-is-real/mental-health-statistics

Carroll, K., Easton, C., Nich, C., Hunkele, K., Neavins, T., & Sinha, R. et al. (2006). The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. *Journal Of Consulting And Clinical Psychology*, *74*(5), 955-966. doi: 10.1037/0022-006x.74.5.955

Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, December 2014.

Casey, B., & Jones, R. (2010). Neurobiology of the adolescent brain and behavior. *Journal Of The American Academy Of Child & Adolescent Psychiatry*, *49*(12), 1189-1201. doi: 10.1097/00004583-201012000-00005

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches*. 4th Edition, Thousand Oaks CA, SAGE Publications, Inc.

Davis, M., Sheidow, A., Zajac, K., & McCart, M. (2012). Prevalence and impact of substance use among emerging adults with serious mental health conditions. *Psychiatric Rehabilitation Journal*, *35*(3), 235-243. doi: 10.2975/35.3.2012.235.243

Dayal, P., & Balhara, Y. (2017). A naturalistic study of predictors of retention in treatment among emerging adults entering first buprenorphine maintenance treatment for opioid use disorders. *Journal Of Substance Abuse Treatment*, *80*, 1-5. doi: 10.1016/j.jsat.2017.06.004

Dutra, L., Stathopoulou, G., Basden, S., Leyro, T., Powers, M., & Otto, M. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal Of Psychiatry*, *165*(2), 179-187. doi: 10.1176/appi.ajp.2007.06111851

Esposito-Smythers, C., Brown, L., Wolff, J., Xu, J., Thornton, S., & Tidey, J. (2014). Substance abuse treatment for HIV infected young people: An open pilot trial. *Journal Of Substance Abuse Treatment*, *46*(2), 244-250. doi: 10.1016/j.jsat.2013.07.008

Feelemyer, J., Des Jarlais, D., Arasteh, K., Abdul-Quader, A., & Hagan, H. (2013). Retention of participants in medication-assisted programs in low- and middle-income countries: an international systematic review. *Addiction*, *109*(1), 20-32. doi: 10.1111/add.12303

Garnick, D. W., Lee, M. T., O'Brien, P. L., Panas, L., Ritter, G. A., Acevedo, A., Garner, B. R., Funk, R. R., … Godley, M. D. (2012). The Washington circle engagement performance measures' association with adolescent treatment outcomes. *Drug and alcohol dependence*, *124*(3), 250-8. doi: 10.1016/j.drugalcdep.2012.01.011

Government of Newfoundland and Labrador Health and Community Services: The Personal Health Information Act. (2019). Retrieved from https://www.health.gov.nl.ca/health/phia/

Halfon, N., Forrest, C. B., Lerner, R. M., & Faustman, E. M. (2018). *Handbook of life course health development*. Cham: Springer. doi:10.1007/978-3-319-47143-3

Helgeson, V., Reynolds, K., Snyder, P., Palladino, D., Becker, D., Siminerio, L., & Escobar, O. (2013). Characterizing the transition from paediatric to adult care among emerging adults with Type 1 diabetes. *Diabetic Medicine*, *30*(5), 610-615. doi: 10.1111/dme.12067

Henin, A., & Berman, N. (2016). The promise and peril of emerging adulthood: introduction to the special issue. *Cognitive And Behavioral Practice*, *23*(3), 263-269. Doi: 10.1016/j.cbpra.2016.05.005

Hser, Y., Longshore, D., & Anglin, M. D. (2007). The life course perspective on drug use: A conceptual framework for understanding drug use trajectories. *Evaluation Review, 31*(6), 515-547. doi:10.1177/0193841X07307316

Hutchinson, E. D. (2019). *Dimensions of Human Behavior* (6th ed.). Thousand Oakes CA, Sage.

Jabareen, Y. (2009). Building a conceptual framework: Philosophy, definitions, and procedure. *International Journal of Qualitative Methods, 8*(4), 49-62. doi:10.1177/160940690900800406

Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of Addiction. *Neuropsychopharmacology*, *35*(1), 217–238. http://doi.org/10.1038/npp.2009.110

Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal Of General Practice*, *24*(1), 120-124. doi: 10.1080/13814788.2017.1375092

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., . . . Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration.*PLoS Medicine, 6*(7), e1000100-e1000100. doi:10.1371/journal.pmed.1000100

Mason, M., & Luckey, B. (2003). Young adults in alcohol-other drug treatment. *Alcoholism Treatment Quarterly*, *21*(1), 17-32. doi: 10.1300/j020v21n01_02

Maté, G. (2008). *In the realm of hungry ghosts: Close encounters with addiction*. Toronto: Knopf Canada.

McInnes, M., Moher, D., Thombs, B., McGrath, T., Bossuyt, P., & Clifford, T. et al. (2018). Preferred reporting items for a systematic review and meta-analysis of diagnostic test accuracy studies. *JAMA*, *319*(4), 388. doi: 10.1001/jama.2017.19163

Morse, J., & Field, P. (1995). *Qualitative Research Methods for Health Professionals.* Thousand Oaks, Calif: SAGE Publications.

Morse, S., & MacMaster, S. (2015). Characteristics and outcomes of young adult opiate users receiving residential substance abuse treatment. *Journal Of Evidence-Informed Social Work*, *12*(6), 556-566. http://dx.doi.org/10.1080/15433714.2013.872071

Moustakas, C. E. (1994). *Phenomenological research methods*. Thousand Oaks, Calif: SAGE Publications.

Pearson, C., Janz T., & Ali, J. (2013). Mental and substance use disorders in Canada. *Health at a Glance.* September. Statistics Canada Catalogue no. 82-624-X.

PROSPERO. (2019). Retrieved from https://www.crd.york.ac.uk/prospero/#aboutpage

Rehman A., & Alharthi, K. (2016). An introduction to research paradigms. *International Journal of Educational Investigations, 3(8),* 51-59.

Robbins, T., Everitt, B., & Nutt, D. (2010). *The neurobiology of addiction*. Oxford: Oxford University Press.

Romero-Gonzalez, M., Shahanaghi, A., DiGirolamo, G. J., & Gonzalez, G. (2017). Buprenorphine-naloxone treatment responses differ between young adults with heroin and prescription opioid use disorders. *The American journal on addictions*, *26*(8), 838-844.

SAMSHA: Treatment for Substance Use Disorders (2018). Retrieved from https://www.samhsa.gov/treatment/substance-use-disorders

Satre, D., Mertens, J., Areán, P., & Weisner, C. (2003). Contrasting outcomes of older versus middle-aged and younger adult chemical dependency patients in a managed care program. *Journal Of Studies On Alcohol*, *64*(4), 520-530. doi: 10.15288/jsa.2003.64.520

Satre, D., Mertens, J., Areán, P., & Weisner, C. (2004). Five-year alcohol and drug treatment outcomes of older adults versus middle-aged and younger adults in a managed care program. *Addiction*, *99*(10), 1286-1297. doi: 10.1111/j.1360-0443.2004.00831.x

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., . . . Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity, 52*(4), 1893-1907. doi:10.1007/s11135-017-0574-8

Schuman-Olivier, Z., Weiss, R., Hoeppner, B., Borodovsky, J., & Albanese, M. (2014a). Emerging adult age status predicts poor buprenorphine treatment retention. *Journal Of Substance Abuse Treatment*, *47*(3), 202-212. doi: 10.1016/j.jsat.2014.04.006

Schuman-Olivier, Z., Claire Greene, M., Bergman, B., & Kelly, J. (2014b). Is residential treatment effective for opioid use disorders? A longitudinal comparison of treatment outcomes among opioid dependent, opioid misusing, and non-opioid using emerging adults with substance use disorder. *Drug And Alcohol Dependence*, *144*, 178-185. doi: 10.1016/j.drugalcdep.2014.09.009

Smith, D. C. (2017). Emerging adults and substance use disorder treatment: Developmental considerations and innovative approaches. New York, NY: Oxford University Press.

Smith, D., Cleeland, L., & Dennis, M. (2010). Reasons for quitting among emerging adults and adolescents in substance-use-disorder treatment. *Journal Of Studies On Alcohol And Drugs*, *71*(3), 400-409. doi: 10.15288/jsad.2010.71.400

Smith, D., Davis, J., Ureche, D., & Dumas, T. (2016). Six month outcomes of a peer-enhanced community reinforcement approach for emerging adults with substance misuse: A preliminary study. *Journal Of Substance Abuse Treatment*, *61*, 66-73. doi: 10.1016/j.jsat.2015.09.002

Suri, H. (2013). Epistemological pluralism in research synthesis methods. *International Journal of Qualitative Studies in Education, 26*(7), 889-911. doi:10.1080/09518398.2012.691565

Taking the Next Step Forward: Building a Responsive Mental Health and Addictions System for Emerging Adults, 2015. Ottawa, ON: Mental Health Commission of Canada.

Timko, C., Schultz, N., Cucciare, M., Vittorio, L., & Garrison-Diehn, C. (2016). Retention in medication-assisted treatment for opiate dependence: A systematic review. *Journal Of Addictive Diseases*, *35*(1), 22-35. doi: 10.1080/10550887.2016.1100960.

Towards Recovery: A Vision for a Renewed Mental Health and Addictions System, 2017 Newfoundland, Canada: All-Party Committee on Mental Health and Addictions

Van Manen, M., & ProQuest (Firm). (1990). *Researching lived experience: Human science for an action sensitive pedagogy*. Albany, N.Y.: State University of New York Press.

Vo, H., Robbins, E., Westwood, M., Lezama, D., & Fishman, M. (2016). Relapse prevention medications in community treatment for young adults with opioid addiction. *Substance Abuse*, *37*(3), 392-397. doi: 10.1080/08897077.2016.1143435

Co-authorship Statement

For this master's thesis, the proposal/study design was created in consultation with my committee consisting of my two co-supervisors, Dr. Lisa Bishop and Dr. Stephen Darcy, and other committee members Dr. Victor Maddalena and Dr. Catherine de Boer. Through discussion, my committee members and I designed the two thesis studies and chose the methodology, data collection, analysis methods, and the tools used to build rigour to ensure reliability and validity (systematic review) and trustworthiness (qualitative study) of the findings.

For the systematic review, I (KD) conducted the screening articles process. All authors discussed the article selection process, conducted the data extraction process, interpreted the data, and reviewed the articles for inclusion. I wrote the first draft of the manuscript and co-authors (LB, SD) contributed revisions or suggested changes which were then revised into the final version. All authors (KD, LB, SD) have reviewed and approved the final manuscript. The manuscript is submitted for publication to the Canadian Journal of Addiction.

For the qualitative manuscript, I (KD) conducted the semi-structured interviews and transcribed them verbatim. LB, SD, and I coded two of the most information rich transcripts and I was responsible for coding the remaining transcripts. I met with LB and SD bi-weekly to thematically analyze the data. I wrote the first draft of the manuscript and co-authors (LB, SD, CdB, VM) contributed revisions or suggested changes which were then revised into the final versions. All authors (KD, LB, SD, CdB, VM) reviewed and approved the final manuscript. The manuscript is in preparation to be submitted for publication to Drug and Alcohol Dependence.

Chapter 2: An Evaluation of Behavioural and/or Pharmacological Interventions that Lead to the Greatest Treatment Retention for Emerging Adults with Substance Use Disorder: A Systematic Review

Authors and affiliations: Kathryn Dalton[1], Lisa Bishop[1,2], Stephen Darcy[2]

[1]Memorial University of Newfoundland, School of Pharmacy

[2]Memorial University of Newfoundland, Discipline of Family Medicine, Faculty of Medicine

This manuscript has been submitted for publication in the *Canadian Journal of Addiction*.

Abstract

Background: Recent insights into the developmental and life differences of the emerging adult (age 18-25), as well as the high incidence of substance use disorders in this population, requires emerging adults to be regarded as a distinct population. Research shows that emerging adults often drop out of substance use disorder treatment earlier than adults age 26+. In order to increase treatment retention in emerging adults, there needs to be a better understanding of what substance use disorder treatment interventions work best for this population.

Methods: Following the PRISMA guidelines, Medline, PsycInfo, CINAHL (all via EBSCO), and Embase were systematically searched for articles that evaluate treatment interventions for emerging adults. From here, the authors identified treatment interventions that lead to the highest treatment retention for emerging adults with substance use disorder.

Results: Ten studies were included. The main findings indicate the highest treatment retentions occur with (1) behavioral therapy such as cognitive behavioral therapy and contingency management alone for cannabis and alcohol use disorders, or (2) cognitive behavioral therapy paired with opioid-replacement-therapy for opioid use disorder.

Conclusion: The interventions identified in this review that lead to the highest treatment retention for emerging adults is similar to studies evaluating interventions for all ages. Given that retention rates are often lower in emerging adults, despite the application of the full range of effective adult treatments, this review suggests they may require something different. This review is unable to decipher what exactly needs to change and suggests ways retention in treatment may be improved, but further research will be needed to confirm.

Keywords: substance-use disorders; substance use treatment; emerging adults; systematic review

Introduction

Individuals between the ages of 18-25 have recently been conceptualized as a unique developmental stage marked by differing social, psychological, and health issues separate from younger adolescents and the older population (Adams, Knopf, & Park, 2013; Arnett, 2000; Mason & Luckey, 2003). Arnett (2000) proposes that this period of development, wedged between adolescence and adulthood, is best referred to as emerging adulthood. For this review, the age range of 18-25 will be referred to as emerging adults, consistent with the definition proposed by Arnett (2000). Some of the distinct features separating this population are related to having a different home and school structure compared to younger adolescents and having less security and stability compared to older peers (Arnett, 2000). Emerging adults also have the freedom and opportunity to set the groundwork for their futures; however, a failure to meet and adjust successfully in this transitional stage could result in life-impacting problems, with the development of a substance use disorder (SUD) being a prominent one (Smith, 2017).

Rates of illicit drug and alcohol use across the lifespan are highest in emerging adults compared to any other age group (Goodman, Henderson, Peterson-Badali, & Goldstein, 2014). For example, the rate of illicit drug use for emerging adults is 21.5%, compared to 10.1% for adolescents and 6.6% for adults age 26 or older (Smith, Bahar, Cleeland, & Davis, 2014, p.1). Studies have pointed to possible risk factors in this group, including brain development, self-medication of negative affective states, environmental influences (peers), genetics, parental substance use, and parental disapproval (Arain et al., 2013; Casey & Jones, 2010; Smith, 2017).

The use of substances often leads to the development of a SUD. According to the National Survey on Drug Use and Health (NSDUH), as cited by American Addiction Centers (2019), 19.7 million Americans aged 12 and older had a SUD in 2017. About 1 in 25 adolescents (age 12-17), 1 in 6 emerging adults, and about 1 in 16 of those 26+ struggled with a SUD in the United States in 2017 (American Addiction Centers, 2019). In treatment programs, emerging adults represent almost twice the expected rate given the age composition of the general population (Bergman, Kelly, Nargiso, & McKowen, 2016; Wetherill & Tapert, 2013). Collectively, this highlights the need to focus on treating emerging adults with SUDs.

According to the Substance Abuse and Mental Health Services Administration (SAMSHA, 2018), standard care for patients with SUD includes individual and group counseling, inpatient and residential treatment, intensive outpatient treatments, medication, recovery support, peer support, and 12-step fellowship. Among these standard care guidelines, some of the interventions within them include cognitive behavioral therapy (CBT), contingency management (CM), motivational enhancement therapy (MET), community reinforcement approach (CRA) therapy with a peer-to-peer support focus, and medications for opioid use disorder such as methadone, buprenorphine, and naltrexone, also known as opioid-replacement therapy (ORT). Individuals may not need all of these interventions, but each one plays a role in sobriety.

Emerging adults typically receive the same treatment modalities as older adults, with most treatment centers grouping all ages 18 and above together (Helgeson et al., 2013; Mason & Luckey, 2003). This “one size fits all” approach to SUD treatment is problematic, as it ignores the recent insights into the distinct life and neurodevelopmental

difference of emerging adults, as well as the high incidence of SUDs and the challenge of retaining emerging adults in treatment programs (Arnett, 2000; Choi, et al., 2015; Mason & Luckey, 2003; Schuman-Olivier, Weiss, Hoeppner, Borodovsky, & Albanese., 2014a; Smith et al., 2014). Retention in treatment is defined as remaining in a treatment program for the prescribed length of time. This is an important outcome because it positively correlates to a range of positive outcomes related to long term sobriety, such as a reduced substance use, a higher social functioning, and a higher quality of life (Feelemyer, Des Jarlais, Arasteh, Abdul-Quader, & Hagan, 2014; Timko, Schultz, Cucciare, Vittorio, & Garrison-Diehn, 2016).

Age has been consistently identified as a predictor of treatment retention, and research shows that when 18-25-year old's enter treatment, their risk of drop-out is much higher than adults 26+ (Mason & Luckey, 2003). For example, emerging adults that received the same treatment as age 26+ showed a 22% lower retention in treatment rate (Schuman-Olivier et al., 2014a). This is of particular importance to treatment programs as they seek to identify methods to increase treatment utilization and retention in this population (Dunne, Bishop, Avery, & Darcy, 2017; Smith, 2017).

Some reasons that may lead to poor retention and treatment engagement in younger populations include factors such as lower abstinence motivation, lower readiness to change, higher psychiatric comorbidity, higher social pressures, instability in environment and scheduling, frequent moves and transitions, and self-and peer-directed identity exploration (Satre, Mertens, Areán, & Weisner, 2003; Satre, Mertens, Areán, & Weisner, 2004; Smith, Cleeland, & Dennis, 2010). Discovering interventions that lead to the highest treatment retention among emerging adults is needed to improve both short

and long-term outcomes for this unique age group (Smith, 2017). There is limited research indicating the best approach for retaining emerging adults in SUD programs.

The purpose of this systematic review is to fill the gap in this field by evaluating treatment interventions for emerging adults and identifying which interventions leads to highest rates of treatment retention. Improving treatment retention in emerging adults can lead to an increased chance of long term sobriety, ultimately enabling an emerging adult to become less reliant on the healthcare system, contribute to society, and strengthen relationships with family and friends (Simpson, Joe, Rowan-Szal, & Greener., 1997).

Methods

Methodology

According to Antwi and Kasim (2015), all research is based on some underlying philosophical assumptions about what constitutes 'valid' research and which research method(s) is/are appropriate for the development of knowledge in a given study. As such, the research involved in this systematic review is based on a realism ontology and an objective epistemology. Further, the conceptual framework underpinning this systematic review research is rooted in the life course perspective and Arnett’s (2000) understanding of emerging adulthood. Arnett (2000) stresses the importance of viewing emerging adults as their own distinct population separate from its older and younger counterparts. Furthermore, according to Halfon and Forrest (2018), it is appropriate to classify emerging adulthood as a stage in the life course as it explains the multiple areas of development that occur during this life stage. Further, the life course also highlights the various trajectories that emerging adults can encounter, with SUD being a specific one.

PICO Question and Study Registration

This Systematic Review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (see Figure 2.1 below) (Liberati et al., 2009). The PICO for this study is as follows: P: emerging adults with substance use disorder; I/C: any intervention for substance use disorder; O: retention in treatment. The study protocol is registered in the international prospective register of systematic reviews (PROSPERO), registration number: CRD42017072906 or available here: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=72906

PRISMA 2009 Flow Diagram

Figure 2.1. PRISMA study selection flowchart.

Inclusion and Exclusion Criteria

Articles that investigated drug and/or behavioural/psychological interventions for emerging adults age 18-25 with SUD were eligible for inclusion. Articles were included if retention in the treatment program was measured, which was defined by remaining in treatment for the entire duration (Kern-Godal, Arnevik, Walderhaug, & Ravndal., 2015). Articles were considered if authors provided data relevant to the PICO. Only English language articles were included, with no restrictions on publication date. Any duration of study length, as well as various dosing schedules and study locations, were considered. When considering multiple studies arising from the same sample/dataset, the study that was the most relevant to the PICO was chosen and the other studies were excluded. Any form of prospective clinical trial was considered, while studies such as cost-effective studies, case-control studies, case reports, and study protocols were excluded. Studies that evaluated heavy drinking without a SUD diagnosis, nicotine addiction as a single substance, and behavioral addictions (e.g., gambling addiction) were excluded.

Search Strategy

The literature search was conducted with the assistance of a Memorial University Health Science Centre Library librarian to ensure an exhaustive and comprehensive search strategy. The databases Medline, PsycInfo, CINAHL (all via EBSCO), and Embase, were searched from their inception to January 2018. In order to account for the inconsistent terms used to define this age range and to ensure that the correct age range was captured, search strategies were thoroughly developed and modified for each database by combining database-specific controlled vocabulary, syntax, relevant Mesh and Emtree terms and keywords such as ‘emerging adult’, ‘young adult’ ‘substance-use

dependency', and 'treatment'. See Table 2.1 below for the full search strategy as performed in MEDLINE (via EBSCO), which was adapted for use in the other databases. The search was designed to be broader to capture more articles, hence the high number of records identified.

Table 2.1.

Search Strategy as performed in MEDLINE (via EBSCO).

#	Query	Results
S1	MH "Substance-Related Disorders" OR MH "Alcohol-Related Disorders+" OR MH "Amphetamine-Related Disorders" OR MH "Cocaine-Related Disorders" OR MH "Opioid-Related Disorders+" OR MH "Substance Abuse, Intravenous"	219,174
S2	TI (substance OR drug OR alcohol OR chemical OR amphetamine OR cocaine OR opioid* OR narcotic*) N1 (addict* OR dependen* OR abuse OR disorder*)	37,646
S3	AB (substance OR drug OR alcohol OR chemical OR amphetamine OR cocaine OR opioid* OR narcotic*) N1 (addict* OR dependen* OR abuse OR disorder*)	92,353
S4	S1 OR S2 OR S3	264,291
S5	MH "Substance Abuse Treatment Centers" OR MH "Residential Treatment"	7,648
S6	TI (treatment OR rehab OR rehabilitation OR "de addiction" OR deaddiction OR outpatient* OR "out patient*" OR "community based" OR inpatient* OR "in patient*" OR residential) W1 (center* OR centre* OR program* OR service*)	11,906
S7	AB (treatment OR rehab OR rehabilitation OR "de addiction" OR deaddiction OR outpatient* OR "out patient*" OR "community based" OR inpatient* OR "in patient*" OR residential) W1 (center* OR centre* OR program* OR service*)	58,430
S8	S5 OR S6 OR S7	70,085
S9	MH "Young Adult" OR TI "young adult" OR AB "young adult" OR TI "young adults" OR AB "young adults" OR TI youth* OR AB youth* OR TI "emerging adult*" OR AB "emerging adult*"	729,740

S10	MH "Epidemiologic Studies" OR MH "Case-Control Studies+" OR MH "Cohort Studies+" OR MH "Cross-Sectional Studies" OR TI "cohort study" OR AB "cohort studies" OR TI "Cohort analy*" OR AB "Cohort analy*" OR TI "follow up study" OR AB "follow up study" OR TI "follow up studies" OR AB "follow up studies" OR TI "observational study" OR AB "observational study" OR TI "observational studies" OR AB "observational studies" OR TI longitudinal OR AB longitudinal OR TI retrospective OR AB retrospective OR TI "cross sectional" OR AB "cross sectional"	2,454,617
S11	(PT "Randomized Controlled Trial" OR PT "Controlled Clinical Trial" OR TI randomized OR AB randomized OR TI placebo OR AB placebo OR SH "drug therapy" OR TI randomly OR AB randomly OR TI trial OR AB trial OR TI groups OR AB groups) NOT (MH "Animals" NOT MH "Humans")	2,178,489
S12	S10 OR S11	4,073,690
S13	S4 AND S8 AND S9 AND S12	937

Screening

The search results were imported to the online bibliographic management program, RefWorks, where duplicates were removed. The titles and abstracts of all the articles were screened to identify studies that examined treatment for emerging adults with SUD. All articles were screened to determine if results were stratified by age. Authors of studies that did not report the results by age group but met the other criteria were contacted with the request to provide data within 18-25 years old. Articles that required further review were full-texted screened. The remaining full-text articles were assessed to determine the articles that were eligible for inclusion. The three authors met to discuss if articles were suitable for inclusion and discrepancies were resolved through discussion. The references of the included articles were also scanned and assessed for inclusion. All three authors approved the final studies included in the review.

Data Collection

The three authors independently extracted data from the studies and then met for comparison and discussion. Information was extracted from each study on: (1) the study design; (2) the characteristics of participants; (3) the inclusion and exclusion criteria; (4) the intervention used; and (5) the outcome measure.

Risk of Bias

All three authors independently assessed the risk of bias in eligible studies for inclusion to determine their quality. The US Preventive Services Task Force quality rating criteria (USPSTF) (2018) was used to determine the quality of comparable groups, the degree of loss to follow-up, reliability, and validity of measurements, a clear definition of the intervention, the outcomes considered, and potential confounders. Articles were then given a rating of poor, fair, or good (see Table 2.2). If an article had a high risk of bias, it was discussed by the three authors for inclusion status.

Table 2.2.

Details of Studies Included in the Systematic Review.

Author/ year + quality score (QS)[a]	**Study Design**	**1. Participant Recruitment 2. Participants Description**	**Country**	**Substance**	**Treatment intervention**	**1. Outcome measure(s) 2. Length of treatment retention**	**Summary of outcomes**
Evaluation of cannabis and/or alcohol use disorders							
Carroll et al. (2006) QS: Good	Randomized Control Trial (RCT)	1. Participants were referred for treatment for marijuana dependence by the Office of Adult Probation to the Substance Abuse Treatment Unit. 2. N=135 marijuana dependent patients referred for treatment by the criminal justice system	USA	Cannabis use disorder	Randomized to 1 of 4 treatment conditions: (1) MET*/CBT* plus CM* (2) DC* plus CM (3) MET/CBT without CM (4) DC without CM * MET = Motivational Enhancement Therapy CBT= Cognitive Behavioral Therapy	1. Treatment Retention, Marijuana-free urine 2. Retention in treatment at 8 weeks	Treatment retention at 8 weeks was: (1) MET/CBT plus CM: 69.7% (2) DC plus CM: 66.7% (3) MET/CBT without CM: 63.68% (4) DC without CM: 39.4%

					CM = Contingency Management DC = Drug counseling		
Esposito-Smythers et al. (2014) QS: Fair	Open pilot trial	1.Participants were recruited from three adolescent HIV clinics (outpatient). 2. N=17 emerging adults (age 18-24) with HIV & SUD (alcohol or cannabis) recruited from three adolescent HIV clinics	USA	Alcohol or cannabis use disorder	Integrated cognitive behavioral therapy (CBT) and contingency management (CM) interventions designed for young people living with HIV with alcohol and/or cannabis use disorder.	1. Retention/ session attendance, participant satisfaction 2. Treatment retention in 15 sessions occurring over 4 months	Treatment retention was: 82% (14/17) at 4 months (17.4 weeks)
Smith et al. (2016) QS: Fair	Cohort study	1. Participants were recruited from consecutively screened individuals at a publicly-funded, not-for profit SUD treatment center (n=20), as well as through	USA	Alcohol, cannabis, or any undefined SUD.	Sessions were delivered individually and weekly and consisted of an adaption of the CRA approach by adding peer-delivered sessions and motivational interviewing.	1. Global Appraisal of Individual Needs (GAIN), Adjusted Days Abstinent (ADA), Days of Binge Drinking (DBD), Quarterly Cost to Society (QCS), A-CRA	Treatment retention was: 11.4% at 3 months (13 weeks).

		advertising on city buses (n=15). 2. N= 35 18-25 year old's SUD			Standard CRA consists of cognitive behavioral sessions based on factors such as functional analysis of substance use behaviors, prosocial behaviors, happiness scaling and goal setting, and anger management skills.	Exposure Scale. Contact was made with the author to provide treatment retention. 2. Treatment retention in 12 sessions occurring overt 3 months	
Evaluation of opioid use disorders							
Schuman-Olivier et al. (2014b) QS: Fair	Cohort study	1. Participants were undergoing residential treatment and enrolled in a naturalistic study. 2. N=73 opioid dependent emerging adults (age 18-24).	USA	Opioid use disorder	The treatment intervention used in this study were youth-specific based upon the 12-step Minnesota Model treatment including motivational enhancement, cognitive behavioural	1. Commitment to sobriety, self-efficacy, coping skills, intentions to attend 12-step, psychiatric symptoms, treatment completion. 2. Retention in treatment at 35 days.	Treatment retention was: 80.82% retention in treatment for opioid dependent participants at day 35 and the detox taper length averaged 7 days.

					therapy, and family based therapeutic approaches.		
Vo et al. (2016) QS: Fair	Cohort study	1. Outpatients in a program referred to as a specialty community out-patient treatment program for young adults with opioid addiction, the Young Adult Alternative Program (YAAP). 2. N=56 opioid dependent patients between the ages of 19-26	USA	Opioid use disorder	Retrospective chart review of N = 56 serial admissions into a specialty community treatment program for young adults that featured the use of relapse prevention medications of buprenorphine or extended release naltrexone and psychosocial treatment	1. Treatment retention and weekly opioid negative urine tests. 2. Treatment Retention at 12 weeks and 24 weeks	Treatment retention was: No different between buprenorphine and extended release naltrexone and was 65% at 12 weeks.
Marsch et al. (2016) QS: Good	Double blind, placebo controlled, multicenter randomized controlled trial	1. Outpatient treatment clinics with a volunteer sample of participants.	USA	Opioid use disorder	Participants were randomly assigned to either a 28-day buprenorphine taper or a 56-day buprenorphine	1. The primary outcome was opioid abstinence measured as a percentage of scheduled urine toxicology tests	Treatment retention was: 16.7% for 28 day taper group 44% for the 56 day taper group

		2. N = 42 18-25 year old's with opioid use disorder			taper via a parallel groups design during a 63 day detox period. Both groups received behavioral counseling and voucher based abstinence incentives (also referred to as contingency management).	documented to be negative for opioids. The secondary outcome was treatment retention measured as number of days attended scheduled visits. 2. Treatment retention at 63 days	
Dayal and Balhara (2017) QS: Fair	Cohort Study	1. A 50 bed substance abuse treatment center offering maintenance therapy for opioid use disorder. Buprenorphine induction can occur in the out-patient or in-patient setting. Participants were patients that received maintenance treatment from	India	Opioid use disorder	Buprenorphine maintenance treatment with counseling and rehabilitation services in an all ages treatment center	1. Treatment retention 2. Treatment retention was measured at 90 days, 6 months, and 1 year	Treatment retention was: 33.8% at 90 days (12.8 weeks) 19.1% at 6 months (26 weeks) 11.8% at one year (52 weeks)

		the center for opioid use. 2. N=68 opioid and alcohol dependent patients					
Schuman-Olivier et al. (2014a) QS: Good	Cohort study	1. Patients were prescribed buprenorphine/ naloxone and assigned to an intensive outpatient program for 2 weeks. 2. N=70 emerging adults with opioid use disorder.	USA	Opioid use disorder	Office based opioid treatment consisting of buprenorphine maintenance treatment and weekly psychosocial treatment sessions either in group or one-on-one format.	1. Treatment retention 2. Treatment retention at 3 months and 12 months	Treatment retention was: 56% at 3 months (13 weeks)
[Romero-Gonzalez et al. (2017) ***** Phase 1 of 2 part study included in this review** QS: Good	Cohort study	1. Participants were recruited from an 8-week outpatient treatment period. 2. N=80 18-25 year old’s with opioid use disorder (n=63	USA	Opioid use disorder	8-week treatment period inducted participants onto a fixed dose of buprenorphine-naloxone (16-4mg/day) on week 1 after stopping all	1. Treatment retention, craving, withdrawal symptoms. 2. Treatment retention at 8 weeks	Treatment retention was: 82.5% for prescription opioid users 64.7% for heroin users

		with prescription opioid use and n=17 with heroin use).			opioids. Buprenorphine/ naloxone was discontinued at the end of week 8. All participants received group cognitive-behavioral therapy on a weekly basis.[Phase1]		
Gonzalez et al. (2015) QS: Good ***** Phase 2 of 2 part study included in this review**	Double blind placebo-controlled trial	1. Participants were recruited through newspaper advertising, referrals from UMass Addiction and Comorbidity Treatment Services, and from community-based substance abuse treatment clinics. 2. N=80 opioid dependent patients recruited for the study	USA	Opioid use disorder	Participants were treated with buprenorphine /naloxone 16-4 mg/day[Phase1]* and randomized to memantine (15mg or 30mg) or placebo[Phase2*]	1.Primary outcome measures were a change in weekly mean proportion of opioid use, cumulative abstinence rates after rapid buprenorphine discontinuation. Secondary outcomes were retention in treatment, withdrawal symptoms, opioid cravings, depression symptoms.	Treatment retention was: Not statistically significantly different between the two groups (placebo and memantine). The percentage of patients that completed treatment at week 13 was: (1) Placebo: 35% for placebo, (2) Memantine 15mg group = 21%

						2. Treatment retention at 13 weeks.	(3) Memantine 30 mg = 22%

Synthesis of Results

A meta-analysis was not possible due to the different interventions/controls of the studies. Therefore, the results are reported in a narrative format.

Results

Search Results

Figure 2.1 shows the results of the identification, screening, eligibility determination, and final inclusion of articles. A total of 5157 studies were identified. With duplicates removed, 4011 studies remained, with 756 successfully screened as potentially eligible for inclusion. From here, a total of ten studies were included; three were randomized controlled trials (RCT), one was an open pilot trial, and six were cohort studies.

Characteristics of Included Studies

The descriptive characteristics and results are summarized in Table 2.2. The results of the studies are reported by type of substance with two categories: (1) cannabis and/or alcohol use disorders, and (2) opioid use disorder. There were three studies under cannabis/alcohol and seven studies under opioids.

The primary outcome measure of interest for this systematic review was retention in treatment. Retention in treatment was the primary outcome for seven studies (Carroll et al., 2006; Dayal & Balhara, 2017; Esposito-Smythers et al., 2014; Romero-Gonzalez et al., 2017; Schuman-Olivier et al., 2014a; Schuman-Olivier, Greene, Bergman, and Kelly., 2014b; Vo et al., 2016) and the secondary outcome for three studies (Gonzalez et al., 2015; Marsch et al., 2016; Smith et al., 2016).

The sample size of the studies ranged from 17-135, all studies included participants with ages between 18-25, except for the Vo, Robbins, Westwood, Lezama, & Fishman (2016) study which had participants age 18-26. This was the only additional study with this age range, and it was felt this study was important to include despite the one-year age difference from the inclusion criteria.

Contact was made with the authors of the studies to provide data if possible. Marsch et al. (2016) researched 16-24 year old's and was able to provide data on the 18-24 year old population for this systematic review. Another author (Smith et al., 2016) did not report retention in treatment results in their study, however, was able to provide this information for this systematic review.

Treatment Retention Rates

Evaluation of cannabis and alcohol use disorders.

Three studies specifically evaluated behavioral interventions for individuals with cannabis and/or alcohol use disorders.

Carroll et al. (2006) was an RCT that examined emerging adults randomized to one of four treatment conditions: (1) a motivational/skills-building intervention (motivational enhancement therapy/cognitive–behavioral therapy; MET/CBT) plus incentives contingent on session attendance or submission of marijuana-free urine specimens (contingency management; CM), (2) MET/CBT without CM, (3) individual drug counseling (DC) plus CM, and (4) DC without CM.

The MET/CBT group involved an emphasis on the development of motivation for change and the implementation of skills to reduce marijuana use with an attempt to resolve ambivalence, heighten discrepancies about personal goals and marijuana use, and

elicit motivation to change. Exposure to CBT techniques and skills training (understanding the patterns of substance use, strategies for recognizing and coping with craving, problem-solving, managing thoughts about marijuana, improving decision-making skills to avoid risky decisions) was used once ambivalence about reducing marijuana use had been addressed. The DC group was similar to a standardized version of typical community-based counseling and was very different from the MET/CBT group. Treatment in the DC group was similar to self-help and 12-step programs with an emphasis placed on education regarding things such as marijuana use, people, places, and things associated with marijuana use, and cravings. When participants received CM in conjunction with the other therapies, participants received vouchers redeemable for goods or services purchased by study staff. The voucher system was implemented by the research staff, however, therapists in both conditions were encouraged to discuss the incentive system during sessions, praise participants for earning vouchers, and discuss how earnings from vouchers might be used to reach the individual's goals. The 8-week retention rates for the therapies included: (1) MET/CBT plus CM: 69.7%, (2) DC plus CM: 66.7%, (3) MET/CBT without CM: 63.68% and (4) DC without CM: 39.4%.

Esposito-Smythers et al. (2014) was an open pilot trial that examined an outpatient integrated CBT and CM intervention for emerging adults. The participants had human immunodeficiency virus (HIV) along with alcohol and/or cannabis use disorder and were recruited from three HIV clinics in the United States. Retention in substance use treatment was measured over four months (about 17 weeks) and involved the attendance at 15 treatment sessions. The retention rate for the integrated CBT/CM intervention was 82%.

Smith et al. (2016) was a cohort study that examined the effectiveness of a peer-enhanced community reinforcement approach (CRA) for 35 emerging adults with alcohol, cannabis, or any undefined SUD. Individualized sessions were delivered weekly and consisted of an adaption of the CRA approach by adding peer-delivered sessions and motivational interviewing. Standard CRA consists of CBT sessions based on factors such as functional analysis of substance use behaviors, prosocial behaviors, happiness scaling and goal setting, and anger management skills. The treatment retention results provided by the author was 11% at three months.

Evaluation of opioid use disorders.

A total of seven studies specifically evaluated retention in treatment for individuals with opioid use disorders. Schuman-Olivier et al. (2014a) was a cohort study that examined the records of a collaborative care buprenorphine treatment program comparing retention rates of emerging adults to older adults. Treatment consisted of office-based opioid treatment with buprenorphine maintenance treatment and consistent weekly psychosocial treatment sessions in a group or one-on-one session. The program provided individual therapy and psychopharmacology based on psychiatric need. Treatment retention for the emerging adult's cohort was with 56% at 13 weeks.

Vo et al. (2016) conducted a cohort study that used a specific outpatient treatment program, the Young Adult Alternative Program (YAAP). Patients were given a choice to receive buprenorphine or extended-release naltrexone along with psychosocial treatment. In this study, patients were asked to attend treatment at least four times each week initially. Their daily dose of buprenorphine was given to them onsite with doses usually

ranging from 8-16 mg per day. There were no differences between buprenorphine and extended release naltrexone with rates of 65% at 12 weeks and 40% at 24 weeks.

Marsch et al.'s (2016) study was a double-blind, placebo-controlled, multicenter RCT that examined buprenorphine taper in youth and young adults aged 16-24. Participants were assigned randomly to receive double blind buprenorphine, and buprenorphine/naloxone assisted taper of either 28 or 56-day duration in a parallel-groups design. Behavioral therapy was used and CM interventions to incentivize opioid abstinence were offered to all participants throughout their participation in the trial. The therapy was based on a motivational interviewing and community reinforcement approach framework consisting of the following components: psychoeducational, cognitive-behavioral, and family systems with a specific focused on the unique treatment needs of adolescents (e.g., legal issues, anger management, housing, etc.). The 28-day group was discontinued at day 28 and given placebo until day 63, while the 56-day group was discontinued at day 56 and given placebo until the end of the study on day 63. As provided by the authors, treatment retention for the 18-24 year old's at 63 days for the 28-day taper was 17% and 44% for the 56-day taper.

The retrospective cohort study by Dayal and Balhara (2017) reviewed the records of all emerging adults who received treatment at an all-ages buprenorphine maintenance treatment center along with counselling and rehabilitation services. The dose of buprenorphine is unknown and could not be obtained by the author. Retention rates were much lower compared to the Vo et al. (2016) study that also used buprenorphine, with 33.8% percent of opioid dependent patients retained in treatment at 90 days, 19% at six months (24 weeks), and 12% at one year (52 weeks).

Schuman-Olivier et al. (2014b) was a cohort study that examined treatment retention in a residential treatment facility. This treatment program used detoxification with buprenorphine combined with a youth-specific treatment model based on the 12-Step Minnesota Model treatment philosophy. Behavioral therapies such as MET, CBT, and family-based therapeutic approaches were used. Participants were detoxified with buprenorphine with average taper length of seven days. Participants were not offered buprenorphine or methadone maintenance at discharge. Participants remained in treatment for an average of 25.5±5.7 days (range 4 - 35 days), and 83.9% were discharged with staff approval.

Two articles report on the same sample that underwent two phases of a study, each published separately (Phase 1: Romero-Gonzalez, Shahanaghi, DiGirolamo, & Gonzalez (2017); Phase 2: Gonzalez et al., 2015). The participants in both studies included 80 opioid use disorder patients between the ages of 18-25. Phase one was a cohort study, and the participants were stratified by type of opioid used, either prescription opioid or heroin. All participants were given 16/4 mg per day buprenorphine-naloxone for eight weeks along with group CBT. CBT focused on understanding SUDs and the recovery process, establishing a support system, managing feelings, coping with high-risk situations, and preventing relapses. Treatment retention was 82.5% for the prescription opioid group and 64.7% for the heroin group.

Phase two (Gonzalez et al., 2015) was a double-blind, placebo-controlled trial, where participants were discontinued off buprenorphine/ naloxone at the end of week nine and were then randomized to receive placebo or two different doses of memantine (15 mg or 30 mg). Treatment retention at week 13 was not statistically significantly

different between groups. The percentage of patients that completed treatment was 35% for placebo, 21% for memantine 15 mg, and 22% for the memantine 30 mg.

Risk of Bias Within Studies

There was limited variation in the risk of bias between studies (Table 2.2), as evaluated using the USPSTF (2018). The majority had similar weaknesses that included issues with 1) assembly of comparable groups, as some studies did not have a comparable group, 2) clear definition of interventions, and 3) adjustment for potential confounders.

Discussion

This review identified ten relevant studies. Interventions that resulted in the highest percentage of treatment retention for emerging adults with alcohol and/or cannabis use disorder involved behavioral therapy such as CBT and CM. Secondly, the interventions that resulted in the highest treatment retention for emerging adults with opioid use disorder involved CBT followed by psychosocial therapy and counseling paired with opioid replacement therapy (ORT) such as buprenorphine, buprenorphine/naloxone, and naltrexone.

A meta-analysis on SUD treatment in all adults over 18 years old reported CM having the highest treatment retention (71%), followed by CBT (65%) and CBT plus CM (56%) (Dutra et al., 2008). Walters and Rotgers (2012) also state that general psychotherapy is ineffective for SUD but discusses the effectiveness of therapies such as MET, CBT, CM. Both of these findings are consistent with the results in this review, as behavioral therapies such as CBT and CM alone or paired with ORT for opioid use disorder had the greatest retention over psychosocial therapy or DC. A systematic review focusing on opioid use disorder in adults demonstrated that ORT (methadone,

buprenorphine/naloxone) had better retention rates than placebo or no medication (Timko et al., 2016). This finding is also consistent with the results in this review as ORT (buprenorphine and naltrexone) had the highest retention rates and were higher than memantine or placebo.

The interventions used in this systematic review are all recommended as standard forms of care by SAMSHA (2018), and the same modalities that work for the adult population also appear to be effective for emerging adults (Dutra et al., 2008; Walters & Rotgers, 2012). However, research consistently demonstrates that retention rates are lower in the emerging adult population (Bergman et al., 2016; Mason & Luckey, 2003; Schuman-Olivier et al., 2014a; Smith, 2017). For example, emerging adults that received the same treatment showed a 22% lower retention rate of 56% versus 78% in aged 26+ (Schuman-Olivier et al., 2014a).

Given that retention rates are often lower in emerging adults despite the application of the full range of effective adult treatments, this review suggests they may require something different. This review is unable to decipher what exactly needs to be different but suggests ways retention in treatment may be improved, but further research will be needed to confirm.

Retention may be improved by modifying treatment to meet the specific needs of emerging adults. SUD treatment is now evolving toward targeting specific populations, such as women and specific ethnic/racial groups (Mason & Luckey, 2003). However, the emerging adult's population is often not targeted as a distinct group (Mason & Luckey, 2003). Both Schuman-Olivier et al. (2014b) and Esposito-Smythers et al. (2014) had the highest treatment retention results and both involved treatments tailored to the specific

needs of the emerging adult. The program director in the Schuman-Olivier et al. (2014b) study reported that their program is designed to be as conductive as possible to the needs of emerging adults. All staff are required to take university-level courses on adolescents and young adults. The program is designed specifically for emerging adults, including an art room, music room, gym, school, and family therapy, all helping to build a sense of responsibility and routine. The Esposito-Smythers et al. (2014) program was individualized for young people living with HIV due to issues that can complicate treatment such as stigma associated with HIV, high-risk peer groups, low self-efficacy, and low social support.

The YAAP, as reported by Vo et al. (2016), was a speciality community outpatient treatment program designed for 19-26-year old's featuring relapse prevention medications such as buprenorphine and extended-release naltrexone plus psychosocial treatment, three to five clinical sessions a week, gradual taper, group, individual counseling, physician aid in medication management, mental health therapy, and psychiatric therapy for co-occurring disorders. Both the YAAP program and the Dayal and Balhara (2017) study used buprenorphine and psychosocial treatment, with higher retention rates in the YAAP program. Dayal and Balhara (2017) provided the same treatment for each patient regardless of age, which may have been the factor accounting for the variation in treatment retention.

Another suggestion that emerged involving ways that standard treatment could be improved is if treatment programs were offered only for those aged 18-25. Guarino et al. (2009) reported that emerging adults place a high value on youth-centered treatment and stated they are reluctant to enter treatment programs that are dominated by adults, as they

perceive them to be more experienced in their addiction. Schuman-Olivier et al. (2014b) had one of the highest retentions in treatment results in this review, reporting that the participants in the youth-centered program enjoyed a tailored environment because they found it easier to relate to younger people as opposed to being with mature people with different life experiences. In the Carroll et al. (2006) study, treatment retention was relatively high, despite it not being tailored to emerging adults. This high retention could be explained by the fact that all the participants in the treatment program were emerging adults. A similar strategy was also used by Vo et al. (2016) in the development of YAAP with good results. More research is needed to give sufficient support to creating recovery programs solely for emerging adults, but the evidence presented here suggests that it may be beneficial.

There are some limitations to this study. There are only a small number of studies available examining emerging adults with SUD, with only ten studies included and the majority were of fair quality. A thorough search was conducted to identify all possible studies that met the inclusion and exclusion criteria, but research focusing on the 18-25-year-old population is understudied. Only English language studies were included, so it is unknown if there are other relevant publications in other languages. All ten studies had different interventions/controls or no control group, making it difficult to compare studies on the level of effectiveness, ultimately limiting the ability to perform a meta-analysis. The studies involved different SUDs, different interventions, and most were from the United States, which limits the generalizability, especially to Canada, specifically due to Canada’s different healthcare system. In the US, healthcare is often tied to employment, which can be a problem for many individuals with SUD as a majority of those are not

employed (Wharton School of the University of Pennsylvania, 2017). Another problem involved grouping some of the samples together such as mandated/in-patient/outpatient, which may have influenced retention rates. Another limitation is using retention in treatment as the outcome measure, given that some interventions were designed to increase retention, whereas other interventions were designed for abstinence; this could play a role in why some studies had higher treatment retention. Also, while retention in treatment appears to be the most common outcome measure used in these studies and through evidence-based research, research is now indicating that engagement is an important concept to examine (Garnick et al., 2012). Future treatment programs and SUD studies could examine the use of this outcome measure.

Future research in this field should examine what emerging adults need despite receiving the full range of effective treatment. Determining if a tailored treatment approach improves retention for emerging adults with SUD or if keeping the environment to only emerging adults leads to greater treatment retention would be important. Future research could also examine the use of engagement as an outcome measure. Further, stratifying emerging adults with SUDs further by examining age could also be an area of future research. Finally, more RCTs would strengthen the field of emerging adults SUD research as the majority of the articles in this review were of fair quality because they were cohort studies.

Conclusion

This systematic review provides an understanding of SUD interventions that leads to the highest treatment retention for emerging adults. The main findings indicate the highest treatment retentions include (1) behavioral therapy such as CBT and CM alone

for cannabis and alcohol use disorders, or (2) CBT paired with ORT for opioid use disorder. Given the small number of studies, more research will be needed to determine the best way to improve treatment retention and emerging adults with SUDs quality of life.

Acknowledgments

School of Pharmacy and Discipline of Family Medicine, Memorial University of Newfoundland; Dr. Victor Maddalena, Dr. Catherine de Boer, and Dr. Marshall Godwin for their guidance and support; and Ms. Michelle Swab for her expertise in systematic review search strategies.

References

Adams, S. H., Knopf, D. K., & Park, M. J. (2014). Prevalence and treatment of mental health and substance use problems in the early emerging adult years in the united states: Findings from the 2010 national survey on drug use and health. *Emerging Adulthood, 2*(3), 163-172. doi:10.1177/2167696813513563

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., . . . Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric Disease and Treatment, 9*, 449-461. doi:10.2147/NDT.S39776

American Addiction Centers - Addiction Statistics. (2019). Retrieved from https://americanaddictioncenters.org/rehab-guide/addiction-statistics

Anti, S., & Kasim, H. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management, 7* (3), *217-225*

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480. doi:10.1037/0003-066X.55.5.469

Bergman, B., Kelly, J., Nargiso, J., & McKowen, J. (2016). "The age of feeling in-between": addressing challenges in the treatment of emerging adults with substance use disorders. *Cognitive And Behavioral Practice*, *23*(3), 270-288. doi: 10.1016/j.cbpra.2015.09.008

Carroll, K. M., Easton, C. J., Nich, C., Hunkele, K. A., Neavins, T. M., Sinha, R., . . . Rounsaville, B. J. (2006). The use of contingency management and Motivational/Skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology, 74*(5), 955-966. doi:10.1037/0022-006X.74.5.955

Casey, B. J., Ph.D., & Jones, R. M., M.S. (2010). Neurobiology of the adolescent brain and behavior: Implications for substance use disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(12), 1189-1201. doi:10.1016/j.jaac.2010.08.017

Choi, S., Adams, S. M., Morse, S. A., & MacMaster, S. (2015). Gender differences in treatment retention among individuals with co-occurring substance abuse and mental health disorders. *Substance use & Misuse, 50*(5), 653-653.

Dayal, P., & Balhara, Y. P. S. (2017). A naturalistic study of predictors of retention in treatment among emerging adults entering first buprenorphine maintenance treatment for opioid use disorders. *Journal of Substance Abuse Treatment, 80*, 1-5. doi:10.1016/j.jsat.2017.06.004

Dunne, T., Bishop, L., Avery, S., & Darcy, Stephen. (2017). A review of effective youth engagement strategies for mental health and substance use interventions. *Journal of Adolescent Health, 60*(5), 487-512. doi:10.1016/j.jadohealth.2016.11.019

Dutra, L., Stathopoulou, G., Basden, S., Leyro, T., Powers, M., & Otto, M. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal Of Psychiatry*, *165*(2), 179-187. doi: 10.1176/appi.ajp.2007.06111851

Esposito-Smythers, C., Brown, L., Wolff, J., Xu, J., Thornton, S., & Tidey, J. (2014). Substance abuse treatment for HIV infected young people: An open pilot trial. *Journal Of Substance Abuse Treatment*, *46*(2), 244-250. doi: 10.1016/j.jsat.2013.07.008

Feelemyer, J., Des Jarlais, D., Arasteh, K., Abdul-Quader, A. S., & Hagan, H. (2014). Retention of participants in medication-assisted programs in low- and middle-income countries: An international systematic review: Retention in low-income country MAT programs. *Addiction, 109*(1), 20-32. doi:10.1111/add.12303

Garnick, D. W., Lee, M. T., O'Brien, P. L., Panas, L., Ritter, G. A., Acevedo, A., . . . Godley, M. D. (2012). The Washington circle engagement performance measures' association with adolescent treatment outcomes. *Drug and Alcohol Dependence, 124*(3), 250-258. doi:10.1016/j.drugalcdep.2012.01.011

Gonzalez, G., DiGirolamo, G., Romero-Gonzalez, M., Smelson, D., Ziedonis, D., & Kolodziej, M. (2015). Memantine improves buprenorphine/naloxone treatment for opioid dependent young adults. *Drug and Alcohol Dependence, 156*, 243-253. doi:10.1016/j.drugalcdep.2015.09.020

Guarino, H. M., Marsch, L. A., Campbell, W. S., III, Gargano, S. P., Haller, D. L., & Solhkhah, R. (2009). Methadone maintenance treatment for youth: Experiences of clients, staff, and parents. *Substance use & Misuse, 44*(14), 1979-1989. doi:10.3109/10826080802494800

Halfon, N., Forrest, C. B., Lerner, R. M., & Faustman, E. M. (2018). *Handbook of life course health development*. Cham: Springer. doi:10.1007/978-3-319-47143-3

Helgeson, V. S., Reynolds, K. A., Snyder, P. R., Palladino, D. K., Becker, D. J., Siminerio, L., & Escobar, O. (2013). Characterizing the transition from paediatric to adult care among emerging adults with type 1 diabetes. *Diabetic Medicine, 30*(5), 610-615. doi:10.1111/dme.12067

Kern-Godal, A., Arnevik, E. A., Walderhaug, E., & Ravndal, E. (2015). Substance use disorder treatment retention and completion: A prospective study of horse-assisted therapy (HAT) for young adults. *Addiction Science & Clinical Practice, 10*(1), 21. doi:10.1186/s13722-015-0043-4

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., . . . Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration.*PLoS Medicine, 6*(7), e1000100-e1000100. doi:10.1371/journal.pmed.1000100

Marsch, L. A., Moore, S. K., Borodovsky, J. T., Solhkhah, R., Badger, G. J., Semino, S., . . . Ducat, E. (2016). A randomized controlled trial of buprenorphine taper duration among opioid-dependent adolescents and young adults: Adolescent buprenorphine treatment. *Addiction, 111*(8), 1406-1415. doi:10.1111/add.13363

Mason, M. J., & Luckey, B. (2003). Young adults in alcohol-other drug treatment: An understudied population. *Alcoholism Treatment Quarterly, 21*(1), 17-32. doi:10.1300/J020v21n01_02

Romero-Gonzalez, M., Shahanaghi, A., DiGirolamo, G. J., & Gonzalez, G. (2017). Buprenorphine-naloxone treatment responses differ between young adults with heroin and prescription opioid use disorders: Buprenorphine treatment for young adults with opioid use. *The American Journal on Addictions, 26*(8), 838-844. doi:10.1111/ajad.12641

SAMSHA: Treatment for Substance Use Disorders (2018). Retrieved from https://www.samhsa.gov/treatment/substance-use-disorders

Satre, D. D., Mertens, J. R., Arean, P. A., & Weisner, C. (2004). Five-year alcohol and drug treatment outcomes of older adults versus middle-aged and younger adults in a managed care program. *Addiction, 99*(10), 1286-1297. doi:10.1111/j.1360-0443.2004.00831.x

Schuman-Olivier, Z., M.D., Weiss, R. D., M.D., Hoeppner, B. B., Ph.D., Borodovsky, J., B.A., & Albanese, M. J., M.D. (2014a). Emerging adult age status predicts poor buprenorphine treatment retention. *Journal of Substance Abuse Treatment, 47*(3), 202-212. doi:10.1016/j.jsat.2014.04.006

Schuman-Olivier, Z., Claire Greene, M., Bergman, B. G., & Kelly, J. F. (2014b). Is residential treatment effective for opioid use disorders? A longitudinal comparison of treatment outcomes among opioid dependent, opioid misusing, and non-opioid using emerging adults with substance use disorder. *Drug and Alcohol Dependence, 144*, 178-185. doi:10.1016/j.drugalcdep.2014.09.009

Simpson, D. D., Joe, G. W., Rowan-Szal, G. A., & Greener, J. M. (1997). Drug abuse treatment process components that improve retention. *Journal of Substance Abuse Treatment, 14*(6), 565-572. doi:10.1016/S0740-5472(97)00181-5

Smith, D. C. (2017). *Emerging adults and substance use disorder treatment: Developmental considerations and innovative approaches*. New York, NY: Oxford University Press.

Smith, D. C., Bahar, O. S., Cleeland, L. R., & Davis, J. P. (2014). Self-perceived emerging adult status and substance use. *Psychology of Addictive Behaviors : Journal of the Society of Psychologists in Addictive Behaviors, 28*(3), 935-941. doi:10.1037/a0035900

Smith, D. C., Cleeland, L., & Dennis, M. L. (2010). Reasons for quitting among emerging adults and adolescents in substance-use-disorder treatment. *Journal of Studies on Alcohol and Drugs, 71*(3), 400-409. doi:10.15288/jsad.2010.71.400

Smith, D. C., Ph.D., Davis, J. P., M.S.W., Ureche, D. J., M.S.W., & Dumas, T. M., Ph.D. (2016). Six-month outcomes of a peer-enhanced community reinforcement approach for emerging adults with substance misuse: A preliminary study. *Journal of Substance Abuse Treatment, 61*, 66-73. doi:10.1016/j.jsat.2015.09.002

Timko, C., Schultz, N. R., Cucciare, M. A., Vittorio, L., & Garrison-Diehn, C. (2016). Retention in medication-assisted treatment for opiate dependence: A systematic review. *Journal of Addictive Diseases, 35*(1), 22-35. doi:10.1080/10550887.2016.1100960

Vo, H. T., Robbins, E., Westwood, M., Lezama, D., & Fishman, M. (2016). Relapse prevention medications in community treatment for young adults with opioid addiction. *Substance Abuse, 37*(3), 392-397. doi:10.1080/08897077.2016.1143435

Walters, S. T., & Rotgers, F. (2012). *Treating substance abuse: Theory and technique* (3rd ed.). New York: Guilford Press.

Wetherill, R., & Tapert, S. F. (2013). Adolescent brain development, substance use, and psychotherapeutic change. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors, 27*(2), 393-402.

Wharton School of the University of Pennsylvania. (2017). Retrieved from https://knowledge.wharton.upenn.edu/article/lessons-can-u-s-learn-canadian-health-care-system/

Chapter 3: Piecing Together The Puzzle of Success: Attending to the Developmental Needs of Emerging Adults in Substance Use Disorder Programming

Authors and affiliations: Kathryn Dalton[1], Lisa Bishop[1,2], Stephen Darcy[2], Catherine de Boer[3], Victor Maddalena[4]

[1]Memorial University of Newfoundland, School of Pharmacy

[2]Memorial University of Newfoundland, Discipline of Family Medicine, Faculty of Medicine

[3]Memorial University of Newfoundland, School of Social Work

[4]Memorial University of Newfoundland, Division of Community Health and Humanities, Faculty of Medicine

This manuscript is currently being prepared for publication in *Drug and Alcohol Dependence.*

Abstract

Background: Emerging adults (those between the ages of 18-25) have the highest rate of substance use disorder (SUD) and drop out of treatment earlier when compared to the other age groups. Retention in treatment positively correlates to long term sobriety. There is a gap in the literature regarding how to improve retention in this age group. To optimize services for emerging adults, a better understanding of what treatment interventions work best for this population is needed.

Methodology: This qualitative phenomenological study explored the perspectives of health care professionals (HCPs) on barriers and facilitators to treatment retention for emerging adults with SUD. Inclusion criteria for this study were English-speaking HCPs that worked full-time at SUD residential programs, including nurse practitioners, pharmacists, registered nurses, addiction counselors, occupational therapists, psychologists, and program center managers. Semi-structured interviews were conducted with nine HCPs from two SUD programs (residential detoxification and residential treatment). Interviews were transcribed verbatim, coded by developing a list of significant common statements, and themes emerged from these statements.

Results: Four themes related to facilitators and barriers to treatment retention were identified: the emerging adults' development, their addiction and recovery, the environment, and SUD programming. The main themes are coupled with empathy and frustration; interviewees were empathetic towards emerging adults and felt they are a distinct population requiring more support and understanding, but were also frustrated with program policies and therefore, had suggestions for improvement. Future policy recommendations include tailoring programs to the unique needs of the emerging adult, tailoring programs to be as flexible as possible, and including HCPs in the design of SUD programming.

Conclusion: HCPs felt emerging adults with SUD are a distinct population that requires more support and understanding. Improving retention in treatment for emerging adults will ensuring they are receiving the best possible care for their level of development. This will help improve their lives by increasing their quality of life and enhancing the likelihood of long term sobriety.

Keywords: substance-use disorder; emerging adulthood; treatment; residential treatment; qualitative research

Introduction

According to the 2015 National Survey on Drug Use and Health, 20.8 million people living in the United States have an alcohol or other substance-use disorder (SUD), and in 2012, about six million Canadians met the criteria for a SUD (SUD; Jones, Johnston, Biola, Gomez, & Crowder, 2018; Pearson, Janz, & Ali, 2013). Furthermore, in Canada from 2016 - 2018, over 11,500 lives were lost due to opioid related harms (Government of Canada, 2019). Collectively, this indicates an international crisis with opioid use disorders and other SUDS. For individuals of any age with chronic SUDs, long-term residential treatment provides intensive services combined with safe housing and assistance with daily life. Individuals over the age of 18 have generally been offered similar treatments regardless of age (Helgeson et al., 2013). This "one size fits all" approach ignores the distinct differences of the emerging adult as well as the understanding of viewing this population as a separate age group (Arnett 2000; Mason & Luckey, 2003).

Emerging adulthood (those between the ages of 18-25) is a developmental stage proposed by Jeffrey Jensen Arnett, a psychologist with a keen interest in understanding this population. Arnett (2000) describes various socioeconomic and demographic factors that differentiate 18-25-year old's from the older population, with an emphasis on factors such as an unprecedented degree of freedom and a stage of "feeling in between." Emerging adults have their lives ahead of them with the opportunity to set the groundwork for their future. Research also shows this period of instability can lead to the development of a SUD, as this age group has the highest rate of substance use compared to any other age group with approximately 21% of emerging adults meeting the

diagnostic criteria of SUD, in comparison to only 9% for 12-17-year old's and 7% for those age 26+ (Adams, Morse, Choi, Watson, & Bride, 2017; Davis, Sheidow, Zajac, & McCart, 2012).

Treatment for emerging adults with SUD is challenging due to the complex psychosocial and neurodevelopmental differences of this population. The primary challenge is retaining this population in treatment. Retention in treatment is important because it positively correlates with a range of outcomes related to sobriety and overall improved health. Sobriety improvements include a reduced drug use, and general health improvements include a higher social functioning and a higher quality of life (Feelemyer, Des Jarlais, Arasteh, Abdul-Quader, & Hagan, 2014; Timko, Schultz, Cucciare, Vittorio & Garrison-Diehn, 2016). When an emerging adult becomes sober, they can be a more productive member of society (Laudet, Savage & Mahmood, 2002). They have less reliance on the healthcare system, can seek employment and have better relationships with family and friends.

This research takes place in Newfoundland and Labrador (NL) Canada. The treatment center is located approximately 100km outside the major city, and the detoxification center is located in the major city. The two SUD centers in this study reported a similar rate of retention in treatment. In a residential treatment center, over two months, retention was 64% for emerging adults and 76% retention for age 26+. A similar trend was shown in a NL residential detoxification center, with emerging adults remaining in the program for fewer average days and dropping out more often after one day (emerging adult: 40% drop out after one day versus age 26+: 35%) (Program managers, Personal Communication, September 11 & September 25, 2018).

Research shows emerging adults tend to drop out of treatment earlier than those age 26+. A study by Schuman-Olivier, Weiss, Hoeppner, Borodovsky and Albanese (2014a) found that when given the same treatment interventions, emerging adults remained in opioid-use disorder in-patient treatment at a significantly lower rate compared to older adults at three months (56% versus 78%) and 12 months (17% versus 45%).

Literature suggests that the greatest treatment retention is achieved when using treatment such as behavioral therapy or opioid replacement therapy (Carroll et al., 2006; Esposito-Smythers et al., 2014; Romero-Gonzalez et al., 2017; Schuman-Olivier, Claire Greene, Bergman & Kelly, 2014b), which aligns with the guidelines and evidence for treating adults with SUDs (Dutra et al., 2008; SAMSHA, 2018; Timko et al., 2016; Walters & Rotgers, 2014). Elswick, Fallin-Bennett, Ashford, and Werner-Wilson (2018) explored barriers and facilitators to recovery through the perspectives of the emerging adult. They found emerging adults report challenges that may be unique to their age, stage of development, residential, and financial instability. Facilitators for recovery included spirituality and visible role models, as well as their families in their recovery process. Guarino et al. (2009) explored the perspectives of staff in a methadone maintenance clinic. They reported emerging adults to have unique challenges such as the desire to rush through treatment, the notion behind having to find new prosocial activities in place of their drug use, and high comorbidity of mood disorders. A successful recovery was noted to involve a readiness to change from the client, individualized care from the program, and the use of methadone maintenance treatment.

There is no clear explanation of why emerging adults have lower retention rates in traditional treatment even though many aspects of treatment are effective. Researchers stress that discovering how to increase treatment utilization and retention among emerging adults is a research priority (Smith, Cleeland, Dennis, 2010).

The objective of this study is to fill the aforementioned knowledge gap by gathering a rich set of qualitative data from the perspectives of health care professionals (HCPs) at two residential SUD centers. Interviewing HCPs is beneficial for two reasons: it is a unique and understudied way to address the gap by adding information-rich insight into emerging adults SUD residential programs, and HCPs work in direct contact with this population and have a vast understanding of health care systems. Including a rural treatment center and an urban detoxification center are unique benefits of this study as both capture the various stages of addiction treatment and have clients from differing areas of the province.

The guiding research questions were: (a) What do HCPs perceive to be facilitators of retention encountered by emerging adults who attend residential SUD programs? (b) What do HCPs perceive to be barriers to retention encountered by emerging adults who attend residential SUD programs? The results of this study may inform decisions related to the most effective treatment options for emerging adults with SUD. Ensuring they are receiving the best possible care for their level of development will improve the lives of emerging adults by increasing their quality of life and enhancing the likelihood of long term sobriety.

Methodology and Methods

Methodology

According to Antwi and Kasim (2015), all research is based on some underlying philosophical assumptions about what constitutes 'valid' research and which research method(s) is/are appropriate for the development of knowledge in a given study. As such, the research involved in this qualitative study is based on an interpretivism research paradigm informed by a relativism ontology and a subjective epistemology. Further, the conceptual framework underpinning this qualitative study is rooted in Arnett’s (2000) understanding of emerging adulthood as a distinct population and in the life course perspective. According to Halfon and Forrest (2018), it is appropriate to classify emerging adulthood as a stage in the life course as it explains the multiple areas of development that occur during this life stage. Further, the life course also highlights the various trajectories that emerging adults can encounter, with SUD being a common one.

The methodology involved in this study is a phenomenological qualitative study with face to face semi-structured interviews as the method of data collection. Phenomenological research is focused on perceptions as the primary source of knowledge (Moustakas, 1994). This is appropriate as this study investigates HCPs perceptions of facilitators and barriers to retention encountered by emerging adults who attend residential SUD programs. This study was reviewed and approved by the Health Research Ethics Authority (HREA) of Newfoundland and Labrador and Eastern Health’s Research Proposals Approval Committee (RPAC).

Methods

Participants and setting.

Inclusion criteria for this study were English-speaking HCPs that worked full-time at SUD residential programs, including nurse practitioners, pharmacists, clinical pharmacists, registered nurses, addiction counselors, occupational therapists, psychologists, and program center managers. Other non-HCP staff was excluded because it was beyond the scope of their training. Both centers are voluntary residential SUD centers; one center was an in-patient treatment center, and the other center was an in-patient detoxification center. The four-week in-patient treatment program follows a similar schedule Monday to Friday and consists of mindfulness therapy, group therapy (anger management, relapse prevention), educational sessions (addiction and the brain, sexual health and sexually transmitted infections [STIs]) and occupational therapy. Clients end their days at 5:00 pm which consists of mostly free time but have check-ins and homework periods. This center has an art-room, meditation room, and a gym room for clients to avail during their free time. The in-patient detoxification center does not follow a rigorous schedule. Detoxification is up to seven days, and during their stay, if clients feel well they can attend group therapy, meet with counselors, or set-up residential treatment. Topics included in the group therapy are related to recovery, pet therapy, Alcoholic Anonymous, women-only Alcoholic Anonymous, Narcotics Anonymous, Gamblers Anonymous, cooking group, and grief and loss group. The weekends are less structured and involve self-help groups.

Recruitment and data collection procedure.

Participants were recruited through email contact with the manager at each center. A total of nine HCPs expressed interest and signed a consent form. No identifiable information was reported to protect anonymity. Semi-structured interviews were conducted to allow in-depth insight into individuals' experiences of the emerging adults in the SUD programs. Semi-structured interviews are used when the researcher knows most of the questions to ask but cannot predict the answers, and it is useful because it ensures the researcher obtains all information required without forgetting a question, while at the same time gives a participant freedom to respond and illustrate concepts (Mores & Field, 1995). Interviews lasted about one hour and were conducted one-on-one in a private setting at each residential facility in the spring of 2018. Interview questions were developed by the research team. The two main questions of this phenomenological study addressed (a) What do HCP perceive to be facilitators to retention encountered by emerging adults who attend residential SUD programs? (b) What do HCP perceive to be barriers to retention encountered by emerging adults who attend residential SUD programs? Within these questions, several probing questions included perspectives on differences between emerging adult and older adults, and general commentary based on their experience with the emerging adult population. For a full list of interview questions please refer to table 3.1. Participants were asked to consider success as completing the prescribed length of the program (retention in treatment). Interviews were audio-recorded and transcribed verbatim by the first author.

Table 3.1.
Script of Interview Questions

1. Tell me about your role at this treatment centre? a) How long have you worked here? *"The next questions will focus on the 18-25 year old patients. For the purpose of this interview, success or effectiveness will be considered completion of the program"* 2. What aspects of the program offered at this treatment centre leads to success for the 18-25 year old age group? 3. How do you know when an 18-25 year old is engaged in the program? 4. In contrast, what aspects of the program offered at this treatment centre may not lead to success for the 18-25 year old age group? 5. How do you know when an 18-25 year old is disengaged in the program? a) What are they saying or doing that indicates to you they are disengaged? 6. Do you feel young adults need their own program tailored specifically to their needs? a) What would such a program include? 7. What differences do you see between how young adults and older adults respond to the program? 8. Given what you have observed (or experienced) how is the age range of patients taken into consideration with respect to program delivery? 9. Before we wrap up, are there any issues related to young adult addiction treatment that we have not discussed that you feel are important?

Data analysis.

After interviews were transcribed and de-identified, three of the authors (KD, LB, SD) independently read all transcripts. They then coded two of the most information-rich transcripts and then met to compare notes. The first author then coded the remainder of the transcripts. The coding process involved developing a list of significant common statements and followed the process of Moustakas (1994) approach of listing each statement, also referred to as horizontalization of the data (Padilla-Díaz, 2015). These

three authors met bi-weekly to discuss the list of significant statements and then formed these statements into themes. Each statement was treated with the same worth and from here, they were grouped into broader units. These broader units of information were then shaped into the themes of the study.

Results

Description of Participants

Nine HCPs (n=6 from the residential treatment center and n=3 from detoxification center) were interviewed. The age range of the participants varied; some participants were closer in age to emerging adults, while other participants were middle-aged. The level of SUD treatment experience of the participants varied; approximately five participants expressed having a lot of experience and four expressed lower to moderate level experience. Of note, throughout the interviews, the participants used different terminology for the same concepts. Addiction was used to refer to substance use disorder, and young adults were used to refer to emerging adults.

Themes

The datum was analyzed, and four overarching themes were identified: (1) developmental stage; (2) addiction and recovery; (3) the environment; and (4) substance use disorder programming. Each of the themes is complementary and can be conceptualized and visually represented as pieces of a puzzle with each piece fitting together to represent success (Figure 3.1).

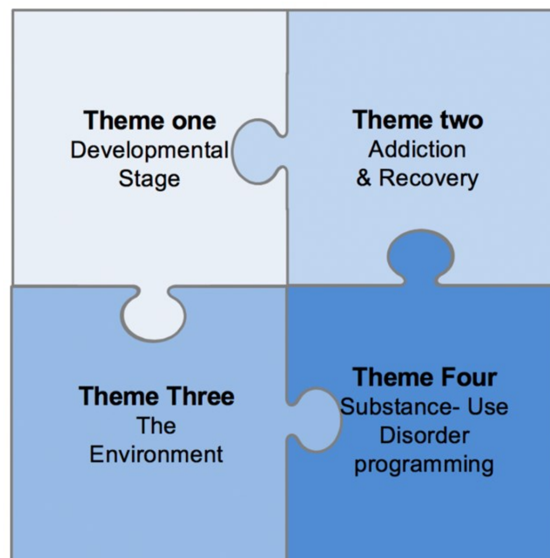


Figure 3.1. The Puzzle of Success: Emerging Adults in SUD Programs

The following table (Table 3.2) summarizes the facilitators and barriers related to each of the four themes. The following section explains each in detail.

Table 3.2

Facilitators and Barriers to Treatment Retention

Theme	Facilitators to success/retention	Barriers to success/retention
Theme one: Developmental Stage		- Emerging adults lack of social skills and not following the rules. -Emerging adults differing needs (The different needs of the two age groups causes issues in the program).
Theme two: Addiction & Recovery	- Intrinsic motivation	- Lack of understanding from the emerging adult, family members, friends, and program staff, general public, and community is a barrier to retention. - Extrinsic motivation
Theme three: The	- Positive post-discharge environment	- Program environment with too many emerging

Environment		adults (leads to forming relationships, chaos, drama)
Theme four: Substance - Use Disorder Programming	- Pre-treatment experience - Safe, fun, relaxed environment - Support from staff - Rapport between client and staff - Withdrawal management - Structure - After-care set ups in place	- Less structure (on evenings/weekends) - Staff lack of support (short staff) - Smoking ban - Length of treatment (too short) - Lack of flexibility

Theme 1: Developmental stage.

Representing the first piece of the puzzle is the participant's view around emerging adults' level of development in success. Participants felt that their level of emotional development could explain any issues or differences faced by emerging adults. One reason could be stunted brain development due to drug use, as participants expressed that most emerging adults began using drugs at an early age, which can influence healthy brain development and lead to significant behavioral issues. Another explanation could be the emerging adults' level of brain maturation not being fully developed. Regardless of their reason, the participants' felt that emerging adults' level of development presents some challenges influencing success.

Impact of developmental stage in success.

Firstly, the participants frequently discussed the impact of issues related to the emerging adults' level of development. Emerging adults are sometimes seen as being non-compliant and more prone to break the rules.

> There's been some problems with drugs being brought in, and it's typically the younger population and cigarettes, people are always trying to bring in cigarettes, get them dropped off or thrown over the fence, or sneaking into each other rooms. Emerging adults can lack social skills or maturity, which hinders success.

> What I see or observe, a lot of our younger population are lacking certain social skills ... just the basic social skills of understanding and respecting someone when they're speaking, how to engage someone in a conversation without shouting or putting defences up by somebody else, or those type of things.

Another participant noted:

> You can see that in the young adults, drama, is almost like they haven't left grade 12 ... because their brain maybe hasn't left grade 7.

Emerging adults differing needs.

Due to these developmental and behavioral differences, the HCPs suggested emerging adults differ from those 26+. For example, their substance use patterns may be different:

> A lot of the older adults here, from my experience, its alcohol-related and not say, crystal meth or whatever, that's the younger, you can't be on that till you're 60.

HCPs emphasized various struggles they encounter engaging with the different age groups, especially when planning different activities such as hikes, which may not be appropriate for all ages. As one participant noted about curricular components:

> I think there could be some changes if it was mostly young people, for example, sometimes they want to go for like a hike or bowling or horseback riding. I think if we had just the 18-25 we would be more able to engage them in finding out what do they like, what do they enjoy, what kind of leisure activities can they put into their lives instead of their addiction, to have it easier on us that way and they might get more out of it.

Group therapy is a prominent part of each program. Clients at both centers have group therapy sessions together on various topics related to addiction. Some HCPs shared a perception that the topics offered are not always relevant to each age group.

> I know staff have changed things, it could be the topic of the group, so you know we have had topics in the past, like ‘return to work’, but ‘return to work’ might not be appropriate for them.

Due to emerging adults’ developmental stage, some participants felt a program tailored to their age group would be appropriate. There were discrepancies in interviewee responses when asked do they need their own program. Some participants felt it would be very beneficial, and some felt unsure if they need their own program and explained some pros and cons.

> I think there's definitely benefits to it … because I think there is nice benefits to having them with some of the older people because they get that wisdom, experience, they see a path that they don't want to take ... and a lot of times the older clients will take the younger ones kind of under their wing and become more of a maternal or paternal figure to them ... and they get to see like a meaningful connection with somebody else.

Regardless of differing opinions regarding separating the program by age, all participants felt a more tailored approach would be beneficial.

> It would certainly involve more things young adults like doing, it could involve some type of like computer, web-based, different things, to be more specific in that area, or I guess pretty much things that age group would be interested in.

In summary, participants felt the program was not addressing the developmental needs of the emerging adult. Realizing this discrepancy, however, was an important part of improving the chances of successful outcomes in this age group.

Theme 2: Addiction and recovery.

The second theme addressed the issues related to addiction and recovery. Participants expressed how most emerging adults have less experience in their addiction, and as a result, one participant said:

> They don't always realize or appreciate that addiction may be something that is lifelong with them and it's a chronic relapsing brain disease.

Lack of understanding.

Issues surrounding a lack of understanding also emerged from the general public, friends and family, and the HCPs. A lack of understanding can be stigmatizing, and interviewees felt when someone does not understand addiction, it can hinder the recovery of the emerging adult. For example, HCPs felt emerging adults do not take their addiction seriously or appreciate the magnitude of the addiction.

> I think as young teenagers there's a tendency that you're invincible and things don't apply to you, and I think that same concept and understanding is there, because obviously developmentally, they're still in that stage, so when they talk about going to group and being required for pre-treatment, they still see it as ‘well that really doesn't apply to me’.

Support and awareness of the community are important to recovery. A lack of understanding from the community/general public was mentioned as barriers, Support and awareness of the community are important to recovery. A lack of understanding from the community/general public was mentioned as barriers.

> I think there's a big lack of understanding in the community at large, I guess of the true root cause of addiction ... There’s a lot of education needed.

Interviewees shared a perception that emerging adults’ family and friends can easily influence their recovery and that a lack of understanding can be a barrier to recovery.

> The parent’s understanding the addiction really helps, so when we hear parents say things like ‘this better work’ … what do they think we’re going to do, like [wave] a magic wand? It’s really a process, and they don’t get that.

Furthermore, some interviewees felt that the HCPs should have experience working in mental health and addictions. When the HCPs do not have prior experience, it can impact the success of the clients in the program. As one participant shared:

> I think it should be a requirement to have mental health and addiction treatment experience … they come in from senior's homes, hospitals, and not a clue about mental health and addictions ... I think it should be a requirement ... I think you need at least 5 [years] to work here.

Several participants emphasized addressing the client's root cause of addiction is important. As one participant noted, quoting Gabore Maté, that the question to ask someone with addiction is not why they have the addiction, but why the pain? According to Maté's (2018) individuals are suffering and as a result, they escape this pain by numbing with substances. A lot of the participants seemed to view addiction similarly and felt that for patients to be ready to change, they need to understand their addiction in a different light.

> Once they see their addiction, and to see that any reasonable person that's gone through what you went through would seek - relief from their suffering, and when they realize that's all they're seeking is relief, so let's seek relief in a healthier way … and when they don't realize the root cause of their pain and suffering, they'll never recover.

Intrinsic versus extrinsic motivation.

Another sub-theme involves the client's motivation for attending the program. Participants felt emerging adults present with different levels and sources of motivation, ranging from very motivated and attending for an intrinsic reason, to not being motivated and attending for an extrinsic reason. These extrinsic motivations may be a barrier to success in the program, and the participants noticed a correlation between the degree of motivation and intrinsic versus extrinsic reasons. Many of the HCPs felt it was common for the emerging adults to attend the programs for extrinsic motivational reasons. One reason included someone forcing them to attend.

> With that age group, it's their family making them come here rather than realizing they want to do it for themselves … I feel like if someone's getting pushed here

> for their family, they kind of coast through, like they're here in body, and not really in mind, and not really doing it.

Additionally, the HCPs felt if a client has a child, they may attend the programs for something related to child services or court-related.

> They'll say, 'I'm only here because my child protection worker said come to the [treatment] center, and I can get my child back.' Like the social worker might not obviously say that in those words but they interpret it.

And some clients may have housing issues and nowhere to live, which can impact recovery.

> I think there's some people who have housing issues that sometimes mask an admission to the [detox] center as a means for detox.

However, interviewees shared the perception that when a client has an intrinsic motivation, it is a facilitator for success.

> There's a huge difference we see when someone comes on their own volition versus a family member giving them an ultimatum.

In summary, participants felt several components related to addiction and recovery leads to success in the programs. Participants emphasized the importance of anyone involved with the recovery of emerging adults should have a good understanding of addiction and the reason for attending programs should be understood and addressed by both the emerging adult and the HCPs.

Theme 3: The environment.

Participants expressed the importance of the surroundings and conditions in which the emerging adult lives. While residing in the program, their environment is important, and participants felt a number of issues emerged that can be explained by the program environment.

Treatment center environment.

Participants expressed the opinion that emerging adult's development sometimes causes behavioral issues, with a shared perception that mixing too many emerging adults without the presence of the older clients can create a chaotic atmosphere. As one participant stated when there are too many young people "it can get toxic quick and spreads like wildfire." When ages are not balanced in the program, the participants felt too many emerging adults together creates a toxic atmosphere,

> [When] we have a lot of young people here that's usually when its chaotic *laughs* ... From my experience that's mostly to do with development.

which also causes issues for the older clients as well.

> The young people are just about drama, and the older people are done with the drama ...I find it's more the disadvantages are to the 60-year-old trying to deal with the drama that the young people have ... in a way to have a separation would be good, you can focus on the drama piece.

Another problem besides "drama" is the issue of emotional/sexual relationships between clients, which is more frequently noted among emerging adults than older clients. Forming emotional/sexual relationships is a barrier to success not only because it is a policy of the centers not to display romantic behavior, but the HCPs felt it distracts emerging adults from the reason they came to the center.

> Something we struggle with, and it does usually just happen with the younger population, is forming relationships here - So there's like zero tolerance for like any sexual activity or exclusive relationships here but - it still happens and we often hear about it after the fact ... so I think we talked about it in a form of substitution, so just like anything that makes them feel good, or makes them feel happy, they're kind of like at an age for some of them for sexual exploration or what not ... but I think that will be the nature of having a lot of young people here, we don't tend to have that issue when we have like the 40-50 year old's ... they can get really focused on their relationship ... none of that has anything to do with their recovery but that's like what they're talking in therapy or group about.

Post-discharge environment.

In addition, participants also acknowledged the importance of the surroundings and conditions of where they live once leaving the program. When leaving the program, having a positive post-discharge environment is important in maintaining their recovery. Participants recognized that often the friends of the emerging adult clients are substance users, and this poses a risk to maintaining sobriety after treatment.

> The younger groups have the support system that is stereotypically not supportive or still using and have a lot of buddies that are still using that they have to cut out, so for a lot of them they are coming in and have to completely revamp their life that they know, that's a very difficult task for them.

In summary, participants expressed how important environments are in emerging adult's success and that a facilitator to success involves a program environment with a balance of ages and ensuring emerging adults return to a positive and supportive post-discharge environment.

Theme 4: Substance-use disorder programming.

Representing the last piece of the puzzle is the participants' view around the SUD programming in ensuring success. Interviewees expressed if the program is not meeting the needs of emerging adults at any stage, then they are at risk of not completing treatment. For example, the SUD programming is complementary to the other three themes because the program can act as a venue to address any issues that emerging adults present with initially. This emphasizes the importance of having a supporting and successful program, and many participants shared this perception. Three important sub-themes emerged as treatment stages involved in emerging adult's recovery, including pre-treatment, design of treatment programming, and after-care.

Pre-treatment.

Pre-treatment is typically the first stage involved in addiction treatment and consists of their first attempt at recovery and is typically out-patient care. However, not every patient with addictions will avail of pre-treatment. A number of the participants felt pre-treatment was a facilitator for success, and many HCPs mentioned that having previous exposure to other forms of treatment before attending residential treatment is beneficial, as it increases clients understanding of their addiction and readiness for treatment.

> The staff here have noticed a big void if clients come in without that pre-treatment, we find we take a lot of time trying to engage them in this process when really, they should be already coming in ready to do the work and already engaged.

Although the participants acknowledged the importance of pre-treatment, the participants also discussed that they couldn't turn someone away because they don't have pre-treatment.

> Usually, this should be the last stage, like they should go to a counselor and work through their problems and see if outpatient works before inpatient ... but you can't set up barriers to saving lives either ... but I think the people that have the most success have had supports already.

Design of treatment programming.

The treatment program is important to a successful recovery and the HCPs frequently discussed specific components that can help or hinder success. Factors related to the treatment program such as the program design were mentioned as facilitators. HCPs felt being in a safe environment is important. HCPs also expressed emerging adults like components that are fun, relaxed, and social, such as playing recreational sports.

> I also think the fun piece ... I think the therapeutic rec is a big part for the youth ... going out and playing badminton and basketball and having fun and I think our therapeutic rec specialist is one of the best, she really engages and has fun with them and I think that's a really big piece.

Also, participants felt a relaxed, less formal environment is important for emerging adults in the program design.

> Definitely the younger crowd, the 18-25-year old's, they do participate more in group, especially in more of a relaxed, kind of like fun group, where they can just kind of openly ask questions and isn't necessarily talking about their like addiction and getting into like emotions ... I think they all do respond pretty well to the education piece … so when you're able to increase their knowledge, they're really receptive.

Currently, initiating withdrawal management with opioid substitution is not a routine component of the inpatient treatment program. Interviewees mentioned that some emerging adults would benefit from more effective withdrawal management to help them with the pain of withdrawal. One participant pointed out that this should be a component in the design of treatment programs:

> I think the withdrawal management of the medications [leads to success] because I think that a lot of youth want quick fixes ... and I don't think they can handle the pain of going through withdrawal ... so I think the medication piece really works for them.

Participants frequently discussed the structure of the treatment program. Some participants indicated that a structured program is important to establish a routine in emerging adults.

> Having some routine and structure in their lives is huge and learning to create routine and structure in their lives ... boredom and free time is a trigger for many of them.

Similarly, participants noted that the program is less structured on the evenings and weekends, and this is sometimes when issues emerge.

> I find when the clients are in a structured setting from 9-5 with the clinical team, its good, but then later in the evening, when there is no clinical team or on the weekends [when] there's just nursing, sometimes you can see, they're not as engaged ... and sometimes they almost look like a totally different group of people.

Another aspect related to the program design was about the staff who work at the treatment center. Participants mentioned how important it is for patients to feel supported and have a good rapport with the staff.

> I think the [therapeutic] relationship is always key because like I said this population is stereotypically untrusting, so no matter what kind of therapy I'm doing, I'm always focused on building a rapport first, because if they don't trust me, it doesn't matter what skill I'm using.

Participants also expressed helplessness and frustration about the program design. HCPs expressed a great desire to want to help but acknowledged that sometimes there are factors related to program design rules/policy that are barriers to letting them help in the best way possible. They mentioned that they sometimes feel like their resources are stretched and they could use additional support.

> I think it would be so helpful to have either therapy assistance or volunteers in the room with us because I think those people, in order to get anything out of the program, need a bit more support than we can provide in a group program. It's almost like if you have a young person that needs help with their homework, like I can't help them all.

Participants also mentioned certain rules associated with the program can lead to barriers. One participant highlighted the 'no smoking rule' as a barrier for some staying in the program.

> I think they should be allowed to smoke. They're not allowed to smoke and a lot of the time that causes a lot of people to leave ... so that's just one thing that would be amazing if it got changed because we'd have such a higher retention here.

The in-patient treatment center is currently four-weeks and some participants felt the length was too short, which was a barrier for building rapport.

> I think length of treatment is a big issue ... I consistently notice that when people are in end of week 3 and week 4 that's when I'm starting to develop ... we're really starting to do some work, I've developed a rapport with them and then I only have a week left with them ... I'd be happy with 6 if we could get 6, but 8 would be great ... they're not going to remember their first 2 weeks because either they were in withdrawal, or they're so anxious, and this is so overwhelming, and they're trying to get used to it.

Participants also expressed changing the daily structure to suit the needs of the emerging adults would be more beneficial.

> Sometimes I find it might be a little too much … sometimes I go out with the therapeutic rec and they tell me more on walk … I think if we could have more, like I don't know, more walks ... like informal than the structure all day long, I don't think that works ... by the afternoon they're too tired... I think structure is important to teach them ... I think the whole groups all day long is a little bit too much ... I think that's one of the faults of the program.

Another participant noted:

> [A program] that could still have rules in place but be able to kind of go with the flow the way a younger person may be able to, like most young people tend to sleep in a little in the mornings and stay up a bit later in the night, so tailoring that a little bit more would be good.

After-care.

The final stage for recovery is after-care. This involves having good supports in place for when the client leaves the program such as having counseling, family supports, and other social supports in place. After-care is just as important as pre-treatment, and HCPs also acknowledged this. For example:

> I think consistent after-care is the big thing - and no gaps in care. They're here for 4 weeks, a lot of times 5 weeks, with continued support every day, all day, so when they leave they need to go right into another service and have consistent service, because a lot of times I find if there are gaps or even a couple weeks gaps, you lose them.

In summary, participants expressed how important programs are in the success of emerging adults. Participants felt it is important for emerging adults to have pre-treatment and after-care, with one participant saying, "we notice the gap at the beginning, and we notice the gap at the end." Participants expressed factors related to success in the programs such as a safe, fun, and relaxed environment and the ease to develop a positive rapport between client and staff. Participants also expressed frustration about the program design and wanted factors such as the smoking ban, length of the program, structure of the program days, and group therapy to be flexible.

Overall Summary

Overall, this study identified four themes related to facilitators and barriers for retention in treatment of emerging adults in SUD programs. Although some of the findings could pertain to those of any age, the focus of these findings is on the emerging adult population. The four themes are complementary and highlight that HCPs feel emerging adults are a distinct population requiring more support and understanding as many factors may make them more difficult to treat. The general attitudes of the participants were empathetic, and they acknowledged that any barriers to emerging adult retention are usually related to their level of development. Participants also expressed frustration for policies of the program and suggestions for improvement.

Discussion

Emerging adults with SUD are often a challenging population to treat, as research consistently demonstrates emerging adults have higher rates of substance use but drop out of treatment earlier than their older counterparts (Adams et al., 2017; Schuman-Olivier et al., 2014a). Understanding how to improve treatment retention is important because it is

the strongest predictor of continued sobriety and positive health outcomes (Gogel, Cavaleri, Gardin, & Wisdom, 2011). When an individual becomes sober, they have the opportunity to regain the years lost to drug use, increase their quality of lives and relationships, and contribute to society and the economy. This study contributes to the literature by directly identifying facilitators and barriers to retention in treatment through the perspectives of HCPs that work closely with emerging adults in SUD programs, given retention in treatment is normally low in this age group.

The HCPs described four complementary themes related to facilitators and barriers for retention of emerging adults in SUD programs. The four complementary themes can be represented visually through a puzzle; when all pieces of the puzzle fit - success is achieved (Figure 3.1). Conversely, barriers arise when one of the four pieces does not fit.

Several components facilitate successful retention such as ensuring emerging adults differing needs are understood and addressed in the program was identified as important. Empathetic staff help to ensure rapport is built quickly and easily. Ensuring the clients understand the root cause of addiction and their motivation for seeking treatment helps with success. Another component of the puzzle involves ensuring those close to emerging adults' recovery such as family and friends understand addiction as this helps reduce stigma and increases support. The fourth piece is the programming content itself. A program should have optimal age mixing which helps reduce drama and chaos in the treatment setting. It is also important for clients to have pre-treatment or for a program to adjust for clients who come in without pre-treatment. Finally, a program should also ensure clients have good after-care supports in place when they leave the program.

The participants acknowledged the unique differences of the emerging adult and felt facilitators to retention involves a program that is tailored to the unique needs of emerging adults. Similar studies expressed the importance of developmentally appropriate services for emerging adults as they have unique challenges, including the desire to rush through treatment, having to find new prosocial activities in place of their drug use, and high comorbidity of mood disorders such as social anxiety, generalized anxiety, bipolar disorder, and depression (Guarino et al. 2009; Skehan & Davis, 2017). Strategies to tailor treatment programs and ultimately increase retention for emerging adults could include aspects that were used in a study by Schuman-Olivier et al. (2014b) which had very high retention rates (~80%) for their residential treatment program on emerging adults. Strategies include tailoring to the needs of the emerging adult, help build a sense of responsibility and routine for emerging adults with an art room, music room, gym, school, and family therapy, and university level courses on adolescents and young adults for staff.

The participants mentioned the importance of having highly educated staff in the areas of emerging adulthood development and addiction. One study reported that all their staff was required to take university-level courses on adolescents and young adults (Schuman-Olivier et al., 2014b). Therefore, one recommendation could be to increase staff education and ensure staff are adequately trained and prepared to work with emerging adults with SUDs and their unique needs. A lack of understanding from the family members was also a barrier to emerging adults' retention because it leads to stigmatization and ultimately affects an emerging adult's recovery. A study by Luoma et al. (2007) suggests SUD treatment centers should attend to the impact of stigma on their clients by having interventions with service providers to reduce stigma or to examine the

program's policies and procedures for the possibility of their contribution to stigma. Additional suggestions include motivational interviewing, acceptance and commitment training, and communicating positive stories of people with SUD (Livingston, Milne, Fang, & Amari, 2011; Luoma et al. 2007). It is also important to understand the root cause of addiction to help develop the best possible treatment for each individual. There are many root causes of addiction, and as such, treatment should not be “one size fits all” (MentalHealth.Net, 2015).

Understanding the motivation behind why an emerging adult is attending a program was discussed in our study. Motivation is recognized to be an important factor in recovery from SUDs (Sayegh, Huey, Zara, & Jhaveri, 2017). Intrinsic motivation is when an individual engages in behavior because of the inherent satisfaction or enjoyment the action entails. Extrinsic motivation is when a person performs a behavior because of external factors, such as the promise of reward or the fear of punishment, for example, to avoid court (Sayegh et al., 2017). DiClemente (1999) states that individuals with intrinsic motivation have better long-term outcomes than those with extrinsic motivation. Approaches designed to help clients identify intrinsic motivation includes reflective listening by helping clients recognize the discrepancy between "where they are" and "where they want to be” through an exploration of life goals and values and motivational strategies such as brief intervention, motivational interviewing, and motivational enhancement therapy (MET) (Center for Substance Abuse Treatment, 1999; DiClemente, Bellino, & Neavins, 1999).

The role of the environment on treatment retention was discussed in this study. Guarino et al. (2009) suggested emerging adults prefer to be in an environment with only

emerging adults and are intimidated entering a residential program dominated by all older adults. Contradictory to this finding, the majority of the participants in our study thought that keeping a balance of age creates a more therapeutic environment for emerging adults because with too many emerging adults there is an increase in interpersonal drama and illicit sexual encounters. Additionally, the role of the environment post-discharge was considered to be equally as important as relapse after discharge is usually high (Carter et al., 2008). Barriers to a positive transition from residential treatment to the community include geographical differences between care, and the client having to rebuild trust with a new counselor (Carter et al., 2008). Also, other ways to incorporate after-care include access to stable housing and employment, positive support networks, expanded discharge planning services, transitional assistance, and funding to help any gaps in service delivery or to meet basic needs (Manuel et al., 2017).

Flexible programming was also acknowledged as a facilitator to success. A systematic review of mental health and SUD residential programs for any age suggests programs should be flexible, supportive, and low-intensity (Brunette, Mueser, & Drake, 2004). Participants expressed the importance of rapport with the emerging adults and having empathy for the clients helps with rapport building. Among adults in SUD treatment, a stronger therapeutic alliance (i.e., patient-centeredness and empathy from clinicians) has been linked to greater engagement, retention, and early improvements in substance use and distress (Urbanoski, Kelly, Hoeppner, & Slaymaker, 2012). Suggestions to increase the length of the program to increase rapport was discussed.

Further, participants felt those who received treatment before attending the program (pre-treatment) helped better prepare them for the program. Participants felt

those without this experience were at a disadvantage and programs should adjust for clients that come in without pre-treatment by either extending the length of the program or offering a separate stream for those clients. Participants also expressed the desire for flexibility surrounding the smoking ban at the center. On one hand, these non-smoking policies are implemented as public health efforts to provide smoke-free environments, protect non-smokers, and promote tobacco cessation among tobacco users (Muilenburg, Laschober, Eby, & Moore, 2016). On the other hand, some programs operate with less stringent rules with the mandate that quitting tobacco use during treatment for other SUDs adds stress and interferes with treatment success (Muilenburg et al., 2016). A possible option to implement less strict tobacco use is taking clients who smoke on walks off the residential property or allowing them to smoke in a designated area outside the building. Another existing barrier related to the policy of the program included the format of the client's days. The HCPs felt long days were barriers and suggested having a more flexible schedule.

The participant's attitudes demonstrated a need and desire to improve the lives of emerging adults. Most of the participants had some suggestions for improvement and change but were frustrated and felt helpless as they realized it was beyond their control to directly change the structure of programming or the policies of the institution. (e.g., issues with methadone program, not being allowed to smoke, structure, length of the program, dealing with people without pre-treatment). The frustration and helplessness could be resolved by including the views and insights of HCPs with the formation of policy. There is good evidence suggesting that HCPs such as nursing staff should be more involved in policy decisions, given their unique relationship to the patients/clients (Kunaviktikul,

2014). Also, patient-oriented research is a new concept gaining attention because it involves patients, their caregivers, and families in the full process of a research study. Patient-oriented research ensures studies focus on components that patients view as priorities and ultimately leads to improved health outcomes for patients (CIHR, 2018). The benefits of patient-oriented research suggest that including those close to the patients such as HCPs could provide benefits as well.

The findings of this study are relevant in NL as well. Mental health and addiction care delivery in NL is often challenged by geography, adequate human resources, continuity of care, and transitions between pediatric and adult care. Available adult treatment programs follow a standard approach and are not tailored to meet the complex needs of emerging adults. In NL there are two adult residential full-time substance treatment facilities, Humberwood in Corner Brook and The Grace Centre in Harbour Grace. One is on the west coast and the other on the east coast. The wait lists for these facilities illustrate the demand for addiction services. NL could benefit from modifying some of their programs to reflect some of the results found in this study, specifically in regard to tailoring to the unique needs of emerging adults and also increased staff education.

Policy research on SUD has been understudied and under-researched. The findings of our study have implications for policy and program planning, and we encourage policy planners to view our findings. Additionally, our plan is to have knowledge translation in the work place, involvement in provincial committees either as a member or resource person, local/national conference presentations/posters, letters to the editor commenting on specific issues of the day, and letters to newsletters.

Improving SUD outcomes will reduce the total cost of care - total spending on substance abuse treatment in the United States was an estimated $21 billion in 2003 and in Canada, the economic cost of substance use in 2014 was $38.4 billion. This includes costs related to healthcare, criminal justice and lost productivity. (CAMH, 2018;French, Popovici, & Tapsell, 2008). As SUD is a growing global issue, this further emphasizes the importance of finding alternative ways to improve treatment (CAMH, 2018; French, Popovici, & Tapsell, 2008).

This study had some limitations. First, we grouped the residential treatment and residential detoxification programs, which could be a limitation. Although the common themes remained the same, the programs operate different mandates with one focused on treatment and the other on detoxification. Any major differences between the centers were reported separately, but the common themes were similar. Only nine HCPs participated in the interviews, although we felt we reached saturation, more participants could strengthen the findings. A third limitation was using treatment retention as the measure of success. Recent literature suggests engagement (as measured by The Washington Circle of Engagement) may be a better outcome measure because engagement measures how many people return to treatment after the first session, stating, that in order for a patient to have greater retention in treatment, initiation, and engagement in treatment must first occur (Garnick et al., 2012). However, based on the literature, retention in treatment appears to be the most common outcome measure used to measure success in SUD programs.

Future research should examine if tailored SUD programs and flexible SUD programs improve treatment retention for emerging adults. Further, if keeping treatment

program environment to only emerging adults increase treatment retention for emerging adults with SUD. In addition, research from the emerging adult perspective is limited, and future research could also examine facilitators and barriers to retention from their perspectives. Furthermore, policy research should examine if involving HCPs in the planning of SUD programs improves outcomes for emerging adults.

Conclusion

This qualitative study provides an understanding of HCPs perceptions on facilitators and barriers for retention of emerging adults in SUD programs. The main findings identified four main themes coupled with empathy and frustration. The interviewees were empathetic towards emerging adults and felt they are a distinct population requiring more support and understanding, but were also frustrated with program policies and therefore, had suggestions for improvement. Future policy recommendations include tailoring programs to the unique needs of the emerging adult, tailoring programs to be as flexible as possible, and including HCPs in the design of SUD programming. The findings from this study add to the literature surrounding emerging adults retention in SUD programs. It can help advise treatment programs so that they can offer emerging adults the best possible care for their level of development, ultimately increasing the likelihood of their long-term sobriety.

References

Adams, S., Morse, S., Choi, S., Watson, C., & Bride, B. (2017). Substance use and mental health treatment retention among young adults. *Global Journal Of Addiction & Rehabilitation Medicine*, *1*(3). doi: 10.19080/gjarm.2017.01.555564

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist, 55*(5), 469-480. doi:10.1037/0003-066X.55.5.469

Anti, S., & Kasim, H. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management, 7(3),* 217-225.

Brunette, M., Mueser, K., & Drake, R. (2004). A review of research on residential programs for people with severe mental illness and co-occurring substance use disorders. *Drug and Alcohol Review, 23*(4), 471-481. doi:10.1080/09595230412331324590

Carroll, K. M., Easton, C. J., Nich, C., Hunkele, K. A., Neavins, T. M., Sinha, R., . . . Rounsaville, B. J. (2006). The use of contingency management and Motivational/Skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology, 74*(5), 955-966. doi:10.1037/0022-006X.74.5.955

Carter, R. E., Haynes, L. F., Back, S. E., Herrin, A. E., Brady, K. T., Leimberger, J. D., Sonne, S. C., Hubbard, R. L., … Liepman, M. R. (2008). Improving the transition from residential to outpatient addiction treatment: gender differences in response to supportive telephone calls. *The American journal of drug and alcohol abuse*, *34*(1), 47-59.

Center for Substance Abuse Treatment. Enhancing Motivation for Change in Substance Abuse Treatment. Treatment Improvement Protocol (TIP) Series, No. 35. HHS Publication No. (SMA) 12-4212. Rockville, MD: Substance Abuse and Mental Health Services Administration, 1999.

Davis, M., Sheidow, A. J., McCart, M., & Zajac, K. (2012). Prevalence and impact of substance use among emerging adults with serious mental health conditions. *Psychiatric Rehabilitation Journal, 35*(3), 235-243. doi:10.2975/35.3.2012.235.243

DiClemente, C. C. (1999). Motivation for change: Implications for substance abuse treatment. *Psychological Science, 10*(3), 209-213. doi:10.1111/1467-9280.00137

DiClemente, C. C., Bellino, L. E., & Neavins, T. M. (1999). Motivation for change and alcoholism treatment. *Alcohol Research & Health : The Journal of the National Institute on Alcohol Abuse and Alcoholism, 23*(2), 86.

Dutra, L., Stathopoulou, G., Basden, S., Leyro, T., Powers, M., & Otto, M. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal Of Psychiatry*, *165*(2), 179-187. doi: 10.1176/appi.ajp.2007.06111851

Elswick, A., Fallin-Bennett, A., Ashford, K., & Werner-Wilson, R. (2018). Emerging adults and recovery capital. *Journal Of Addictions Nursing*, *29*(2), 78-83. doi: 10.1097/jan.0000000000000218

Esposito-Smythers, C., Brown, L., Wolff, J., Xu, J., Thornton, S., & Tidey, J. (2014). Substance abuse treatment for HIV infected young people: An open pilot trial. *Journal Of Substance Abuse Treatment*, *46*(2), 244-250. doi: 10.1016/j.jsat.2013.07.008

Feelemyer, J., Des Jarlais, D., Arasteh, K., Abdul-Quader, A. S., & Hagan, H. (2014). Retention of participants in medication-assisted programs in low- and middle-income countries: An international systematic review: Retention in low-income country MAT programs. *Addiction, 109*(1), 20-32. doi:10.1111/add.12303

French, M. T., Popovici, I., & Tapsell, L. (2008). The economic costs of substance abuse treatment: Updated estimates and cost bands for program assessment and reimbursement. *Journal of Substance Abuse Treatment, 35*(4), 462-469. doi:10.1016/j.jsat.2007.12.008

Garnick, D. W., Lee, M. T., O'Brien, P. L., Panas, L., Ritter, G. A., Acevedo, A., . . . Godley, M. D. (2012). The Washington circle engagement performance measures' association with adolescent treatment outcomes. *Drug and Alcohol Dependence, 124*(3), 250-258. doi:10.1016/j.drugalcdep.2012.01.011

Gogel, L. P., Cavaleri, M. A., Gardin II, J. G., & Wisdom, J. P. (2011). Retention and ongoing participation in residential substance abuse treatment: Perspectives from adolescents, parents and staff on the treatment process. *The Journal of Behavioral Health Services & Research, 38*(4), 488-496. doi:10.1007/s11414-010-9226-7

Government of Canada. (2019). Retrieved from https://www.canada.ca/content/dam/hc-sc/documents/services/substance-use/problematic-prescription-drug-use/opioids/responding-canada-opioid-crisis/federal-actions/federal-actions-overview.pdf

Guarino, H. M., Marsch, L. A., Campbell, W. S., III, Gargano, S. P., Haller, D. L., & Solhkhah, R. (2009). Methadone maintenance treatment for youth: Experiences of clients, staff, and parents. *Substance use & Misuse, 44*(14), 1979-1989. doi:10.3109/10826080802494800

Halfon, N., Forrest, C. B., Lerner, R. M., & Faustman, E. M. (2018). *Handbook of life course health development*. Cham: Springer. doi:10.1007/978-3-319-47143-3

Helgeson, V. S., Reynolds, K. A., Snyder, P. R., Palladino, D. K., Becker, D. J., Siminerio, L., & Escobar, O. (2013). Characterizing the transition from paediatric to adult care among emerging adults with type 1 diabetes. *Diabetic Medicine, 30*(5), 610-615. doi:10.1111/dme.12067

Jones, Q., Johnston, B., Biola, H., Gomez, S., & Crowder, C. (2018). Implementing standardized substance use disorder screening in primary care. *JAAPA: official journal of the American Academy of Physician Assistants, 31(10),* 42-45.

Kunaviktikul, W. (2014). Moving towards the greater involvement of nurses in policy development. *International Nursing Review, 61*(1), 1-2. doi:10.1111/inr.12092

Laudet, A. B., Savage, R., & Mahmood, D. (2002). Pathways to long-term recovery: A preliminary investigation. *Journal of Psychoactive Drugs, 34*(3), 305-311. doi:10.1080/02791072.2002.10399968

Livingston, J., Milne, T., Fang, M., & Amari, E. (2011). The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review. *Addiction*, *107*(1), 39-50. doi: 10.1111/j.1360-0443.2011.03601.x

Luoma, J., Twohig, M., Waltz, T., Hayes, S., Roget, N., Padilla, M., & Fisher, G. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors*, *32*(7), 1331-1346. doi: 10.1016/j.addbeh.2006.09.008

Manuel, J., Yuan, Y., Herman, D., Svikis, D., Nichols, O., Palmer, E., & Deren, S. (2017). Barriers and facilitators to successful transition from long-term residential substance abuse treatment. *Journal Of Substance Abuse Treatment*, *74*, 16-22. doi: 10.1016/j.jsat.2016.12.001

Mason, M. J., & Luckey, B. (2003). Young adults in alcohol-other drug treatment: An understudied population. *Alcoholism Treatment Quarterly, 21*(1), 17-32. doi:10.1300/J020v21n01_02

Maté, G. (2008). *In the realm of hungry ghosts: Close encounters with addiction*. Toronto: Knopf Canada.

MentalHealth.Net The Many Causes of Addiction and Bio-Psycho-Social-Spiritual Model. (2018). Retrieved from https://www.mentalhelp.net/articles/the-manycauses-of-addiction-and-bio-psych-social-spiritual-model/

Muilenburg, J. L., Laschober, T. C., Eby, L. T., & Moore, N. D. (2016). Prevalence of and factors related to tobacco ban implementation in substance use disorder treatment programs. *Administration and Policy in Mental Health and Mental Health Services Research, 43*(2), 241-249. doi:10.1007/s10488-015-0636-

Opioids and Universal Experience of Addiction by Dr. Gabor Maté. (2018). Retrieved from https://drgabormate.com/opioids-universal-experience-addiction/

Padilla-Díaz, M. (2015). Phenomenology in educational qualitative research: Philosophy as science or philosophical science? *International Journal of Educational Excellence, 1*(2), 101-110. doi:10.18562/IJEE.2015.0009

Romero-Gonzalez, M., Shahanaghi, A., DiGirolamo, G. J., & Gonzalez, G. (2017). Buprenorphine-naloxone treatment responses differ between young adults with heroin and prescription opioid use disorders: Buprenorphine treatment for young adults with opioid use. *The American Journal on Addictions, 26*(8), 838-844. doi:10.1111/ajad.12641

SAMSHA: Treatment for Substance Use Disorders (2018). Retrieved from https://www.samhsa.gov/treatment/substance-use-disorders

Sayegh, C., Huey, S., Zara, E., & Jhaveri, K. (2017). Follow-up treatment effects of contingency management and motivational interviewing on substance use: A meta-analysis. *Psychology Of Addictive Behaviors*, *31*(4), 403-414. doi: 10.1037/adb0000277

Schuman-Olivier, Z., M.D., Weiss, R. D., M.D., Hoeppner, B. B., Ph.D., Borodovsky, J., B.A., & Albanese, M. J., M.D. (2014a). Emerging adult age status predicts poor buprenorphine treatment retention. *Journal of Substance Abuse Treatment, 47*(3), 202-212. doi:10.1016/j.jsat.2014.04.006

Schuman-Olivier, Z., Claire Greene, M., Bergman, B. G., & Kelly, J. F. (2014b). Is residential treatment effective for opioid use disorders? A longitudinal comparison of treatment outcomes among opioid dependent, opioid misusing, and non-opioid using emerging adults with substance use disorder. *Drug and Alcohol Dependence, 144*, 178-185. doi:10.1016/j.drugalcdep.2014.09.009

Skehan, B., & Davis, M. (2017). Aligning mental health treatments with the developmental stage and needs of late adolescents and young adults. *Child and Adolescent Psychiatric Clinics of North America, 26*(2), 177-190.

Smith, D. C., Cleeland, L., & Dennis, M. L. (2010). Reasons for quitting among emerging adults and adolescents in substance-use-disorder treatment. *Journal of studies on alcohol and drugs*, *71*(3), 400–409.

Strategy for Patient-Oriented Research - CIHR. (2018). Retrieved from http://www.cihr-irsc.gc.ca/e/41204.html

Timko, C., Schultz, N. R., Cucciare, M. A., Vittorio, L., & Garrison-Diehn, C. (2016). Retention in medication-assisted treatment for opiate dependence: A systematic review. *Journal of Addictive Diseases, 35*(1), 22-35. doi:10.1080/10550887.2016.1100960

Urbanoski, K. A., Kelly, J. F., Hoeppner, B. B., & Slaymaker, V. (2012). The role of therapeutic alliance in substance use disorder treatment for young adults. *Journal of substance abuse treatment*, *43*(3), 344-51.

Walters, S. T., & Rotgers, F. (2012). *Treating substance abuse: Theory and technique* (3rd ed.). New York: Guilford Press.

Chapter 4: Summary

Overview of Chapter

In this concluding chapter, the reader will be re-oriented to the background involved in the development of the research studies, followed by a return to the conceptual framework and a summary of the findings in the two studies presented in this thesis. As a reminder, chapter two reported the systematic review, which examined substance use disorder (SUD)/addiction treatment interventions from the literature that leads to the highest treatment retention for emerging adults. Chapter three presented the qualitative study, which examined health care professionals (HCPs) perceptions on facilitators and barriers to retention of emerging adults in SUD programs. This is followed by recommendations for policy and practice and areas for future research and concludes with a final reflection.

Background of Studies

Development of Research Question and Objectives

Emerging adults (those between the ages of 18-25) have the highest rate of SUD, constitute more than 20% of SUD treatment cases, and are less likely to stay in treatment compared to other age groups (Adams, Morse, Choi, Watson, & Bride, 2017; Bergman, Kelly, Nargiso, & McKowen, 2016; Schuman-Olivier, Weiss, Hoeppner, Borodovsky, Albanese, 2014a). Collectively, this suggests there is a need to increase treatment retention within this population in an effort to help them recover from SUD.

Treatment retention is important because it correlates to a range of outcomes related to long term sobriety (Feelemyer, Des Jarlais, Arasteh, Abdul-Quader, & Hagan,

2013; Timko, Schultz, Cucciare, Vittorio & Garrison-Diehn, 2016). Improving retention in treatment for emerging adults with SUD will improve their quality of life (Feelemyer et al., 2013). Nevertheless, Smith (2017) identified a gap in the literature on how to improve outcomes and stressed that it should be a research priority. The majority of the literature either describes demographic differences between emerging adults and those age 26+ or examines interventions that lead to the greatest treatment retention in emerging adults (Adam et al., 2017; Carroll et al., 2006; Dayal & Balhara, 2017; Esposito-Smythers et al., 2014; Mason & Luckey., 2003; Morse and MacMaster., 2015; Schuman-Olivier et al, 2014a; Smith, Davis, Ureche & Dumas, 2016; Vo, Robbins, Westwood, Lezama & Fishman, 2016).

To address this gap, two complementary studies were designed and presented in this thesis with the overarching research question: what are the best options to improve treatment retention in emerging adults with SUD?

General Approach and Methods

The general approach and methods involved a two-part complementary research study focused on SUD in emerging adults. A systematic review was presented in chapter two. This chapter summarizes the literature on interventions leading to the highest treatment retention. This was done following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. As such, Medline, PsycInfo, CINAHL (all via EBSCO), and Embase were systematically searched for articles evaluating treatment interventions for emerging adults with SUD that leads to the highest treatment retention. The results of the systematic review informed the design and interview questions for the qualitative study, presented in chapter three.

Chapter three (qualitative study) explored perspectives of HCPs on facilitators and barriers leading to the highest treatment retention. Conducting this study followed the procedures for conducting phenomenological research, as referenced by Creswell and Poth (2018). Creswell and Poth (2018) describe Moustakas (1994) approach involving systematic steps in the data analysis procedure and guidelines for assembling the textural and structural descriptions.

Conceptual Framework

Through revisiting the life course conceptual framework, the reader can see where the findings of this thesis fit within the conceptual framework. Imenda (2014) states that once data are collected and analyzed, a framework is used as a mirror to check whether the findings agree with the framework or if there are any discrepancies. As mentioned, Arnett (2000) views emerging adults as their own distinct population and for the life course conceptual framework of emerging adults, characterizing emerging adulthood as a stage in the life course can explain social, cognitive, psychological, and brain development that occurs in this stage of life.

The findings that emerged from this thesis are consistent with the conceptual framework. Firstly, it highlights the importance of viewing emerging adults as a unique life stage separate from their older and younger counterparts. Secondly, it compassionately recognizes the fact that emerging adults’ unique developmental differences can influence various life trajectories such as SUDs.

The systematic review (chapter 2) highlighted that emerging adults require more supports compared to their older counterparts, as indicated by the lower retention rates demonstrated in the emerging adult population when given the same interventions

(Schuman-Olivier et al, 2014a). Although the systematic review didn't identify what exactly was missing, it aligns with the life course of emerging adults being separate from their older and younger counterparts.

The interpretive findings that emerged from the qualitative study also aligns with the conceptual framework. Participants in the qualitative study felt emerging adults are their own unique population with differing social, cognitive, and developmental differences. This is evidenced in the themes, specifically in the developmental theme. None of the participants felt that emerging adults do just as well as their older counterparts; and all held the view that as a group emerging adults are their own distinct developmental stage, which is aligned with the life course framework.

Summary of Findings

General Findings

Within the limitations of this research, the results offer a unique contribution to the field. This thesis set out to add to the literature regarding ways to improve treatment retention for emerging adults with SUD. As mentioned, the majority of the literature does not suggest ways to improve retention and are primarily American studies. The articles included in the systematic review (chapter 2) focus on treatment interventions leading to the greatest treatment retention for emerging adults with SUD. Policy makers and those who deliver treatment should consider implementing the interventions that lead to the greatest treatment retention, especially since retention is low in this population. More specifically, the systematic review identified that the highest treatment retention is reported to occur with interventions such as contingency management (CM) and/or cognitive behavioral therapy (CBT) for alcohol, cannabis, or SUD other than opioid use

disorder. For opioid use disorder, the greatest treatment retention is reported to occur with withdrawal management therapy paired with CBT. This finding is similar to interventions that lead to the highest treatment retention for all ages. Since retention is still lower in this population, the systematic review suggests emerging adults may be missing something despite receiving the full range of effective treatment.

The qualitative study (chapter 3) contributes to the knowledge gap by directly identifying facilitators and barriers for retention in treatment through the perspectives of HCPs that work closely with emerging adults in SUD programs. Consistent with the literature, the two SUD programs in this study demonstrate lower retention rates in emerging adults compared to those age 26+ (Program managers, Personal Communication, September 11 & September 25, 2018). The qualitative study identified facilitators and barriers for retention in treatment programs in four complementary themes: (1) the emerging adults' development, (2) their addiction and recovery, (3) the environment, and (4) SUD programming. From these findings, a number of policy recommendations can be made which focus on improving retention in treatment for emerging adults with SUD.

Some of the policy recommendations include tailored programming, flexible programming, increased staff and family education, improved care for emerging adults with opioid use disorder, suggestions for determining the best program environment for emerging adults, implementing after-care, and increasing HCP involvement in program design. Policy makers and those who design treatment could avail of this information and recommendations in designing and delivering their programs and practice. These policy

recommendations are discussed further in the Policy Recommendations section and in Table 4.1.

Detailed Findings

This section begins with an overview of the similarities and differences between the two studies, and the following section will discuss these examples in terms of recommendations for improvement.

Tailored programming.

Firstly, a topic that frequently came up in both the systematic review and the qualitative study was the concept of tailored treatment. The studies in the systematic review that lead to the greatest treatment retention were those that tailored their program to the unique needs of the emerging adult. For example, Schuman-Olivier et al. (2014b) reported that their program is designed to be as conductive as possible to the needs of emerging adults. The participants in the qualitative study acknowledged the unique differences of the emerging adult and felt facilitators to retention involves a program that is tailored to the unique needs of emerging adults.

Flexible programming.

A topic that was not identified in the systematic review but discussed in the interviews was the concept around flexible programming to benefit the unique needs of the emerging adults. Participants in the qualitative study were frustrated with the lack of flexibility and felt the current strict programming rules were a barrier to retention for emerging adults. Some areas that lead to frustration involved the strict length of programming in the treatment program, the strict design of the client’s days (all day group therapy, and very little informal time with clients), and strict rules around no-

smoking. Another issue was the concept of “one size fits all”, whereas the program only offers one stream of care and expects to be inclusive to all clients. For example, clients come in at different points in their recovery, with some having prior treatment experience and others come to the centers as their first experience in recovery. HCPs felt it was more common for emerging adults to come to the program with no pre-treatment experience, and as a result, this presents a barrier to retention because it takes them longer to adjust.

Staff and family education.

The importance of having a competently educated staff in the areas of emerging adulthood development and addiction was present in both studies. Firstly, a study in the systematic review that had high treatment retention reported that all their staff was required to take university-level courses on adolescents and young adults (Schuman-Olivier et al., 2014b). Similarly, the participants in this qualitative study felt it was important for staff to have a great understanding of mental health and addictions. For example, a participant felt that having less than five years’ experience in mental health and addictions is a barrier to the success of the program. Those with less experience may have a lack of understanding of SUD, so other issues could emerge such as struggles building rapport with clients, or stigma, which is a barrier to retention. A lack of understanding from the family members is also a barrier to emerging adults’ retention because it leads to stigmatization and ultimately affects an emerging adult’s recovery.

Combination therapy for opioid use disorder.

Both the systematic review and qualitative study discussed the greatest success for clients with opioid use disorder involves a combination of behavioral therapy and pharmacotherapy. Studies in the systematic review for opioid use disorder all used a

combination of both behavioral therapy and pharmacotherapy. Retention rates were highest when paired with gold standard behavioral therapy such as CBT (Romero-Gonzalez, Shahanaghi, DiGirolamo, & Gonzalez, 2017; Schuman-Olivier et al., 2014b). Similarly, the interviewees in the qualitative study discussed that emerging adults often cannot handle the pain of going through withdrawal and felt withdrawal management is an important component that leads to treatment retention. Withdrawal management aids in reducing the severity of withdrawal symptoms and could be accessed through medical supervision and/or pharmacological treatment options (World Health Organization, 2009).

SUD programming environment.

While the systematic review suggested that treatment retention may be improved by keeping the environment to only emerging adults, participants in the qualitative study felt too many emerging adults in the program environment is a barrier to retention and felt a mixed balance of the ages is optimal. Notwithstanding the importance of tailoring the programs relevant to emerging adults, the participants felt balancing the ages reduces issues such as chaotic and dramatic environment or the formation of romantic relationships, therefore, advocated a mix of ages within treatment.

After-care.

The concept around after-care was not mentioned in the systematic review studies but was frequently discussed during the qualitative interviews. After-care is defined as informal or formal supports that help to reinforce and continue the progress made in residential treatment. Examples include family and friends, self-help groups, and religious or spiritual activities (informal) and after-care substance abuse services (formal) (Manuel

et al., 2017). The participants felt emerging adults need to have strong supports in place when leaving the treatment program to ensure they stay on a strong path to recovery.

HCPs frustration in program design.

Participants in the qualitative study also expressed frustrations related to the program design (e.g. clients not being allowed to smoke, structure, length of the program, etc.). The participants were frustrated because they have to work within the confines of the program rules and felt powerless to affect the changes that would benefit their clients. HCPs expressed a great desire to want to help but acknowledged factors exist relating to program design rules/policy that are barriers to letting them help in the best way possible.

Future Recommendations

Overall, both studies suggest interventions that may lead to improvements in retention for emerging adults in SUD treatment programs. These findings add to the literature around the best treatment options for emerging adults. Additionally, the results add to the literature with recommendations in areas related to program design policy, those who deliver treatment, and in the area of future research. The following section suggests recommendations for policy and research based on the above findings. Those who design SUD programs should be made aware of the most effective components to include in a program and should avail of the information in this thesis.

Policy Recommendations

A number of policy recommendations emerged from this thesis. The following section offers suggestions for improvement. Recommendations are based on results from the two studies or based on the literature. Table 4.1 below summarizes the policy recommendations, and the following subsections describe each in detail.

Table 4.1

Policy Recommendations

Policy Recommendation	Suggestion of how to implement recommendation
Tailored Programming	- Add interactive and fun web-based activities - Add art room, music room, gym - Tailored group therapy (i.e.: return to school as opposed to standard return to work)
Flexible Programming	- Altering structure of average day as opposed to all day group therapy sessions - More informal conversations - Flexible length - Flexibility for patients at different stages of recovery - Flexibility around smoking rules
Increase Staff and Family Education	- Increase education through motivational interviewing and communicating positive stories of people with SUDs.
Improve care for emerging adults with Opioid Use Disorder	- Combining behavioral therapy in conjunction with pharmacotherapy
Determine Best SUD Program Environment for Emerging Adult's	- Conducting research to determine what environment is best for emerging adults
Implementing After-care	- Ensuring emerging adults return to positive post-discharge environments
Reduce HCPs Frustration in Program Design	- Involving HCPs in the design of the programs

Recommendation for Tailored Programming

First, both studies suggest that tailoring treatment to the unique needs of the emerging adult facilitates retention in treatment. HCPs felt emerging adults should have tailored programming for their unique needs. Examples were discussed of how treatment could be tailored towards the emerging adult and included specific things such as the involvement of interactive and fun web-based activities. In addition, a study in the systematic review that had high retention rates discussed the importance of their program being as tailored as possible to the unique needs of the emerging adult. Their program

involved using components such as an art room, music room, and gym (Schuman-Olivier et al., 2014b). The participants in the qualitative study discussed these extra-curricular components as factors that emerging adults enjoy. In addition, tailoring the group therapy to the emerging adult would be beneficial. For example, group therapy such as “return to work” may not apply to emerging adults and participants felt tailoring it to things such as “return to school” would be more appropriate. Future programs should implement these components into programs to improve retention for emerging adults.

Recommendation for Flexible Programming

A systematic review on mental health and SUD residential programs for any age suggests programs should be flexible, supportive and low-intensity (Brunette, Mueser, & Drake, 2004). In addition, programs that were offered for longer or unlimited periods had better outcomes than programs offered for shorter periods (around three months) (Brunette, Mueser, & Drake, 2004). The qualitative study speaks highly to the benefits of a flexible program. Some examples include altering the structure of the average day in the program as opposed to all day group therapy. For example, participants felt the full day back-to-back group therapy is a barrier, and a recommendation could be having more informal conversations, the involvement of more recreational activities, or more web-based computer activities. Programs should be flexible with length if a client needs more time to recover, have flexible days for clients that may not succeed with all day group therapy, and should be flexible to account for clients coming in at different stages of recovery (e.g. no pre-treatment versus pre-treatment experience). However, one HCP acknowledged that it is unethical to turn away clients without pre-treatment and therefore a program should ultimately account for clients that come in with less experience by

potentially having separate streams for those who are more experienced and one for those that come in completely new to a program.

HCPs acknowledged a number of emerging adults drop out due to strict no smoking policy. A participant mentioned the potential of a smoking area or taking clients on walks to allow them to smoke, which may ultimately motivate clients to complete their program. Some programs operate with less stringent rules arguing the mandate to quit tobacco use during treatment for other SUDs adds stress to patients and interferes with treatment success (Muilenburg et al., 2016). Interestingly, a study by Callaghan et al. (2007) found smoking bans do not appear to compromise the treatment retention rates of smokers in comparison to non-smokers. Future research would be helpful to investigate the correlation between smoking bans and retention in emerging adults and to potentially consider implementing lenient rules surrounding tobacco use.

Recommendation for Staff and Family Education

An important concept discussed in the qualitative study involved the understanding of SUD and its role in recovery. Participants stated it is important for those who deliver treatment to have a great understanding of SUD and also an understanding of emerging adult development and their unique needs. This will aid in reducing any issues related to stigma and help in rapport building. This is also supported by the systematic review as one of the studies that had the greatest treatment retention discussed the importance of staff education in emerging adult's development (Schuman-Olivier et al., 2014b). In addition, among adults in SUD programs, a stronger alliance/rapport has been linked to greater engagement, retention, and early improvements in substance use and distress (Urbanoski, Kelly, Hoeppner, & Slaymaker, 2011).

Additionally, the qualitative study discussed a family's lack of understanding of SUD is a barrier to recovery. A lack of understanding leads to stigmatizing behavior. One systematic review suggested that effective strategies for reducing stigma in the community or larger social groups included motivational interviewing and communicating positive stories of people with SUD (Livingston, Milne, Fang & Amari, 2011). Therefore, perhaps SUD programming could offer these two components at family therapy. Another alternative could be to include training opportunities to reduce stigmatizing behaviour. In conclusion, more emphasis should be placed on providing additional education and resources to those who work with SUD clients and for family members of those with SUD.

Recommendation for Emerging Adults with Opioid Use Disorder

Both the systematic review and qualitative study discussed the greatest success for clients with opioid use disorder involves a combination of behavioral therapy and pharmacotherapy such as buprenorphine, buprenorphine-naloxone (Suboxone), or naltrexone. Emerging adults with opioid use disorder should be given pharmacotherapy for withdrawal symptoms in combination with behavioral therapy. The systematic review suggests greatest treatment retention occurs when behavioral therapy is CBT.

Recommendation for SUD Programming Environment

The systematic review seems to suggest that keeping the environment to only emerging adults leads to greatest treatment retention. In contrast to this finding, the participants in the qualitative study felt a mixed balance of the ages is a facilitator to treatment retention. The participants felt balancing the ages reduces issues such as chaotic and dramatic environment or the formation of romantic relationships, and therefore

advocated a mix of ages within treatment. Future research could explore the perspectives of emerging adults' experiences in mixed ages versus all emerging adults.

Recommendation for Implementing After-care

The HCPs expressed the importance of having after-care supports in place post-discharge. If an emerging adult leaves and returns to the same environment (of the same people, places, and things) that potentially promote SUD, it will jeopardize the chance of a successful recovery. Recommendations in the literature suggest including access to stable housing and employment, specific after-care services and positive support networks, expanded discharge planning services, transitional assistance, and funding to help any gaps in service delivery or to meet basic needs (Manuel et al., 2017). Positive transitions from residential treatment back into the community and flexible treatment programming will facilitate better links/connections to community resources and ultimately help with the success of recovery (Manuel et al., 2017).

Recommendation for Involving HCPs in Program Design

A final policy recommendation involves including the HCPs in the development of the programming. Evidentially, they have a lot of experience with the clients and are well aware of the issues that emerge in the program. The HCPs appeared to be very frustrated when discussing the barriers, and many of them relate these barriers to the program itself and the fact they can only help within the means of the program design. The literature points to the promise of involving HCPs in program designs, such as nurses due to their unique relationship to the patients/clients (Kunaviktikul, 2014). Future programs should consider involving HCPs in the design of the programs.

Cost-Effectiveness of Recommendations

Although the aforementioned recommendations are all promising, dissemination of any new intervention into health systems requires investment in clinician training and system implementation (Slade et al., 2017). For example, in a study examining the cost-effectiveness of tailored PTSD treatment to standard treatment, the cost was six times higher in the tailored treatment (Slade et al., 2017). Although the cost of changing a program may be higher, a more feasible preliminary option could be to conduct a pilot study or a cost-effective analysis of tailored programming in SUDs to standard SUD treatment program to gauge feasibility.

Future Research Directions

New directions for the systematic review could perhaps involve expanding the search in other languages. Obtaining global literature can help generalize the findings related to the literature. New directions for the qualitative study could involve expanding to other SUD programs across the province and/or country. The results of the qualitative study are not intended to be generalized but rather to describe the specific phenomenon. Expanding the study to other regions will be an interesting way to see where the two SUD programs in this study fit into the larger schema of SUD programs.

Questions for Future Research

Some questions for future research include:

1. Does a tailored approach lead to higher treatment retention for emerging adults with SUD?
2. Is the concept of engagement a better outcome measure for long term sobriety compared to retention in treatment?

3. Does keeping SUD program environment to only emerging adults increase treatment retention?
4. What do emerging adults perceive to be the facilitators and barriers to retention while attending residential SUD programs?
5. Does the addition of components such as pre-treatment and after-care result in better long-term outcomes compared to no pre-treatment and after-care?
6. Does allowing clients to smoke tobacco increases treatment retention compared to programs that have a no smoking rule?
7. What is the optimal length a program should be that leads to the greatest treatment retention and ultimately long-term sobriety?

Strengths and Limitations

Identifying the strengths and limitations of the thesis can provide insight into future directions.

Strengths

This thesis had a number of strengths that could contribute to the field of emerging adults SUD treatment. The biggest strength is the research demand for this topic and the uniqueness of the two studies, to the best of my knowledge, they are the first of their kind. Improving retention in treatment for emerging adults is a research priority, and these two studies collectively offer unique suggestions for improvement. A second strength is exploring the concept of improving retention in treatment for emerging adults through two different paradigms. Using a positivist and interpretivist paradigm offers different insights into the same question. Both are complementary and helped contribute

to the knowledge generated in this thesis. The primary investigator was an emerging adult which offered unique insight and understanding of this topic. Also, the research team that designed the study composed of experienced professionals in the field of SUD, academia, and qualitative research.

The systematic review had a number of specific strengths. First, it focused on just 18-25-year old's but the literature for this age range is very limited. There were over 5000 initial articles in the search but only 10 involved a specific focus on emerging adults with SUD. Most studies focused on emerging adults with problematic substance use patterns without the disorder.

For the qualitative study, the involvement of HCPs is a unique and understudied perspective, as most studies usually focus on the client's perspective. Another strength of using HCPs is the fact that they work in direct contact with their clients and health care systems, so their perspectives could be very practical and beneficial.

Limitations

This thesis considered retention as a surrogate marker of success in SUD programs since it is related to a range of positive outcomes related to long term sobriety such as a reduced drug use, a higher social functioning, and a higher quality of life (Feelemyer et al., 2013; Timko et al., 2016). A limitation of this thesis is not considering engagement as a measure of success, since other studies suggest engagement in treatment is a more practical measure of success (Garnick et al., 2012). The Washington Circle of Engagement states that initiation and engagement in treatment must first occur in for a patient to have the greatest treatment retention (Garnick et al., 2012).

Specific limitations related to the systematic review includes having only English language studies, it is unknown if there are other relevant publications in other languages. Another limitation is related to generalizability, as the studies involve different SUDs, different interventions, and most were from the United States. Another limitation involved grouping some of the samples together such as mandated/in-patient/outpatient, which may indirectly influence retention rates.

A specific limitation related to the qualitative study includes that we grouped the residential treatment and residential detoxification programs, which could be a limitation. Although the common themes remained the same, the programs operate different mandates with one focused on treatment and the other on detoxification. Any major differences between the centers were reported separately, but the common themes were similar

Implications

It is hoped that the results of this thesis can be used to inform and advise knowledge users (i.e., clinicians) and decision makers (i.e., those responsible for designing and delivering treatment programs for emerging adults) of options to improve treatment retention in emerging adults with SUD. Additionally, our plan is to have knowledge translation in the workplace, become involved in provincial committees either as a member or to provide resources, present at local/national conferences, and submit letters to the editors or newsletters. This can help inform and improve practices in this province and provide information about how this province fits into the larger scheme of SUD services across the country. Also, ensuring emerging adults are receiving the best

possible treatment will improve their lives by enhancing the likelihood of long term sobriety, increasing their quality of life, and reducing the economic burden of SUDs.

Conclusion

This thesis presents the results of two studies focused on improving treatment retention for emerging adults with SUD. The systematic review identified the treatment interventions that lead to the highest treatment retention involves CM and/or CBT for alcohol and/ or cannabis use disorders. For opioid use disorder, the greatest treatment retention was reported to occur with ORT paired with CBT. This finding is similar in all ages, and since retention in treatment is still lower in emerging adults, this suggests something may be missing. Policy and program implications of the systematic review suggest a benefit towards tailoring programs to the unique need of the emerging adult.

The qualitative study reported four themes related to facilitators and barriers to treatment retention of emerging adults: (1) the emerging adults' development, (2) their addiction and recovery, (3) the environment, and (4) SUD programming. These findings have implications in policy and program planning such as a recommendation of ensuring, addressing, and acknowledging the differing needs and behavioral differences of the emerging adult through tailored treatment or flexible programming. Increasing the understanding and lack of stigma about SUD and understanding and addressing the reason emerging adults are seeking treatment in SUD programming is important. Further, balancing the environment such as ensuring there is a balance between age cohorts and ensure that emerging adults return to positive environments post-discharge. Finally, advocating for clients to seek pre-treatment, or a flexible program to adjust and for clients

that come in without pre-treatment and ensuring that appropriate after-care is in place post-discharge.

Overall, the results of this thesis demonstrated that emerging adults with SUD are a unique population that requires more support and understanding as there are many factors that make them more difficult to treat. These results have implications in policy planning for those who design SUD programming, implications for those who deliver treatment to emerging adults with SUD, and implications for future research.

Final Reflection

I submit this master's thesis with a sense of great personal accomplishment and a wealth of new knowledge. Throughout the process of this thesis, I gained a huge respect for those who conduct systematic reviews and qualitative research. Conducting this thesis was both challenging and rewarding. Initially, I was nervous about conducting qualitative research. I knew that I had the skills from my course work, and the background for the topic, but as someone that comes from a neuroscience background, the majority of what I knew was quantitative research, so, I was worried. However, the more interviews I did, the more comfortable I got with qualitative research. The analysis component felt more enjoyable than academic work. I was so immersed in the data and discovering new themes was so rewarding. By the end of the qualitative study, I found myself wanting to do this for the rest of my life and I am now looking into Ph.D. programs with a qualitative component. I think another aspect that made this work so enjoyable was my passion for helping those with SUDs. Moustakas (1994) states that in phenomenology, a researcher has a personal interest in what they seek to know, and a researcher is intimately connected with the phenomenon.

Another challenge was being so immersed in a topic that brings about such difficulty in the lives of those suffering. This research draws attention to troubling statistics on emerging adults with SUD. As an emerging adult, I acknowledge this can be a challenging period of life. I relate to all of Arnett's (2000) five features, and I feel blessed to be where I am today. Unfortunately, it was emotionally challenging to research and read about other emerging adults that struggle so deeply. This challenge motivated me because I want to make a difference in the lives of emerging adults and hopefully work towards improving treatment to help them overcome SUDs and ultimately see the beauty and possibilities of this life stage. Also, I can help make a difference in the lives of those who struggle with SUD, which is one of my biggest passions.

This research was rewarding because I have great hope that my thesis findings can be a small piece of contribution to this evolving field. I commend and look up to the HCPs that dedicate their lives to helping this population, and I look forward to my future contributions to this field. I conclude this thesis with even more compassion for those who struggle in emerging adulthood and those who have addiction issues.

References

Adams, S., Morse, S., Choi, S., Watson, C., & Bride, B. (2017). Substance use and mental health treatment retention among young adults. *Global Journal Of Addiction & Rehabilitation Medicine, 1(3),* 10.19080/GJARM.2017.01.555564

All-Party Committee on Mental Health and Addictions - Health.gov.nl (2018). Retrieved from https://www.health.gov.nl.ca/health/all_party_committe_report.pdf

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469-480. doi: 10.1037//0003-066x.55.5.469

Bergman, B., Kelly, J., Nargiso, J., & McKowen, J. (2016). "The age of feeling in-between": addressing challenges in the treatment of emerging adults with substance use disorders. *Cognitive And Behavioral Practice*, *23*(3), 270-288. doi: 10.1016/j.cbpra.2015.09.008

Brunette, M., Mueser, K., & Drake, R. (2004). A review of research on residential programs for people with severe mental illness and co-occurring substance use disorders. *Drug And Alcohol Review*, *23*(4), 471-481. doi: 10.1080/09595230412331324590

Callaghan, R., Brewster, J., Johnson, J., Taylor, L., Beach, G., & Lentz, T. (2007). Do total smoking bans affect the recruitment and retention of adolescents in inpatient substance abuse treatment programs?. *Journal Of Substance Abuse Treatment*, *33*(3), 279-285. doi: 10.1016/j.jsat.2006.12.008

Centre for Addiction and Mental Health (CAMH) Mental Illness and Addictions: Facts and Statistics. (2018). Retrieved from https://www.camh.ca/en/driving-change/thecrisis-is-real/mental-health-statistics

Carroll, K., Easton, C., Nich, C., Hunkele, K., Neavins, T., & Sinha, R. et al. (2006). The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. *Journal Of Consulting And Clinical Psychology*, *74*(5), 955-966. doi: 10.1037/0022-006x.74.5.955

Clinical Guidelines for Withdrawal Management and Treatment of Drug Dependence in Closed Settings. Geneva: World Health Organization; 2009.4, Withdrawal Management. Available from: https://www.ncbi.nlm.nih.gov/books/NBK310652/

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches*.

Davis, J., Smith, D., & Briley, D. (2017). Substance use prevention and treatment outcomes for emerging adults in non-college settings: A meta-analysis. *Psychology Of Addictive Behaviors*, *31*(3), 242-254. doi: 10.1037/adb0000267

Dayal, P., & Balhara, Y. (2017). A naturalistic study of predictors of retention in treatment among emerging adults entering first buprenorphine maintenance treatment for opioid use disorders. *Journal Of Substance Abuse Treatment*, *80*, 1-5. doi: 10.1016/j.jsat.2017.06.004

Esposito-Smythers, C., Brown, L., Wolff, J., Xu, J., Thornton, S., & Tidey, J. (2014). Substance abuse treatment for HIV infected young people: An open pilot trial. *Journal Of Substance Abuse Treatment*, *46*(2), 244-250. doi: 10.1016/j.jsat.2013.07.008

Feelemyer, J., Des Jarlais, D., Arasteh, K., Abdul-Quader, A., & Hagan, H. (2013). Retention of participants in medication-assisted programs in low- and middle-income countries: an international systematic review. *Addiction*, *109*(1), 20-32. doi: 10.1111/add.12303

Garnick, D. W., Lee, M. T., O'Brien, P. L., Panas, L., Ritter, G. A., Acevedo, A., … Godley, M. D. (2012). The Washington circle engagement performance measures' association with adolescent treatment outcomes. *Drug and alcohol dependence*, *124*(3), 250–258. doi:10.1016/j.drugalcdep.2012.01.011

Imenda S. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks?. *Journal of Social Sciences, 38*(2), 185-195, DOI: 10.1080/09718923.2014.11893249

Kunaviktikul, W. (2014). Moving towards the greater involvement of nurses in policy development. *International Nursing Review*. *61*(1), 1-2. https://doi.org/10.1111/inr.12092

Livingston, J., Milne, T., Fang, M., & Amari, E. (2011). The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review. *Addiction*, *107*(1), 39-50. doi: 10.1111/j.1360-0443.2011.03601.x

Manuel, J., Yuan, Y., Herman, D., Svikis, D., Nichols, O., Palmer, E., & Deren, S. (2017). Barriers and facilitators to successful transition from long-term residential substance abuse treatment. *Journal Of Substance Abuse Treatment*, *74*, 16-22. doi: 10.1016/j.jsat.2016.12.001

Mason, M., & Luckey, B. (2003). Young adults in alcohol-other drug treatment. *Alcoholism Treatment Quarterly, 21*(1), 17-32. https://doi.org/10.1300/J020v21n01_02

Morse, S., & MacMaster, S. (2015). Characteristics and outcomes of young adult opiate users receiving residential substance abuse treatment. *Journal Of Evidence-Informed Social Work*, *12*(6), 556-566. http://dx.doi.org/10.1080/15433714.2013.872071

Muilenburg, J. L., Laschober, T. C., Eby, L. T., & Moore, N. D. (2016). Prevalence of and factors related to tobacco ban implementation in substance use disorder treatment programs. *Administration and policy in mental health*, *43*(2), 241–249. doi:10.1007/s10488-015-0636-y

Moustakas, C. E. (1994). *Phenomenological research methods*. Thousand Oaks, Calif: SAGE Publications.

Romero-Gonzalez, M., Shahanaghi, A., DiGirolamo, G., & Gonzalez, G. (2017). Buprenorphine-naloxone treatment responses differ between young adults with heroin and prescription opioid use disorders. *The American Journal On Addictions*, *26*(8), 838-844. doi: 10.1111/ajad.12641

Schuman-Olivier, Z., Weiss, R. D., Hoeppner, B. B., Borodovsky, J., & Albanese, M. J. (2014a). Emerging adult age status predicts poor buprenorphine treatment retention. *Journal of Substance Abuse Treatment*, *47*(3), 202–212. http://doi.org/10.1016/j.jsat.2014.04.006

Schuman-Olivier, Z., Claire Greene, M., Bergman, B., & Kelly, J. (2014b). Is residential treatment effective for opioid use disorders? A longitudinal comparison of treatment outcomes among opioid dependent, opioid misusing, and non-opioid using emerging adults with substance use disorder. *Drug And Alcohol Dependence*, *144*, 178-185. doi: 10.1016/j.drugalcdep.2014.09.009

Smith, D. C. (2017). Emerging adults and substance use disorder treatment: Developmental considerations and innovative approaches. New York, NY: Oxford University Press.

Smith, D., Davis, J., Ureche, D., & Dumas, T. (2016). Six month outcomes of a peer-enhanced community reinforcement approach for emerging adults with substance misuse: A preliminary study. *Journal Of Substance Abuse Treatment*, *61*, 66-73. doi: 10.1016/j.jsat.2015.09.002

Strategy for Patient-Oriented Research - CIHR. (2018). Retrieved from http://www.cihr-irsc.gc.ca/e/41204.html

Timko, C., Schultz, N., Cucciare, M., Vittorio, L., & Garrison-Diehn, C. (2016). Retention in medication-assisted treatment for opiate dependence: A systematic review. *Journal Of Addictive Diseases*, *35*(1), 22-35. doi: 10.1080/10550887.2016.1100960.

Urbanoski, K. A., Kelly, J. F., Hoeppner, B. B., & Slaymaker, V. (2012). The role of therapeutic alliance in substance use disorder treatment for young adults. *Journal of substance abuse treatment*, *43*(3), 344-51.

Vo, H., Robbins, E., Westwood, M., Lezama, D., & Fishman, M. (2016). Relapse prevention medications in community treatment for young adults with opioid addiction. *Substance Abuse*, *37*(3), 392-397. doi: 10.1080/08897077.2016.1143435

Full List of References

Adams, S. H., Knopf, D. K., & Park, M. J. (2014). Prevalence and treatment of mental health and substance use problems in the early emerging adult years in the united states: Findings from the 2010 national survey on drug use and health. *Emerging Adulthood, 2*(3), 163-172. doi:10.1177/2167696813513563

Adams, S., Morse, S., Choi, S., Watson, C., & Bride, B. (2017). Substance use and mental health treatment retention among young adults. *Global Journal Of Addiction & Rehabilitation Medicine, 1(3),* 10.19080/GJARM.2017.01.555564

All-Party Committee on Mental Health and Addictions - Health.gov.nl (2018). Retrieved from https://www.health.gov.nl.ca/health/all_party_committe_report.pdf

American Addiction Centers - Addiction Statistics. (2019). Retrieved from https://americanaddictioncenters.org/rehab-guide/addiction-statistics

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing. https://doi.org/10.1176/appi.books.9780890425596

Anti, S., & Kasim, H. (2015). Qualitative and quantitative research paradigms in business research: A philosophical reflection. *European Journal of Business and Management, 7(3),* 217-225

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., . . . Sharma, S. (2013). Maturation of the adolescent brain. *Neuropsychiatric Disease and Treatment, 9*, 449-461. doi:10.2147/NDT.S39776

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469-480. doi: 10.1037//0003-066x.55.5.469

Arnett, J. (2015). *Emerging adulthood*. New York: Oxford Univ. Press.

Bergman, B., Kelly, J., Nargiso, J., & McKowen, J. (2016). "The age of feeling in-between": addressing challenges in the treatment of emerging adults with substance use disorders. *Cognitive And Behavioral Practice*, *23*(3), 270-288. doi: 10.1016/j.cbpra.2015.09.008

Brunette, M., Mueser, K., & Drake, R. (2004). A review of research on residential programs for people with severe mental illness and co-occurring substance use disorders. *Drug And Alcohol Review*, *23*(4), 471-481. doi: 10.1080/09595230412331324590

Callaghan, R., Brewster, J., Johnson, J., Taylor, L., Beach, G., & Lentz, T. (2007). Do total smoking bans affect the recruitment and retention of adolescents in inpatient substance abuse treatment programs?. *Journal Of Substance Abuse Treatment*, *33*(3), 279-285. doi: 10.1016/j.jsat.2006.12.008

Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, December 2014.

Carroll, K. M., Easton, C. J., Nich, C., Hunkele, K. A., Neavins, T. M., Sinha, R., . . . Rounsaville, B. J. (2006). The use of contingency management and Motivational/Skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology, 74*(5), 955-966. doi:10.1037/0022-006X.74.5.955

Carter, R. E., Haynes, L. F., Back, S. E., Herrin, A. E., Brady, K. T., Leimberger, J. D., Sonne, S. C., Hubbard, R. L., … Liepman, M. R. (2008). Improving the transition from residential to outpatient addiction treatment: gender differences in response to supportive telephone calls. *The American journal of drug and alcohol abuse*, *34*(1), 47-59.

Casey, B. J., Ph.D., & Jones, R. M., M.S. (2010). Neurobiology of the adolescent brain and behavior: Implications for substance use disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 49*(12), 1189-1201. doi:10.1016/j.jaac.2010.08.017

Center for Substance Abuse Treatment. Enhancing Motivation for Change in Substance Abuse Treatment. Treatment Improvement Protocol (TIP) Series, No. 35. HHS Publication No. (SMA) 12-4212. Rockville, MD: Substance Abuse and Mental Health Services Administration, 1999.

Centre for Addiction and Mental Health (CAMH) Mental Illness and Addictions: Facts and Statistics. (2018). Retrieved from https://www.camh.ca/en/driving-change/thecrisis-is-real/mental-health-statistics

Choi, S., Adams, S. M., Morse, S. A., & MacMaster, S. (2015). Gender differences in treatment retention among individuals with co-occurring substance abuse and mental health disorders. *Substance use & Misuse, 50*(5), 653-653.

Clinical Guidelines for Withdrawal Management and Treatment of Drug Dependence in Closed Settings. Geneva: World Health Organization; 2009.4, Withdrawal Management. Available from: https://www.ncbi.nlm.nih.gov/books/NBK310652/

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches*.

Davis, J., Smith, D., & Briley, D. (2017). Substance use prevention and treatment outcomes for emerging adults in non-college settings: A meta-analysis. *Psychology Of Addictive Behaviors*, *31*(3), 242-254. doi: 10.1037/adb0000267

Davis, M., Sheidow, A., Zajac, K., & McCart, M. (2012). Prevalence and impact of substance use among emerging adults with serious mental health conditions. *Psychiatric Rehabilitation Journal*, *35*(3), 235-243. doi: 10.2975/35.3.2012.235.243

Dayal, P., & Balhara, Y. P. S. (2017). A naturalistic study of predictors of retention in treatment among emerging adults entering first buprenorphine maintenance treatment for opioid use disorders. *Journal of Substance Abuse Treatment, 80*, 1-5. doi:10.1016/j.jsat.2017.06.004

DiClemente, C. C. (1999). Motivation for change: Implications for substance abuse treatment. *Psychological Science, 10*(3), 209-213. doi:10.1111/1467-9280.00137

DiClemente, C. C., Bellino, L. E., & Neavins, T. M. (1999). Motivation for change and alcoholism treatment. *Alcohol Research & Health : The Journal of the National Institute on Alcohol Abuse and Alcoholism, 23*(2), 86.

Dunne, T., Bishop, L., Avery, S., & Darcy, Stephen. (2017). A review of effective youth engagement strategies for mental health and substance use interventions. *Journal of Adolescent Health, 60*(5), 487-512. doi:10.1016/j.jadohealth.2016.11.019

Dutra, L., Stathopoulou, G., Basden, S., Leyro, T., Powers, M., & Otto, M. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal Of Psychiatry*, *165*(2), 179-187. doi: 10.1176/appi.ajp.2007.06111851

Elswick, A., Fallin-Bennett, A., Ashford, K., & Werner-Wilson, R. (2018). Emerging adults and recovery capital. *Journal Of Addictions Nursing*, *29*(2), 78-83. doi: 10.1097/jan.0000000000000218

Esposito-Smythers, C., Brown, L., Wolff, J., Xu, J., Thornton, S., & Tidey, J. (2014). Substance abuse treatment for HIV infected young people: An open pilot trial. *Journal Of Substance Abuse Treatment*, *46*(2), 244-250. doi: 10.1016/j.jsat.2013.07.008

Feelemyer, J., Des Jarlais, D., Arasteh, K., Abdul-Quader, A., & Hagan, H. (2013). Retention of participants in medication-assisted programs in low- and middle-income countries: an international systematic review. *Addiction*, *109*(1), 20-32. doi: 10.1111/add.12303

French, M. T., Popovici, I., & Tapsell, L. (2008). The economic costs of substance abuse treatment: Updated estimates and cost bands for program assessment and reimbursement. *Journal of Substance Abuse Treatment, 35*(4), 462-469. doi:10.1016/j.jsat.2007.12.008

Garnick, D. W., Lee, M. T., O'Brien, P. L., Panas, L., Ritter, G. A., Acevedo, A., … Godley, M. D. (2012). The Washington circle engagement performance measures' association with adolescent treatment outcomes. *Drug and alcohol dependence*, *124*(3), 250–258. doi:10.1016/j.drugalcdep.2012.01.011

Gogel, L. P., Cavaleri, M. A., Gardin II, J. G., & Wisdom, J. P. (2011). Retention and ongoing participation in residential substance abuse treatment: Perspectives from adolescents, parents and staff on the treatment process. *The Journal of Behavioral Health Services & Research, 38*(4), 488-496. doi:10.1007/s11414-010-9226-7

Gonzalez, G., DiGirolamo, G., Romero-Gonzalez, M., Smelson, D., Ziedonis, D., & Kolodziej, M. (2015). Memantine improves buprenorphine/naloxone treatment for opioid dependent young adults. *Drug and Alcohol Dependence, 156*, 243-253. doi:10.1016/j.drugalcdep.2015.09.020

Government of Canada. (2019). Retrieved from https://www.canada.ca/content/dam/hc-sc/documents/services/substance-use/problematic-prescription-drug-use/opioids/responding-canada-opioid-crisis/federal-actions/federal-actions-overview.pdf

Government of Newfoundland and Labrador Health and Community Services: The Personal Health Information Act. (2019). Retrieved from https://www.health.gov.nl.ca/health/phia/

Guarino, H. M., Marsch, L. A., Campbell, W. S., III, Gargano, S. P., Haller, D. L., & Solhkhah, R. (2009). Methadone maintenance treatment for youth: Experiences of clients, staff, and parents. *Substance use & Misuse, 44*(14), 1979-1989. doi:10.3109/10826080802494800

Halfon, N., Forrest, C. B., Lerner, R. M., & Faustman, E. M. (2018). *Handbook of life course health development*. Cham: Springer. doi:10.1007/978-3-319-47143-3

Helgeson, V., Reynolds, K., Snyder, P., Palladino, D., Becker, D., Siminerio, L., & Escobar, O. (2013). Characterizing the transition from paediatric to adult care among emerging adults with Type 1 diabetes. *Diabetic Medicine*, *30*(5), 610-615. doi: 10.1111/dme.12067

Henin, A., & Berman, N. (2016). The promise and peril of emerging adulthood: introduction to the special issue. *Cognitive And Behavioral Practice*, *23*(3), 263-269. Doi: 10.1016/j.cbpra.2016.05.005

Hser, Y., Longshore, D., & Anglin, M. D. (2007). The life course perspective on drug use: A conceptual framework for understanding drug use trajectories. *Evaluation Review, 31*(6), 515-547. doi:10.1177/0193841X07307316

Hutchinson, E. D. (2019). *Dimensions of Human Behavior* (6th ed.). Thousand Oakes CA, Sage.

Imenda S. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks?. *Journal of Social Sciences, 38*(2), 185-195, DOI: 10.1080/09718923.2014.11893249

Jabareen, Y. (2009). Building a conceptual framework: Philosophy, definitions, and procedure. *International Journal of Qualitative Methods, 8*(4), 49-62. doi:10.1177/160940690900800406

Jones, Q., Johnston, B., Biola, H., Gomez, S., & Crowder, C. (2018). Implementing standardized substance use disorder screening in primary care. *JAAPA: official journal of the American Academy of Physician Assistants, 31(10),* 42-45.

Kern-Godal, A., Arnevik, E. A., Walderhaug, E., & Ravndal, E. (2015). Substance use disorder treatment retention and completion: A prospective study of horse-assisted therapy (HAT) for young adults. *Addiction Science & Clinical Practice, 10*(1), 21. doi:10.1186/s13722-015-0043-4

Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of Addiction. *Neuropsychopharmacology*, *35*(1), 217–238. http://doi.org/10.1038/npp.2009.110

Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal Of General Practice*, *24*(1), 120-124. doi: 10.1080/13814788.2017.1375092

Kunaviktikul, W. (2014). Moving towards the greater involvement of nurses in policy development. *International Nursing Review*. *61*(1), 1-2. https://doi.org/10.1111/inr.12092

Laudet, A. B., Savage, R., & Mahmood, D. (2002). Pathways to long-term recovery: A preliminary investigation. *Journal of Psychoactive Drugs, 34*(3), 305-311. doi:10.1080/02791072.2002.10399968

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., . . . Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration.*PLoS Medicine, 6*(7), e1000100-e1000100. doi:10.1371/journal.pmed.1000100

Livingston, J., Milne, T., Fang, M., & Amari, E. (2011). The effectiveness of interventions for reducing stigma related to substance use disorders: a systematic review. *Addiction*, *107*(1), 39-50. doi: 10.1111/j.1360-0443.2011.03601.x

Luoma, J., Twohig, M., Waltz, T., Hayes, S., Roget, N., Padilla, M., & Fisher, G. (2007). An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive Behaviors*, *32*(7), 1331-1346. doi: 10.1016/j.addbeh.2006.09.008

Manuel, J., Yuan, Y., Herman, D., Svikis, D., Nichols, O., Palmer, E., & Deren, S. (2017). Barriers and facilitators to successful transition from long-term residential substance abuse treatment. *Journal Of Substance Abuse Treatment*, *74*, 16-22. doi: 10.1016/j.jsat.2016.12.001

Marsch, L. A., Moore, S. K., Borodovsky, J. T., Solhkhah, R., Badger, G. J., Semino, S., . . . Ducat, E. (2016). A randomized controlled trial of buprenorphine taper duration among opioid-dependent adolescents and young adults: Adolescent buprenorphine treatment. *Addiction, 111*(8), 1406-1415. doi:10.1111/add.13363

Mason, M. J., & Luckey, B. (2003). Young adults in alcohol-other drug treatment: An understudied population. *Alcoholism Treatment Quarterly, 21*(1), 17-32. doi:10.1300/J020v21n01_02

Maté, G. (2008). *In the realm of hungry ghosts: Close encounters with addiction*. Toronto: Knopf Canada.

McInnes, M., Moher, D., Thombs, B., McGrath, T., Bossuyt, P., & Clifford, T. et al. (2018). Preferred reporting items for a systematic review and meta-analysis of diagnostic test accuracy studies. *JAMA*, *319*(4), 388. doi: 10.1001/jama.2017.19163

MentalHealth.Net The Many Causes of Addiction and Bio-Psycho-Social-Spiritual Model. (2018). Retrieved from https://www.mentalhelp.net/articles/the-manycauses-of-addiction-and-bio-psych-social-spiritual-model/

Morse, J., & Field, P. (1995). *Qualitative Research Methods for Health Professionals.* Thousand Oaks, Calif: SAGE Publications.

Morse, S., & MacMaster, S. (2015). Characteristics and outcomes of young adult opiate users receiving residential substance abuse treatment. *Journal Of Evidence-Informed Social Work*, *12*(6), 556-566. http://dx.doi.org/10.1080/15433714.2013.872071

Moustakas, C. E. (1994). *Phenomenological research methods*. Thousand Oaks, Calif: SAGE Publications.

Muilenburg, J. L., Laschober, T. C., Eby, L. T., & Moore, N. D. (2016). Prevalence of and factors related to tobacco ban implementation in substance use disorder treatment programs. *Administration and Policy in Mental Health and Mental Health Services Research, 43*(2), 241-249. doi:10.1007/s10488-015-0636-

Opioids and Universal Experience of Addiction by Dr. Gabor Maté. (2018). Retrieved from https://drgabormate.com/opioids-universal-experience-addiction/

Padilla-Díaz, M. (2015). Phenomenology in educational qualitative research: Philosophy as science or philosophical science? *International Journal of Educational Excellence, 1*(2), 101-110. doi:10.18562/IJEE.2015.0009

Pearson, C., Janz T., & Ali, J. (2013). Mental and substance use disorders in Canada. *Health at a Glance.* September. Statistics Canada Catalogue no. 82-624-X.

PROSPERO. (2019). Retrieved from https://www.crd.york.ac.uk/prospero/#aboutpage

Rehman A., & Alharthi, K. (2016). An introduction to research paradigms. *International Journal of Educational Investigations, 3(8),* 51-59.

Robbins, T., Everitt, B., & Nutt, D. (2010). *The neurobiology of addiction*. Oxford: Oxford University Press.

Romero-Gonzalez, M., Shahanaghi, A., DiGirolamo, G. J., & Gonzalez, G. (2017). Buprenorphine-naloxone treatment responses differ between young adults with heroin and prescription opioid use disorders. *The American journal on addictions*, *26*(8), 838-844.

SAMSHA: Treatment for Substance Use Disorders (2018). Retrieved from https://www.samhsa.gov/treatment/substance-use-disorders

Satre, D. D., Mertens, J. R., Arean, P. A., & Weisner, C. (2004). Five-year alcohol and drug treatment outcomes of older adults versus middle-aged and younger adults in a managed care program. *Addiction, 99*(10), 1286-1297. doi:10.1111/j.1360-0443.2004.00831.x

Satre, D., Mertens, J., Areán, P., & Weisner, C. (2003). Contrasting outcomes of older versus middle-aged and younger adult chemical dependency patients in a managed care program. *Journal Of Studies On Alcohol*, *64*(4), 520-530. doi: 10.15288/jsa.2003.64.520

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., . . . Jinks, C. (2018). Saturation in qualitative research: Exploring its conceptualization and operationalization. *Quality & Quantity, 52*(4), 1893-1907. doi:10.1007/s11135-017-0574-8

Sayegh, C., Huey, S., Zara, E., & Jhaveri, K. (2017). Follow-up treatment effects of contingency management and motivational interviewing on substance use: A meta-analysis. *Psychology Of Addictive Behaviors*, *31*(4), 403-414. doi: 10.1037/adb0000277

Schuman-Olivier, Z., Claire Greene, M., Bergman, B. G., & Kelly, J. F. (2014b). Is residential treatment effective for opioid use disorders? A longitudinal comparison of treatment outcomes among opioid dependent, opioid misusing, and non-opioid using emerging adults with substance use disorder. *Drug and Alcohol Dependence, 144*, 178-185. doi:10.1016/j.drugalcdep.2014.09.009

Schuman-Olivier, Z., M.D., Weiss, R. D., M.D., Hoeppner, B. B., Ph.D., Borodovsky, J., B.A., & Albanese, M. J., M.D. (2014a). Emerging adult age status predicts poor buprenorphine treatment retention. *Journal of Substance Abuse Treatment, 47*(3), 202-212. doi:10.1016/j.jsat.2014.04.006

Simpson, D. D., Joe, G. W., Rowan-Szal, G. A., & Greener, J. M. (1997). Drug abuse treatment process components that improve retention. *Journal of Substance Abuse Treatment, 14*(6), 565-572. doi:10.1016/S0740-5472(97)00181-5

Skehan, B., & Davis, M. (2017). Aligning mental health treatments with the developmental stage and needs of late adolescents and young adults. *Child and Adolescent Psychiatric Clinics of North America, 26*(2), 177-190.

Smith, D. C. (2017). *Emerging adults and substance use disorder treatment: Developmental considerations and innovative approaches*. New York, NY: Oxford University Press.

Smith, D. C., Bahar, O. S., Cleeland, L. R., & Davis, J. P. (2014). Self-perceived emerging adult status and substance use. *Psychology of Addictive Behaviors : Journal of the Society of Psychologists in Addictive Behaviors, 28*(3), 935-941. doi:10.1037/a0035900

Smith, D. C., Cleeland, L., & Dennis, M. L. (2010). Reasons for quitting among emerging adults and adolescents in substance-use-disorder treatment. *Journal of Studies on Alcohol and Drugs, 71*(3), 400-409. doi:10.15288/jsad.2010.71.400

Smith, D.C., Davis, J.P., Ureche, D.J., & Dumas, T.M. (2016). Six-month outcomes of a peer-enhanced community reinforcement approach for emerging adults with substance misuse: A preliminary study. *Journal of Substance Abuse Treatment, 61*, 66-73. doi:10.1016/j.jsat.2015.09.002

Strategy for Patient-Oriented Research - CIHR. (2018). Retrieved from http://www.cihr-irsc.gc.ca/e/41204.html

Suri, H. (2013). Epistemological pluralism in research synthesis methods. *International Journal of Qualitative Studies in Education, 26*(7), 889-911. doi:10.1080/09518398.2012.691565

Taking the Next Step Forward: Building a Responsive Mental Health and Addictions System for Emerging Adults, 2015. Ottawa, ON: Mental Health Commission of Canada.

Timko, C., Schultz, N. R., Cucciare, M. A., Vittorio, L., & Garrison-Diehn, C. (2016). Retention in medication-assisted treatment for opiate dependence: A systematic review. *Journal of Addictive Diseases, 35*(1), 22-35. doi:10.1080/10550887.2016.1100960

Towards Recovery: A Vision for a Renewed Mental Health and Addictions System, 2017 Newfoundland, Canada: All-Party Committee on Mental Health and Addictions

Urbanoski, K. A., Kelly, J. F., Hoeppner, B. B., & Slaymaker, V. (2012). The role of therapeutic alliance in substance use disorder treatment for young adults. *Journal of substance abuse treatment*, *43*(3), 344-51.

Van Manen, M., & ProQuest (Firm). (1990). *Researching lived experience: Human science for an action sensitive pedagogy*. Albany, N.Y.: State University of New York Press.

Vo, H., Robbins, E., Westwood, M., Lezama, D., & Fishman, M. (2016). Relapse prevention medications in community treatment for young adults with opioid addiction. *Substance Abuse*, *37*(3), 392-397. doi: 10.1080/08897077.2016.1143435

Walters, S. T., & Rotgers, F. (2012). *Treating substance abuse: Theory and technique* (3rd ed.). New York: Guilford Press.

Wetherill, R., & Tapert, S. F. (2013). Adolescent brain development, substance use, and psychotherapeutic change. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors, 27*(2), 393-402.

Wharton School of the University of Pennsylvania. (2017). Retrieved from https://knowledge.wharton.upenn.edu/article/lessons-can-u-s-learn-canadian-health-care-system/

Appendix A

Script of recruitment:

1.This is a script of how manager will be contacted for permission to conduct the study; what information I plan to send to the manager and what will be said/sent to potential participants by the manager. I plan to send this email to the manager of each treatment centre and this is the text that will be pasted in the email textbox. In the same email I will attach a project summary.

"I will be submitting a study that I anticipate will receive approval to be conducted at the treatment centre you work at. The study involves interviewing health care professionals (nurse practitioners, nurses, pharmacists, social workers, recreational therapists, administrator) about
the successes and barriers encountered by young adults in addiction treatment. I am emailing you
today to ask for permission to hold this study at your treatment centre. Therefore, does this study sound like something you will be okay with? Attached is a copy of a project summary. If this is something you are okay with, would you mind forwarding this email to the health care professionals at your center? This is so the eligible participants can be made aware that a study is planned to take place at the centre. Recruitment will not be taking place until ethics approves the study. Once the study is approved, I will follow up with you about the recruitment process."

-Attach to email: project summary-

2.Once ethics approves this study, this will be a script of the first email template that will be sent to managers of each treatment centre for recruiting participants. I will attach project summary to this email again in case the potential participants want to read through it again before contacting me expressing interest.

"The project I discussed with you was approved by the HREB. The project is titled "Matching Treatment to Development: Young Adults and Substance-Use Disorder" and it will be taking place at your treatment centre during January and February 2018. This study will involve interviews to heath care professionals at the centre. Would you mind forwarding this email invitation to them? Attached is a copy of the project summary I sent in the last email. If they decide they are interested in the study, they can email me at kld465@mun.ca expressing their interest in participating in the study and I will send them a copy of the consent form.

-Attach to email: project summary-

3. When participants send me an email expressing interest in participating in the study, this is a script of the email to be sent to potential participants, in this email I will attach the cover letter for the consent form and the consent form.

"Hello,

Thank you so much for contacting me regarding your interest in my research study. Attached in this email is a cover letter for the consent form and the consent form, please read it carefully before deciding whether or not you would like to participate. If you decide you do not want to participate, that is totally okay. If you decide you would like to participate, please read and sign the consent form and send it back to me at kld465@mun.ca or if you would prefer to meet with me in person to go over the consent form, this can be arranged.

Let me know if you have any questions,

Kathryn Dalton"

-Attach cover letter for consent form and consent form to this email-

Project Summary

Project Title: Matching Treatment to Development: Young Adults and Substance-Use Disorder

Introduction: In Canada, the economic burden of mental health issues and substance use disorder is estimated at $51 billion annually, including health care costs, lost productivity, and reductions in quality of life (CAMH Facts and Statistics, 2018). Substance use occurs across the world and is especially prevalent in young adults. Young adults are often an overlooked population because all ages over 18 are grouped together as adults. However, this population is recently being viewed as their own distinct age group. Not only is this population developmentally different from older adults, young adults also have the highest rates of substance use than any other age group (Adams, Morse, Choi, Watson, & Bride, 2017). Adults and young adults with substance use disorder have generally been offered similar treatments regardless of age, meaning that someone that is 18 years old is treated the exact same as someone that is 50 years old. This lack of age-targeted treatment creates a “one size fits all” approach to substance-use disorder treatment, which ignores recent insights into the developing brain of the young adult as well as the notion that this population should be viewed as their own distinct age group. It is now understood that the period of brain development, which begins in adolescence, does not reach completion until early adulthood (~ 25 years; Arain et al., 2013). This has implications for the treatment of addiction in the young adult population because understanding the neural basis of addiction and

the developing brain is key in identifying appropriate treatment for an individual's developmental stage. Recently, researchers are urging health care providers to accommodate young adults as a unique treatment population (Mason & Luckey, 2003). Research is limited on the young adult population and this study will help add to the literature about young adults and their response to residential addiction treatment. The purpose of this study is to improve the lives of young adults with addiction treatment by ensuring they are receiving the best possible care for their level of development. This will be done by exploring the perspectives of health care professionals at a residential treatment center and discovering what works and what does not work for young adults with substance-use disorder.

Research Objectives: The objectives of the study are as follows: 1. What are the perceived treatment successes encountered by young adults (age 18-25) who receive residential addiction treatment? 2. What are the perceived treatment barriers encountered by young adults (age 18-25) who receive residential addiction treatment? **Methodology:** The data will be collected through semi-structured interviews that will consist of a set of open-ended questions that will last about 1 hour. The participants will be health care professionals (e.g. nurse practitioners, nurses, pharmacists, social workers, recreational therapists, administrator) at a residential treatment centre. The interviewer will have set questions that will guide the conversation. The interviews will be audio recorded, transcribed and thematically analyzed for common themes. Written consent will be obtained from all participants. **Implications:** Young adult substance use is a growing issue in our society. Through conducting research that focuses on effective treatment for young adults

we can help improve services for young adults living with addictions. Ultimately, the information obtained in my study can be used to inform and advise knowledge users (i.e.: clinicians) and decision makers (i.e.: those responsible for designing and delivering treatment programs for young adults) of the most effective treatment options for young adults to ensure they are receiving the best possible care for their level of development.

References

Adams, S., Morse, S., Choi, S., Watson, C., & Bride, B. (2017). substance use and mental health treatment retention among young adults. Global Journal Of Addiction & Rehabilitation Medicine, 1(3).

Arain, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., ... Sharma, S. (2013). Maturation of the adolescent brain. Neuropsychiatric Disease and Treatment, 9, 449–461. http://doi.org/10.2147/NDT.S39776

CAMH: Mental Illness and Addictions: Facts and Statistics [Internet]. Camh.ca. 2016 [cited 7 November 2016]. Available from: http://www.camh.ca/en/hospital/about_camh/newsroom/for_reporters/Pages/addictionme ntalhealthstatistics.aspx

Mason, M., & Luckey, B. (2003). Young Adults in Alcohol-Other Drug Treatment. Alcoholism Treatment Quarterly, 21(1), 17-32. http://dx.doi.org/10.1300/j020v21n01_02

Appendix B

Script said before interviews:

Welcome,

Thank you very much for coming today and agreeing to participate in this interview. You may already know this, but my name is Kathryn Dalton and I am a Master of Science in Pharmacy student at Memorial University under the co-supervision of Dr. Lisa Bishop and Dr. Stephen Darcy. I received ethics approval and approval through Eastern Health to conduct my masters research at this treatment centre.

I will start with a brief overview of my research before moving into the interview questions. I am interested in young adults and the best-suited treatment approaches for young adults with substance-use disorder. Throughout this interview, I will use the phrase 'young adult' to mean young adults between the age of 18-25. I will also use the phrase "substance-use disorder" to mean addiction or substance dependency. Participation in this study is voluntary and your responses will be kept confidential. The interview will last about 1 hour.

The results of today's interview will be used to inform and advise clinicians and knowledge users of what works best and what does not work for young adults with substance-use disorder. This is to ultimately ensure that this population receives the best possible care for their developmental stage.

Do you have any questions before we start?

Script of Interview Questions

1. Tell me about your role at this treatment centre?
   a) How long have you worked here?

"The next questions will focus on the 18-25 year old patients. For the purpose of this interview, success or effectiveness will be considered completion of the program"

2. What aspects of the program offered at this treatment centre leads to success for the 18-25 year old age group?

3. How do you know when an 18-25 year old is engaged in the program?

4. In contrast, what aspects of the program offered at this treatment centre may not lead to success for the 18-25 year old age group?

5. How do you know when an 18-25 year old is disengaged in the program?
    a) What are they saying or doing that indicates to you they are disengaged?

6. Do you feel young adults need their own program tailored specifically to their needs?
    a) What would such a program include?

7. What differences do you see between how young adults and older adults respond to the program?

8. Given what you have observed (or experienced) how is the age range of patients taken into consideration with respect to program delivery?

9. Before we wrap up, are there any issues related to young adult addiction treatment that we have not discussed that you feel are important?

Appendix C

Ethics Office
Suite 200, Eastern Trust Building
95 Bonaventure Avenue
St. John's, NL
A1B 2X5

December 13, 2017

55 Old Petty Harbour Road
St. John's Newfoundland, A1G 1H6

Dear Ms. Dalton:

Researcher Portal File # 20181224
Reference # 2017.261

RE: "Matching Treatment to Development: Young Adults and Substance Use Disorder"

This will acknowledge receipt of your correspondence.

This correspondence has been reviewed by the Chair under the direction of the Health Research Ethics Board (HREB). ***Full board approval*** of this research study is granted for one year effective **November 23, 2017.**

This is your ethics approval only. Organizational approval may also be required. It is your responsibility to seek the necessary organizational approval from the Regional Health Authority (RHA) or other organization as appropriate. You can refer to the HREA website for further guidance on organizational approvals.

This is to confirm that the HREB reviewed and approved or acknowledged the following documents
(as indicated):

Revised Appendix F Qualitative Research Interview Script, Approved
Revised Appendix D Cover Letter for Qualitative Research Interview Consent Form, Approved
Revised Appendix E Qualitative Research Interview Consent Form dated December 6, 2017, Approved
Appendix H Project Summary, approved

Research Proposal, approved

MARK THE DATE

This approval will lapse on November 23, 2018. It is your responsibility to ensure that the Ethics Renewal form can be found on the Researcher Portal as an Event form.

If you do not return the completed Ethics Renewal form prior to date of renewal:

You will no longer have ethics approval
You will be required to stop research activity immediately
You may not be permitted to restart the study until you reapply for and receive approval to undertake the study again
Lapse in ethics approval ***may result in interruption or termination of funding***

You are solely responsible for providing a copy of this letter, along with your approved HREB application form; **to Research Grant and Contract Services** should your research depend on funding administered through that office.

Modifications of the protocol/consent are not permitted without prior approval from the HREB. Implementing changes without HREB approval may result in your ethics approval being revoked, meaning your research must stop. Request for modification to the protocol/consent must be outlined on an amendment form (available on the Researcher Portal website as an Event form) and submitted to the HREB for review.

The HREB operates according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2), the Health Research Ethics Authority Act (HREA Act) and applicable laws and regulations.

You are responsible for the ethical conduct of this research, notwithstanding the approval of the HREB.

We wish you every success with your study. Sincerely,

Ms. Patricia Grainger (Chair, Non-Clinical Trials Health Research Ethics Board)
Dr. Joy Maddigan (Vice-Chair, Non-Clinical Trials Health Research Ethics Board)
CC: Dr. Stephen Darcy and Dr. Lisa Bishop

Appendix D

Department of Research
5th Floor Janeway Hostel
Health Sciences Centre
300 Prince Philip Drive
St. John's, NL A1B 3V6
Tel: (709) 752-4636
Fax: (709) 752-3591

February 14, 2018

Ms. Kathryn Dalton
55 Old Petty Harbour Road
St. John's, NL
A1G 1H6

Dear Ms. Dalton,

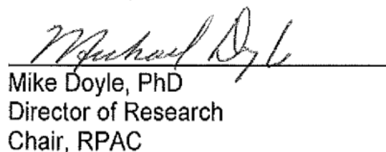
Your research proposal *HREB Reference #: 2017.261 "Matching Treatment to Development: Young Adults and Substance Use Disorder"* was reviewed by the Research Proposals Approval Committee (RPAC) of Eastern Health at a meeting dated February 13, 2018 and we are pleased to inform you that the proposal has been granted full approval.

The approval of this project is subject to the following conditions:

- The project is conducted as outlined in the HREB approved protocol;
- Adequate funding is secured to support the project;
- In the case of Health Records, efforts will be made to accommodate requests based upon available resources. If you require access to records that cannot be accommodated, then additional fees may be levied to cover the cost;
- A progress report being provided upon request.

If you have any questions or comments, please contact Sharon Newman, Manager of the Patient Research Centre at 777-7283 or by email at sharon.newman@easternhealth.ca.

Sincerely,



Mike Doyle, PhD
Director of Research
Chair, RPAC

MD/rg

Appendix E

To whom it may concern,

You are getting this letter because you expressed interest in participating in a research study entitled “Matching Treatment to Development: Young Adults and Substance-Use Disorder.” I am the researcher and my name is Kathryn Dalton. I am currently enrolled in the Master of Science in Pharmacy program at Memorial University of Newfoundland and this research will be a component of my master’s Thesis.

The purpose of this study is to explore what health care professionals perceive to be treatment successes and barriers encountered by young adults (age 18-25) who receive residential addiction treatment.

Participating in this study will require you to answer interview questions about young adults at the treatment centre you work at. You will be audio- taped. Your participation in this research project is completely voluntary. There are no known risks to participation beyond those encountered in everyday life. Your responses will remain confidential and anonymous. Data from this research will be kept in a locked cabinet. We will not identify you by name, no one other than the researchers will know your individual answers to the interview questions.

If you agree to participate in this project, please read through the attached consent form and decide whether or not you want to consent to participate in this study. If you decide you would like to participate, please send the signed consent form to me through this email (kld465@mun.ca).

If you have any questions about this project, feel free to contact Kathryn Dalton at 709-699-8040. Or you can talk to someone who is not involved with the study at all but can advise you on your rights as a participant in a research study. This person can be reached through: Ethics Office at 709-
777-6974 Email at info@hrea.ca

Thank you for your time.

Sincerely yours,

Kathryn Dalton

Consent to Take Part in Research

TITLE: Matching Treatment to Development: Young Adults and Substance-Use Disorder

INVESTIGATOR: Kathryn Dalton

SUPERVISORS: Dr. Lisa Bishop, Dr. Stephen Darcy

You have been invited to take part in a research study. Taking part in this study is voluntary. It is up to you to decide whether to be in the study or not. You can decide not to take part in the study. If you decide to take part, you are free to leave at any time.

Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

Please read this carefully. Take as much time as you like. If you like, take it home to think about for a while. Mark anything you do not understand or want explained better. After you have read it, please ask questions about anything that is not clear.

The researchers will:

discuss the study with you
answer your questions
keep confidential any information which could identify you personally
be available during the study to deal with problems and answer questions

1. **Introduction/Background:** In this study we are interested in the success and barriers encountered by young adults who receive residential addiction treatment.

We will explore the successes and barriers through the perspectives of health care professionals as you work very closely with young adults and your perspective will be informative. The results of this study may be used to improve addiction services for young adults.

2. **Purpose of study:** The purpose of this study is to explore what health care professionals perceive to be treatment successes and barriers encountered by young adults (age 18-25) who receive residential addiction treatment.

3. **Description of the study procedures:** You will be expected to participate in one interview with
me. Data collection will be done through a set of questions that I will ask to you. Your responses will be audiotaped. You can stop the interview at any time if you do not want to continue. Your responses to
the interview questions will be the data and I will analyze this data by searching for common themes. Once the data is analyzed the data will be deidentified.

4. **Length of time:** You will be expected to participate in one interview. Each interview will last about 1 hour and will take place at the addiction treatment center you work at in a private room such as the interview room or one of the clinical offices.

5. **Possible risks and discomforts:** The interview will involve questions about young adult with substance use disorder. There will be no risks for you. You will be asked about the program being offered at the centre, which won't directly affect you. You may be uncomfortable discussing the program that is being offered if you have negative perceptions about the program. An inconvenience for you will be the time it takes to do the interviews, which may take you away from your work or be conducted after hours. One risk is that discussing the patients may cause you to become emotionally upset. Dr. Stephen Darcy will be available via telephone in case anyone gets emotionally upset and
needs to speak to someone for support.

6. **Benefits:**

It is not known whether this study will benefit you.

7. **Liability statement:**

Signing this form gives us your consent to be in this study. It tells us that you understand the information about the research study. When you sign this

form, you do not give up your legal rights. Researchers or agencies involved in this research study still have their legal and professional responsibilities.

8. What about my privacy and confidentiality?

Protecting your privacy is an important part of this study. Every effort to protect your privacy will be made. However, it cannot be guaranteed. For example, we may be required by law to allow access to research records.

When you sign this consent form you give us permission to
Collect information from you

Share information with the people conducting the study
Share information with the people responsible for protecting your safety

Access to records
Access to records will only be done for research purposes. The members of the research team will see study records that identify you by name. Other people may need to look at the study records that identify you by name. This might include the research ethics board. You may ask to see the list of these people. They can look at your records only when supervised by a member of the research team.

Use of your study information
The research team will collect and use only the information they need for this research study.

This information will include information from the study interviews.

Your name and contact information will be kept secure by the research team in Newfoundland and Labrador. It will not be shared with others without your permission. Your name will not appear in any report or article published as a result of this study.

Information collected for this study will be kept for five years.

If you decide to withdraw from the study, the information collected up to that time will continue to be used by the research team. It may not be removed. This information will only be used for the purposes of this study.

Information collected and used by the research team will be stored in Dr. Lisa Bishop's office in the School of Pharmacy, Memorial University. Dr. Lisa Bishop is the person responsible for keeping it secure.

Your access to records
You may ask the researcher (Kathryn Dalton) to see the information that has been collected about you.

9. Questions or problems:

If you have any questions about taking part in this study, you can meet with the investigator who is in charge of the study. That person is: Kathryn Dalton (709-699-8040)

Principal Investigator's Name and Phone Number

Or you can speak to my supervisor(s): Dr. Lisa Bishop (777-6571) or Dr. Stephen J Darcy (752-4300)

Or you can talk to someone who is not involved with the study at all but can advise you on your rights as a participant in a research study. This person can be reached through:

Ethics Office at 709-777-6974
Email at info@hrea.ca

This study has been reviewed and given ethics approval by the Newfoundland and Labrador Health Research Ethics Board.

10. There are no financial conflicts of interest.

After signing this consent, you will be given a copy.

Signature Page
Study title: Matching Treatment to Development: Young Adults and Substance-Use Disorder

Name of principal investigator:
Kathryn Dalton

To be filled out and signed by the participant:

Please check as appropriate: I have read the consent and information sheet
Yes { } No { }
I have had the opportunity to ask questions/to discuss this study.
Yes { } No { }
I have received satisfactory answers to all of my questions.
Yes { } No { }
I have received enough information about the study.
Yes { } No { }
I have spoken to Kathryn Dalton and she has answered my questions
Yes { } No { }
I understand that I am free to withdraw from the study at any time without having to give a reason
Yes { } No { }
I understand that it is my choice to be in the study and that I may not benefit.
Yes { } No { }
I understand how my privacy is protected and my records kept confidential
Yes { } No { }
I agree to be audio taped
Yes { } No { }
I agree to take part in this study.
Yes { } No { }

____ ________________________
_ Signature of participant Name printed Year
Month Day

<u>To be signed by the investigator or person obtaining consent</u>

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in

the study, any potential risks of the study and that he or she has freely chosen to be in the study.

____
Signature of investigator Name printed

____-

Year Month Day