

# **The role of adverse childhood experiences and trauma on treatment outcomes among people in opiate agonist treatment**

A thesis submitted to the University of Dublin, Trinity College  
for the Degree of Doctor of Philosophy

**31<sup>st</sup> March 2023**

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## Declaration

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## **Acknowledgement**

I would firstly like thank my supervisors Professor Catherine Comiskey and Dr Jan de Vries without whom the completion of this PhD thesis would not have been possible. I've been most fortunate to have two brilliant supervisors with such a broad range of expertise, knowledge, and experience available to me throughout this challenging journey.

Catherine, thank you for starting me on this journey. Your constant support, patience, guidance, and belief in me, have been the essential elements in supporting the completion of this dissertation. I am forever grateful.

Jan, thank you for your input and guidance particularly on the many psychological aspects raised in this thesis. Your guidance, constructive feedback and attention to detail are most appreciated and an immensely valued contribution to this thesis.

I am most grateful to the School of Nursing and Midwifery for the 1252 School stipend, which has made this PhD possible. I would also like to thank Marie-Pierre Laverne and the staff in School of Nursing and Midwifery for their help and support throughout my time in TCD. A special thank you also to the school librarian, Jessica Eustace-Cook for her support and guidance in preparing the database search protocol for the literature review in this thesis.

I would like to thank all participants who took part in the study, and also the clinical and administration staff in the addiction treatment centres in Community Health Area 09 for enabling and supporting us to conduct this research.

I would also like to thank my friends and colleagues, Marie Hyland, Mark Byrne for their advice and support throughout these past four years. A special thank you to Karen Galligan who helped me with the data collection, Sadie Lavelle Cafferkey who helped with the transcription of the interviews, Elizabeth Quinn who helped input the data into SPSS and Sonam Banka-Cullen for her statistical advice, support, guidance, and friendship over the past seven years.

Finally, I would like to thank my wife Angela for her understanding, support, patience, and the endless snacks which sustained me over the months and years, writing this thesis. I would also like to thank my children for their constant encouragement and support, in particular my daughter Naomi, who proofread this thesis and provided valuable feedback. I really wish my beloved mum was here to celebrate this achievement, although she is not here, she is always in my heart and in my thoughts.

## Summary

**Background:** Opiate Agonist Treatment (OAT), also referred to as Methadone Maintenance Treatment (MMT), has been the cornerstone of medically assisted treatment for people with an opiate use disorder for over five decades. OAT has been shown to retain people in treatment, and reduce the significant harms caused by harmful heroin use, in particular, the health related problems caused by drug injecting behaviour and blood borne viruses such as Human Immunodeficiency Virus (HIV). Despite the success of OAT in reducing illicit opiate use, research shows that polydrug use remains relatively high among people in OAT. Research also shows that children who grow up in dysfunctional homes are at an increased risk of childhood maltreatment and the development of substance use disorders and mental health disorders such as post-traumatic stress disorder (PTSD) in adulthood. However, the relationships between adverse childhood experiences (ACEs) and PTSD on the outcomes of substance use treatment are not fully understood. The present study aims to address this issue.

**Aims:** The main aim of the study is to investigate the relationship between ACEs, PTSD, current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning, among adults attending addiction treatment services. The study also explores whether there are gender differences in the number of ACEs and the levels of PTSD between males and females attending OAT services.

**Methods:** This study makes use of an observational cross-sectional design. Data for this research study was collected in 2019 from among the original 131 subjects who attended one of the six participating opiate addiction treatment centres for the Healthy Addiction Treatment Recovery Model (HAT) research study in 2017, a study designed to measure treatment outcomes among people in OAT. The data collected included measures for the number of ACEs, the level of PTSD and six outcomes of OAT, current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning. Extensive descriptive analyses were conducted and inferential analyses such as correlations, Chi sq. and multiple regression models were statistically explored. This study received ethical approval from the researcher's university.

**Results:** The average age of the participants was 43 years and the mean length of time spent in their current treatment was 11 years. The average age at which people left school was 15 years and the level of unemployment at 77%, was very high among the cohort. Criminality and HIV risk taking behaviour, was very low among the participants. The mean score for PTSD was 30, with 40% of participants returning scores of  $\geq 33$  indicating a diagnosis of PTSD may be appropriate. The average number of ACEs among the cohort was 4 from a maximum of 10 ACEs and a strong positive correlation was found between the number of ACEs and PTSD. Three predictor variables were identified for psychological well-being, (ACEs, general health, and PTSD) with PTSD emerging as the strongest predictor, explaining 54% of the variance in psychological well-being. PTSD was also identified as a significant predictor of social functioning, and physical health. Chi Sq. analysis between the ten ACE factors and those people scoring above and below a PTSD cut-off score of 33, found a significant association between nine of the ten ACE factors, with the strongest association found between PTSD and childhood emotional neglect. The regression modelling for the PTSD showed that four of the ACE factors significantly predicted PTSD, with 'emotional neglect' emerging as the strongest predictor followed by 'growing up in a 'household with someone who abused alcohol or used street drugs'.

**Conclusion:** The findings supported OAT as an effective harm reduction treatment approach in reducing heroin use, HIV risk taking behaviour and criminality among people in OAT. However, evidence was not shown to support OAT in improving mental, physical health and social functioning outcomes among people attending the services. The results suggest that the psychological and mental health needs of this sample of people in OAT are not being fully addressed within the current treatment modality. The results also suggest that given the relationship between PTSD and historical ACEs, psychological well-being and general health, the prevalence of PTSD among this sample may explain the length of time people remain in treatment. Therefore, historical trauma needs to be addressed if service users are to fully recover from opiate addiction. Furthermore, given, that the mean age of participants was 43 years, emotional neglect may be a chronic form of ACE, which affects people's ability to recover from PTSD and harmful substance use.

## **List of Abbreviations**

AA: Alcoholics Anonymous

AAI: Adult Attachment Interview

ACE: Adverse Childhood Experience

APA: American Psychiatric Association

ASAM: American Society of Addiction Medicine

ATOS: Australian Treatment Outcome Study

AUDADIS-5: Alcohol Use Disorder and Associated Disabilities Interview  
Schedule

AUDIT-C: Alcohol Use Disorders Identification Test

BBV: Blood Borne Virus

BI: Brief Interventions

BPD: Borderline Personality Disorder

BSI: Brief Symptom Inventory

CAP-5: Clinician-Administered PTSD Scale for DSM-5

CAPS: Clinician-Administered PTSD Scale

CDC: Centres for Disease Control and Prevention

CNS: Central Nervous System

CSAI: Childhood Sexual Abuse Interview

CTQ: Childhood Trauma Questionnaire

CTS2: Revised Conflict Tactics Scale

CUDIT-R: Cannabis Use Disorders Identification Test

CVD: Cardiovascular Disease

DASS-21: Depression, Anxiety, and Stress Scales-21

DC: Dispensing Clinic

DD: Dual Diagnosis

DSM: Diagnostic and Statistical Manual of Mental Disorders

DSM-5: Diagnostic and Statistical Manual of Mental Disorders: Fifth Edition

DUDIT: Drug Use Disorders Identification Test

DUQ: Drug Use Questionnaire

DVT: Deep Vein Thrombosis

EMCDDA: European Monitoring Centre for Drugs and Drug Addiction

ERSI: Economic and Social Research Institute

EU: European Union

GA: General Assistant

HAT: Healthy Addiction Treatment Recovery Model

HBV: Hepatitis B Vaccine

HCV: Hepatitis C Vaccine



HIV: Human Immunodeficiency Virus

HRBS: HIV Risk-taking Behaviour Scale

HSE: Health Service Executive (Ireland)

ICGP: Irish College of General Practitioners

ICD: International Classifications of Diseases

IHRA: International Harm Reduction Association

IMRAD: Method, Results and Discussion

IPV: Intimate Partner Violence

IQR: Inter-Quartile Range

MM: Minnesota Model

MMT: Methadone Maintenance Treatment

MSPSS: Multidimensional Scale of Perceived Social Support

MTP: Methadone Treatment Protocol

NTORS: The National Treatment Outcomes Research Study

OTI: Opiate Treatment Index

OUD: Opiate Use Disorder

PCL-5: PTSD Checklist for DSM-5

PC-PTSD-5: Primary Care PTSD Screen

PDS: Posttraumatic Stress Diagnostic Scale

PTSD: Post Traumatic Stress Disorder

PUD: Polydrug Use Disorder

PWID: People Who Inject Drugs

RP: Research Prediction

SAMHSA: Substance Abuse and Mental Health Services Administration (USA)

SAOR: Support, Ask and Assess, Offer Assistance and Referral

SAP: Statistical Analysis Plan

SBIRT: Screening, Brief Intervention and Referral to Treatment

SC: Scripting Clinic

SCID-SAC: Substance Abuse, Comorbidity Version

SG: Surgeon General

SPSS: Statistical Package for the Social Sciences

STI: Sexually Transmitted Infections

TA: Thematic Analysis

TB: Tuberculosis

TC: Treatment Centre

UNODC: United Nations Office on Drugs and Crime

WHO: World Health Organisation

WRAP: Wellness Recovery Action Plan

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## Chapter 1: Introduction

### 1.1 Introduction

The World Health Organisation (WHO), reports that an estimated 62 million people use opioids worldwide, with approximately 36 million people experiencing drug use disorders in 2019 (WHO, 2021a). In Western Europe, Degenhardt et al. (2013), estimated over 1.31 million people were using opioids in 2010. Whereas, in 2022 the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) reported that one million Europeans used heroin or another illicit opioid in the prior year (EMCDDA, 2022). Despite the fact that the prevalence of opioid use is lower than that of other illicit drugs, opioids contribute the greatest share of drug related harms throughout Europe (EMCDDA, 2022). Ireland has one of the highest rates of heroin use in the European Union (EU), estimated to be 8 in 1,000 adults (Darker et al., 2016), with opioids drugs considered responsible for the largest number of drug related deaths worldwide. Opiates are the drugs most implicated in drug related deaths in Ireland with over 21,000 of potential life years lost in 2016 alone (Health Research Board, 2019). The incidents of opiate involvement in accidental deaths through drug related poisoning in Ireland reduced by 15% between the years 2008 to 2017 (Evans et al., 2021) and while the number of drug deaths from accidental poisoning has remained relatively stable over this ten-year period, the overall number of non-poisoning deaths have steadily increased by 10% with psychological trauma now accounting for 48% or 197 of all non-poisoning mortality (Evans et al., 2021). Harmful substance use, particularly among people living in large urban disadvantaged areas has increased enormously over the past 20 years (Irish College of General Practitioners, 2018). The standard treatment for people with an opiate addiction in Ireland is through the administration of an opiate agonist, either methadone or buprenorphine/naloxone, labelled Opiate Agonist Treatment (OAT). Methadone is a full opiate agonist while buprenorphine is combined with naloxone to form a partial agonist and administered under the brand name Suboxone (Delargy et al., 2019). This introductory chapter will present an overview of OAT, some of the key benefits for people receiving this medical intervention and some of the drawbacks of long-term drug

treatment. Other key factors relating to OAT will also be discussed including retention in treatment, mental health, social functioning, criminality, and trauma.

The Methadone Treatment Protocol (MTP), a harm reductionist approach to problematic opiate use, was introduced in Ireland in 1998 with the primary aim to provide an appropriate pharmacological response to the increasing number of drug related deaths and high rates of HIV infections among the growing number of people with an opiate use disorder, particularly in socially deprived areas of Dublin City (Health Service Executive, 2010; Irish College of General Practitioners, 2018). The protocol details the provision of opiate agonists to addicted individuals through specialised treatment centres and community pharmacies throughout Ireland. Treatment involves patients attending a specialised treatment centre or a community specialist general practitioner (GP) and pharmacy to receive a prescribed opiate agonist such as methadone or suboxone. Current estimates suggest that over 10,000 people in Ireland receive a medically prescribed opiate agonist with approximately 60% of patients attending specialist treatment centres mainly in Dublin City and county and the remaining 40% attending specialist GPs both in Dublin and across the twenty-six counties within the Republic of Ireland (Delargy et al., 2019).

Among the key benefits of OAT is the retention in long-term treatment, considered a core objective of OAT by the clinical staff involved (Delargy et al., 2019). Retention in treatment provides the individual with a medical grade opioid, consequently enabling the person to eliminate the craving and withdrawal symptomology characteristic of long-term heroin use, therefore, removing the motivation to seek illicitly sourced opioid drugs on the street. The additional benefit for the person is that the agonist is provided free of charge by the drug treatment service or licenced community pharmacy. In a study among people attending six OAT services in North Dublin, Comiskey et al. (2018) found that on average, people attending these services remained in treatment for over 7 years, indicating a high retention rate and treatment compliance. This finding was supported by Mayock et al. (2018) among a sample of people in OAT in South County Dublin, with retention rates exceeding 10 years. Retention in treatment enables the clinical staff to monitor and provide medical support for the related harms caused through injecting behaviour, such as abscesses, a cause of

septicaemia and other blood borne viruses (BBV). According to Delargy et al. (2019), the MTP has proven its effectiveness in supporting the retention of people in treatment while also reducing both human immunodeficiency virus (HIV) and hepatitis C virus (HCV) transmission and improving the overall health and social functioning of people with an opiate use disorder (OUD). A view which was also supported by the results from the Research Outcome Study In Ireland (ROSIE) (Comiskey et al., 2009), National Treatment Outcomes Research Study (NTORS) in Great Britain (Gossop, 2015), and the Australian Treatment Outcome Study (Darke et al., 2015; Ross et al., 2005).

In Ireland the prescription of opiate agonists for people with an OUD has contingencies and legal restrictions attached for those who can prescribe and supply the medications. The GP, whether practicing in a specialist addiction treatment centre or private practice, is required to complete a specialist training programme before they are licenced to prescribe the medication (Delargy et al., 2019). The clinical guidelines for GP's recommend that *"at least one random drug test is taken per month"* from all patients in OAT (Health Service Executive, 2016, p. 32). Furthermore, a contingency management incentive allows a person to take their methadone away for in-home consumption for up to a maximum of six days (excluding holidays). This is conditional on the person being *"free of cocaine and non-prescribed opiates"* and is at the discretion of the prescribing GP (Health Service Executive, 2016, p. 21). The type of agonist (methadone or suboxone) and the dosage a person is prescribed is decided by the GP. According to Delargy et al. (2019), the MTP *"has been the mainstay of harm reduction services in Ireland"* for the past twenty years, providing a network of specially trained GPs *"within a structured framework of training, quality assurance and remuneration"* (Delargy et al., 2019, p. 1). However, the challenges for the medical profession include *"the negative attitude of patients around service delivery"*, the stigma associated with methadone treatment and *"the rates of fatal overdose"* (Delargy et al., 2019, p. 1).

A criticism of the current service is the lack of power a client can exert in the decision-making process for their recovery journey. A qualitative study among twenty-five long-term methadone-maintained people in South Dublin by Mayock et al. (2018) reported that

methadone treatment has had a positive impact on their lives, bringing stability and normality and the *“ability to fulfil their roles as family members, parents and friends”* (Mayock et al., 2018, p. 3). However, OAT only stabilises the person on an opiate substitute, therefore, people are maintained in addiction services potentially for years or even decades. This reality for people in OAT has prompted some service users to refer to methadone colloquially as *“liquid handcuffs”* to indicate the routine nature of OAT (Mayock et al., 2018, p. 3). Furthermore, the MTP is confined within the medico-pharmacological treatment framework for drug dependency, with minimal input from the psychotherapeutic community (Delargy et al., 2019). Although treatment for heroin addiction using opiate agonists dates back to the 1920s, records from this period on the effectiveness of this treatment were inconclusive based on the lack of published material (Joseph & Woods, 2018). It was not until Dole and Nyswander (1965) published the results of a clinical trial involving twenty two opiate addicted patients that methadone was first identified as a potential treatment for an opiate use disorder (OUD). The authors reported that methadone was found to eliminate both the craving to consume heroin and the severe withdrawal symptoms of heroin addiction, concluding that through methadone maintenance treatment (MMT) people *“should be able to live a normal life”* (Dole & Nyswander, 1965, p. 84). A phenomenon observed by Dole and Nyswander (1965) was that several patients suffering with severe emotional stress exhibited symptoms similar to drug withdrawal, even though they were sufficiently medicated. By providing reassurance to the patients without further medication the symptoms of general malaise, nausea, and sweating abated, however, the authors suggested that the effectiveness of methadone treatment can vary *“with changes in psychological and metabolic states”* of the individual (Dole & Nyswander, 1965, p. 83) .

Co-occurring mental health issues with substance use disorders are common among people who use illicit drugs (Kreek, 2011). The term dual diagnosis (DD) refers to the co-occurrence of a substance use disorder (SUD) and psychiatric disorders within the same individual and is considered to be a major health problem (Abou-Saleh, 2004; Wise et al., 2001). Drake and Mueser (2000) argue that patients with dual diagnosis in mental health services receive



no treatment for their substance use because of the challenges in accessing services. Additionally, in instances where substance use treatment is provided to people with DD, it is not tailored to the needs of the individual (Drake & Wallach, 2000). During intake for the Australian Treatment Outcome Study (ATOS), Ross et al. (2005) found that up to 80% of people seeking treatment for heroin dependence had at least *“one other psychiatric disorder, most commonly mood disorders, anxiety and anti-social personality disorder”* (Ross et al., 2005, p. 411), furthermore, high rates of Post-Traumatic Stress Disorder (PTSD) and borderline personality disorder (BPD) were also reported (Ross et al., 2005). Drake and Wallach (2000), suggest that evidence from studies show that DD can result in a range of negative outcomes for the affected person, including relapse, social and behavioural dysfunction, and homelessness. Additionally, research suggests that combining treatment for mental health and harmful substance use interventions offer a greater opportunity for successful treatment outcomes (Abou-Saleh, 2004; Tiet & Mausbach, 2007; Wise et al., 2001).

For many people, the aetiology of substance misuse begins during adolescence and early adulthood. Comiskey et al. (2018) found in their study the youngest person to use heroin was just 12 years and the mean age for first use was 20 years with a standard deviation of  $\pm 6$  years. The psychological theorist Eric Eriksson suggests that role confusion in adolescence can lead an individual to identify with, and become like, others in their social environment (Erikson, 1969). Children who grow up in socially dysfunctional households, and among parents with substance use issues are at greater risk of developing a range of health-related problems including, depression, anxiety, obesity, and substance use disorders in adulthood (Dube et al., 2003; Von Cheong et al., 2017). Additionally, world mental health surveys show that childhood adversities are known predictors of PTSD, a chronic stress related disorder that can have long-term implications for the affected individual, including substance use disorders (Bishop et al., 2017; Jacobsen et al., 2001; McLaughlin et al., 2017; McLean et al., 2014). Research has shown that people who suffer from multiple incidents of childhood adversity, including physical, verbal, and sexual abuse are ten times more likely to inject drugs (Felitti et al., 1998; Harris, 2020). Furthermore,

Mayock et al. (2018), reported that many participants in OAT spoke about their own poor mental health *“with participants frequently making reference to lifelong mental health problems that sometimes spanned from childhood”* (Mayock et al., 2018, p. 7).

The concept of substance misuse as a brain disorder (Welch et al., 2010), within a biomedical paradigm, has been a consistent philosophical position of drug treatment services for many decades (Drake & Wallach, 2000). Engel (1977) argued for the need of a new medical model, suggesting conditions that are not biologically based disorders resulting from psychological rather than neurophysiological dysfunction should be excluded from mental illness and *“are more appropriately handled by nonmedical professionals”* (Engel, 1977, p. 129). Furthermore, while acknowledging the major contribution the biomedical model has made, Engel (1978) argued that sticking dogmatically to the sole promotion of the biomedical model deflects scientific interest away from health-related problems that do not entirely conform to biological models. According to Khantzian (2012), *“suffering is at the heart of addictive disorders”* (Khantzian, 2012, p. 274). The self-medication hypothesis proposes that people consume drugs to alleviate the effects of their psychological suffering (Khantzian, 1997). People who have suffered from traumatic experiences often turn to drugs as a way of self-medicating the severe intrusions and arousal symptoms that can have a significant negative effect on their lives (Khantzian, 1997). Therefore, treatments that combine both biological and psychosocial applications have been among the most effective treatment approaches where the individual has both a substance use disorder and psychological dysfunction (Aarons et al., 2008; Khantzian, 2003).

This current study focuses on investigating the relationship between childhood adversity, PTSD, and treatment outcomes among a population of urban people attending OAT using cross-sectional observational data. This study has taken into account the current gap in the literature in relation to the association between childhood adversity, PTSD, current drug use, HIV risk taking behaviour, psychical health, psychological well-being, crime, and social functioning of people in OAT. Further investigation of these links which will be discussed in chapter two.

## **1.2 The current study**

The overarching aim of the present study is to measure the scores of six treatment outcome domains; current heroin use, current drug use, HIV risk taking behaviour, general health, psychological well-being, criminality, and social functioning, among 131 people who attended opiate agonist treatment between April and October 2017. Moreover, this study will investigate whether there is an association between adverse childhood experiences (ACEs), PTSD, and treatment outcomes among people in long-term OAT. This will be explored within an Irish context. A narrative literature review will also be conducted to explore the relationship between ACEs, PTSD, and treatment outcomes among people in an opiate-maintained treatment services. There has been previous research which attempted to investigate the experiences of people in treatment, however, there has been minimal research on the relationships between ACEs, PTSD, and the treatment outcome domains of current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning. Given international and national priorities for the treatment of co-occurring harmful substance use and psychological dysfunction within addiction services, an understanding of the relationship between these variables may assist in the design of intervention programmes tailored to the specific needs of the individual in treatment. The specific aims of the current study, the objectives and the research predictions are discussed in Chapter four.

## **1.3 Background for the investigation of trauma and ACEs among people in OAT**

A study by Comiskey et al. (2019), referred to as the Healthy Addiction Treatment Recovery (HAT) study provided the background to the current study. This research involved quantitatively measuring treatment outcomes among 131 services users in six addiction treatment centres in North Dublin. During the data collection process clients openly talked about their personal experiences of trauma and abuse as both children and adults, with some people implicating early life trauma for their current drug addiction; this data was not collected as part of the HAT study. Following completion of the HAT data collection phase, the research team discussed their personal recollections and comments by the participants during the interviews with the principal investigator. Following the debrief

meeting, it was agreed that a follow-up quantitative study was required to investigate the anecdotal information provided by service users and to examine whether there are associations between past trauma and treatment outcomes among people in OAT. The findings from the HAT research identified the potential need for trauma informed interventions among people in OAT (Comiskey et al., 2019). The Substance Abuse and Mental Health Services Administration in the United States (SAMHSA), has stated that, *“The need to address trauma is increasingly viewed as an important component of effective behavioural health service delivery”* (SAMHSA, 2014, p. 2). Within the Irish national drug strategy, trauma has also been prioritised, evident from the following strategic statements, *“Personal trauma or life difficulties are associated with risk taking and resultant harm and very particular, targeted programmes may offset these risks and reduce the possibility of future harms”* (Department of Health, 2017, p. 25). However, these risk factors are not always apparent, *“even those who may not be identified as being at risk may develop substance use problems given certain conditions”* (Department of Health, 2017, p. 25).

#### **1.4 Chapter Conclusions**

This chapter provided an introduction of the key variables of interest for the current study; ACEs, PTSD, and the treatment outcome domains specified in Section 1.2. The rationale and aim for investigating the association between childhood adversity, PTSD, and treatment outcomes among people in treatment for an opiate use disorder, was presented along with the overarching aim of the study. A brief background of the study and the data for analyses were also provided. The next section will provide an overview of the dissertation.

#### **1.5 Overview of dissertation**

*Chapter 2: An overview of trauma, ACEs, and associated factors.*

Chapter two provides an overview of addiction and a review of the functional associations between trauma and substance use disorders. This chapter will also provide a definition of trauma, an overview of what is meant by adverse childhood experiences and the link with PTSD. A review of the philosophical position of OAT within drug treatment services will also

be explored. The chapter will conclude with a presentation of the theoretical framework for the current research. The conceptual framework is the biopsychosocial model proposed by Engel (1977), which attempts to provide a paradigm that can offer a broader explanation for the limitations in the theoretical perspective of the biomedical model for recovery from harmful substance use.

*Chapter 3: A narrative literature review on the relationship between ACE's, PTSD, and outcomes among people in Opiate Agonist Treatment*

Chapter three presents the narrative literature review on the relationships between ACEs, PTSD, and treatment outcomes of people in OAT. The chapter discusses the ten eligible studies which met the inclusion criteria and which helped inform the current study. The Introduction, Method, Results and Discussion (IMRAD) format was adopted for reporting the results.

*Chapter 4: Methodological and ontological approaches*

The philosophical framework adopted in this study was the postpositivist paradigm. Chapter 4 details the research methodology of this study. Also provided is information on the study's design, the data collecting settings, power analysis, participants, the psychological instruments and measures, methodological procedures, ethical considerations, and the statistical analyses that were conducted. The role of the researcher is also discussed.

*Chapter 5: Demographic descriptions of participants, treatment outcomes, PTSD and ACEs*

This chapter describes the participants that took part in the study. Detailed descriptive information is presented on education, employment, relationships, family status, and current substance use, broken out by gender. A descriptive finding on the participants overall health status and psychological wellbeing is also presented by gender. Finally, the chapter concludes with a descriptive analysis of ACEs, and PTSD, with some basic inferential statistical gender differences between males and females.

*Chapter 6: Correlational and inferential modelling of treatment outcomes, PTSD and ACE factors.*

This chapter presents the findings of the correlation analyses and multivariate multiple regression analysis. The correlational findings informed the selection of the independent factors for multiple regression modelling. The regression modelling was performed for five outcome variables; current poly drug, HIV risk taking behaviour, general health, psychological well-being, and social functioning. Criminality was not included due to the very low incident rate. The chapter continues by presenting the modelling of PTSD, from among the ten ACE factors.

*Chapter 7: Explanatory qualitative analysis*

This chapter presents the findings of the explanatory thematic analysis. The selection of the participants and the inclusion criteria for analysis is presented in detail and followed by the process stages of the analysis. The results are presented through two global themes; critical events and trauma response. Each global theme is presented through four subthemes and the chapter concludes with a summary of the key findings from the investigation.

*Chapter 8: Reflective journey during data collection*

This chapter presents the researcher's reflective journey during data collection for this research study. The journey is presented in a chronological order and describes some of the challenges in following up and conducting primary research among people in addiction services. The chapter includes the researcher's response to reflective questions on methadone maintenance treatment based on participants comments during data collection. The chapter concludes with details of some of the exceptionally difficult and challenging stories that participants shared during the interviews which were documented in the researchers notes and journals.

*Chapter 9: Discussion and conclusion*

Chapter nine provides a detailed discussion of the findings from the study. The chapter begins by restating the aims and research questions of the study, presenting the key

findings from the analysis, and providing details on how the findings relate to the current available literature. This is followed by a summary of overall findings within an empirical context, proposals for future research and a discussion on the strengths and limitations of this study. The chapter is completed with a conclusion of the overall study and recommendations for treatment providers based on the findings of the study.

## **Chapter 2: Overview of addiction, adverse childhood experiences, trauma, and factors associated with treatment outcomes.**

### **2.1 Introduction**

This chapter introduces the concept of addiction, trauma, ACEs, and harmful substance use. The definitions of addiction, trauma and the functional associations between these variables are presented. This is followed with an overview of ACEs, what they are and the association between ACEs and health outcomes. The philosophical position of the current medically assisted treatment approach for opiate addiction is also presented. The chapter is completed with a section on the application of the biopsychosocial model, which is the theoretical framework for the study.

### **2.2 Defining addiction**

Throughout recent history, addiction has been defined in many ways with multiple partially overlapping definitions within medical practice (Goodman, 1990), even the distinction between the terms ‘addiction’ and ‘dependence’ have been the subject of broad discussion (West, 2013). Writing for the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), West (2013) presents ten definitions of substance addiction. The view of addiction by the American Society of Addiction Medicine is a *“chronic disease of brain reward, motivation, memory and related circuitry”* (West, 2013, p. 22), and supported by genetic evidence and neurobiological changes in the brains of both animals and humans (ASAM, 2011; Bell et al., 2014). The American Heritage Dictionary views addiction as a learned behaviour, eliciting *“compulsive physiological and psychological need for a habit-forming substance or the condition of being habitually or compulsively occupied with or involved in something”* (West, 2013, p. 22). These two differing views demonstrate a lack of consensus among stakeholder organisations of a clear paradigm for addiction.

There are two main nomenclatures that define substance use disorders, the WHO publishers of the International Classification of Diseases (ICD), and the American Psychiatric Association (APA) publishers of the Diagnostic and Statistical Manual of Mental Disorders (DSM) (Hasin et al., 2006). According to Saunders (2017), the updated 11<sup>th</sup> version of the



ICD (ICD-11), has moved away from the broad term substance use disorder and uses the term substance dependence as the central diagnosis for addiction to drugs. The ICD-11 manual provides a coding tool with codes for each individual substance, for example, code 6C43.2Z refers to opioid dependence and code 6C41.2Z refers to cannabis dependence (WHO, 2022a). The current ICD-11 description of substance dependence is a strong internal motivation to use a drug substance, which results in impaired ability to control the use of the substance, therefore, reducing the priority given other activities over persistence substance use despite the negative consequences (WHO, 2022a). In contrast to the ICD-11, the DSM's version 5 (DSM-5), retains the term 'substance use disorder' which implies that substance use disorders are a form of disease and recovery is possible through interventions within a biomedical paradigm (Robinson & Adinoff, 2018). According to the DSM-5 criteria, a SUD involves patterns of symptoms that are caused by using a substance or substances, therefore, creating a powerful desire to continue consuming the substance despite the harmful effects and unsuccessful efforts to cut down or control the substance use behaviour (Saunders, 2017). In contrast to the chronic brain disease concept, Griffiths (2017), argues that any form of addiction should be defined by their similarities rather than their differences. Adding that it is the similarities between the components of addictive behaviour that *"are the key to a behaviour being labelled addiction"* (Griffiths, 2017, p. 1718). Griffiths (2005b), suggests that addictions always result from an interplay between multiple factors which include a person's biological disposition, their psychological makeup, and their social environment. Given that the term 'disorder' is used extensively throughout the literature as evidenced through the use of 'substance use disorder' and 'opiate use disorder' the current study will use the DSM-5 definition for dependence on a drug substance as a disorder.

### **2.2.1 Modelling addictive behaviour**

Modelling and treating addictive behaviour can be extremely challenging for both research commentators and treatment services. According to Hyman and Malenka (2001), *"The defining characteristic of substance addiction is compulsive, out-of-control drug use despite the serious negative consequences"* (Hyman & Malenka, 2001, p. 685). In his general theory

of addictions, Jacobs (1986) suggests that all addictions follow three phases; the discovery that an addictive behaviour can alleviate negative effect, the positive reinforcing effects of a particular addictive behaviour become learned over time, and continuing to engage in the addictive behaviour to relieve negative effect despite the adverse consequences. The EMCDDA published a comprehensive report, highlighting the multifaceted nature of addiction modelling, through differing theoretical perspectives; Automatic processing theories, Goal focussed theories, Reflective choice theories, Identity theories, Integrative theories, and Biological theories, demonstrating the complex nature of this topic (West, 2013).

Uusitalo et al. (2013) present addiction through two fundamentally opposing views; the disease model and the choice model. The disease model of addiction portrays the addict *“as a victim of disease”*, therefore, lacking the control or personal responsibility for their addiction (Uusitalo et al., 2013, p. 33), although this view is not universally supported (Heather et al., 2018). Volkow and Koob (2015) suggest that neuroplasticity changes resulting from prolonged substance use and the effectiveness of medically assisted treatment provides evidence to support the disease model (Hall et al., 2015). In contrast to the disease model, the choice model *“views the addicts as agents”*, thus making their own rational choices whether to engage in addictive behaviours or not (Uusitalo et al., 2013, p. 34). Proponents of the choice model suggest that there is a body of evidence demonstrating that addictive behaviours involve voluntary and intentional actions that are often influenced by financial, legal and familial concerns (Henden et al., 2013). In supporting the choice model, Heyman (2013) proposes that substance addiction has the highest rate of remission of all psychiatric disorders and most addicted individuals voluntarily stop using drugs.

The adaptive model of addiction suggests that addiction is a consequence of interpersonal and intrapersonal stresses resulting from adult immaturity and a failure to achieve life goals, of economic, social, and personal independence (Miller & Giannini, 1990). Therefore, economic, social, and interpersonal problems including deprivation can lead an individual to engage in problematic substance use (Alexander, 1987). Khantzian (1997), however,

posits that for many people, substance use is a response to traumatic events, including childhood trauma, which have occurred in the person's life. The author suggests that *"drugs of abuse"* help to relieve psychological suffering, thus providing the affected person with some measure of emotional regulation (Khantzian, 1997, p. 232).

Griffiths (2005a) proposes that there are six components common to all forms of addiction within a biopsychosocial framework: Salience ('when an activity becomes the dominant factor in an individual's life'), Mood modification ('the physiological arousal or tranquillising effect an individual experiences from engagement in the behaviour'), Tolerance ('where increasing amount of an activity or substance is required to produce a previous effect'), Withdrawal symptoms ('the unpleasant feelings or physical effects which occur when the activity is discontinued'), Conflict ('resulting from adverse consequences of the activity, both within the individual themselves (intrapsychic conflict) and/or with those around them (interpersonal conflict)'), Relapse ('when an individual returns to engaging in an activity after a period of abstinence'). The six components of addiction demonstrate that *"addiction is a multifaceted behaviour that is strongly influenced by contextual factors that cannot be encompassed by any single theoretical perspective"* (Griffiths, 2005b, p. 195). Kim and Hodgins (2018), suggest that behavioural and substance use addictions are "two sides to the same coin" (Kim & Hodgins, 2018, p. 2), proposing a component model for the treatment of addiction. The components model for addictions treatment (see Figure 4.3.2) presents an alternative framework of treatment within a biopsychosocial model structurally broader than the biomedical approach.



Figure 2.1: Component model of addiction treatment: Reproduced from Kim and Hodgins (2018)

The component treatment framework is structured around five psychosocial intervention possibilities that can enhance an individual’s motivation to change their behaviour and are expressed through five components of addiction. The components may vary among and between different individuals. However, for the individual to achieve their desired treatment ‘expression’, the goal setting components need to be resolved (Kim & Hodgins, 2018). The authors argue that motivation to change needs to be addressed first if treatment is to be successful. For example, if the addicted individual has deficits in self-control, motivational enhancement through cognitive and self-control therapy can assist the person to overcome this potential barrier and increase the probability of achieving their desired treatment outcome (see Figure 4.3.2).

This section had shown addiction to be a complex and multifaceted condition without a clear consensus for the modelling and treatment of addictive behaviours. However, there appears to be general agreement that treating people with substance use addictions, which enable the affected person to live a fulfilling life, requires a broader approach than the application of a single biomedical paradigm.

### **2.3 Adverse Childhood Experiences**

Adverse Childhood Experiences (ACEs) are events that occur in a child's life which have a negative influence during childhood and may have a lifelong impact on a person's mental health (Vink et al., 2019). ACEs have been linked to risky health behaviours, chronic health conditions, low life potential and early death (Centers for Disease Control and Prevention, 2016). Frampton et al. (2018) found that individuals who had experienced at least four ACEs were almost six times more likely to drink excessively than were those who reported no ACEs. Previous research studies have reported the link between ACEs and the development of PTSD (Brockie et al., 2015; Felitti et al., 1998; Jones et al., 2021; Messman-Moore & Bhuptani, 2017). An examination of epidemiological data from the World Mental Health Survey (n= 27,071) by McLaughlin et al. (2017) concluded that a differential link exists between childhood adversities and PTSD (McLaughlin et al., 2017). According to Nurius et al. (2015), evidence suggests that chronic stressors early in life not only impact the developmental stage of the person but also increase the risk of additional stressors that can overwhelm an individual's coping mechanism. Childhood trauma resulting from physical or emotional abuse have been linked to an increased risk of developing a range of addictive disorders in later life including, mental health disorders, harmful substance use, gambling, shopping, and video games (He et al., 2022; Lee et al., 2020; Thege et al., 2017).

The original ACE study was conducted in California by Kaiser Permanente and the Centers for Disease Control and Prevention (CDC) between 1995 and 1997 (Felitti et al., 1998). The results obtained from 8,506 participants found a clear "*dose response relationship*" (Felitti et al., 1998, p. 251) between the number of ACEs and the risk of developing a range of negative health problems. These health problems include; depression, alcoholism, substance addiction; and more, across the lifespan of the individual (Felitti et al., 1998). Furthermore, 37 studies reviewed by Hughes et al. (2017), found that multiple ACEs are the risk factors most strongly associated with violence, mental illness, and substance use.

## 2.4 Defining trauma/PTSD

By way of introduction to this section, it is important to clarify the conceptual stance of the current study in terms of a definition of trauma. According to a systematic review by Krupnik (2019), there does not appear to be a consensus on the definition of trauma in the current literature. Trauma could be defined as an event where a person is exposed directly or indirectly to a critical incident such as actual or threatened death, serious physical injury or sexual violence which result in PTSD, where the affected person reexperiences the traumatic event in their normal day to day life (APA, 2013). PTSD can have a debilitating impact on the individual, overwhelming and threatening events that can leave an imprint in the brain which may lead to prolonged psychological distress by, re-experiencing the traumatic event through nightmares and flashbacks, insomnia, and avoiding people, places and reminders of the traumatic event (Karl et al., 2006; Yehuda, 2002).

The US National Centre for PTSD, emphasising the neurobiological impact of PTSD, classify the condition *“as a mental health problem that some people develop after experiencing or witnessing a life-threatening event, like combat, a natural disaster, a car accident, or sexual assault”* (National Center for PTSD, 2019, para. 1). The American Psychiatric Association (APA) defines PTSD as an emotional illness classified as a trauma and stressor-related mental health disorder (APA, 2013; Friedman et al., 2011). However, Brewin (2013) suggests that the International Classifications of Disease (ICD-11) approach differs somewhat to that of the DSM-5; the DSM-5 expanded the range of symptom criteria from 17 in the DSM-IV to 20 in the DSM-5 (Friedman et al., 2011). Whereas the ICD-11 requires evidence for the combination of one symptom of re-experiencing, one act of avoidance and one heightened sense of threat for a diagnosis of PTSD (Brewin, 2013). As a result *“having two definitions of PTSD introduces an element of confusion and uncertainty”* (Brewin, 2013, p. 558) into a condition where consistency is already lacking (Maercker & Perkonig, 2013).

Widening the concept of trauma, Shapiro (2017) proposes a definition that blurs the distinction between trauma and adversity as *“any event that has had a lasting negative effect upon self and psyche”* (Shapiro, 2017, p. 39 as cited in Krupnik, 2019). Based on

studies of childhood adversity, McLaughlin (2016) argues that trauma should be considered as a distinct category from adversity as this distinction would provide a better explanation for trauma-specific psychopathology in the absence of adversity. The current study will utilise the PTSD Checklist for DSM-5, (PCL-5), an instrument based on the DSM-5 classification of PTSD. Research studies have shown the PCL-5 to have good reliability and internal consistency (Bovin et al., 2015; Walker et al., 2002). Based on this, the current study will follow the DSM-5 definition of PTSD as direct or indirect exposure to a critical incident (APA, 2013; A. Pai et al., 2017).

#### **2.4.1 PTSD and substance use**

PTSD can cause great psychological distress to the affected person and can become chronic over time if the condition is not treated effectively (Bisson, 2007; Shalev et al., 2017). Furthermore, people who have experienced a traumatic event resulting in PTSD may turn to alcohol or drugs to self-medicate their PTSD symptoms (Hawn et al., 2020), accordingly, what may have begun as an acute condition can become chronic over time (Simpson et al., 2020). When combined with a substance use, PTSD can cause even greater psychological distress to the affected person (Jacobsen et al., 2001). Brown et al. (2013), propose that approximately 35%-45% of people in substance use treatment have a life diagnosis of PTSD, and individuals with co-occurring SUD and psychopathology have poorer treatment outcomes and more likely to drop out of treatment (Coffey et al., 2016; H. E. Ross et al., 1997). Other researchers estimate that prevalence rates for PTSD and SUD lie somewhere between 11% and 41% (van Dam et al., 2012).

Four main hypotheses have sought to explain the correlations between PTSD and substance use disorders in terms of their functional relationship. These are the self-medication, high risk, susceptibility, and common factors hypotheses (Brady et al., 2015). Firstly; PTSD may be responsible for the development of SUD. Stewart et al. (1998), propose that traumatised individuals may begin to abuse alcohol in an attempt to self-medicate their PTSD symptoms, intrusions, arousals, or avoidance. Secondly, intoxication could directly increase an individual's likelihood of experiencing a traumatic event, heightening their risk of developing PTSD. Thirdly, chronic substance use may increase anxiety levels

inducing a hyperarousal state, therefore, leaving the individual susceptible to the development of PTSD. Fourthly, substance use could worsen PTSD symptomology by prolonging PTSD symptoms and preventing the habituation to the traumatic experiences. Moreover, the person who uses the substance may confuse and misinterpret substance withdrawal, which further exacerbates PTSD symptomology (Stewart, 1996).

The self-medication hypothesis proposes that for some individuals, the etiology of problematic substance use is not driven by the desire to seek pleasure but is an attempt to mediate painful feelings and self-soothe unmanageable psychological and emotional distress (Khantzian, 1997; Suh et al., 2008). Khantzian (1997), infers that drug choice of the individual may be related to their internal emotional states. For example, opiates can have a calming and normalising impact on an individual which can dampen and counteract the disorganising effects of anger and rage. While central nervous depressants, such as alcohol and benzodiazepines create the illusion of relief because they act to mediate the self-feelings of isolation which can lead to depression (Khantzian, 1997). A study by Suh et al. (2008) conducted among 512 participants partially confirmed the Khantzian (1997) paradigm *“that specific psychological characteristics are associated with the drug of choice”*, further suggesting that individuals disposed to suppressing their emotions were more likely to use alcohol (Suh et al., 2008, p. 525). Moreover, Khantzian (2003) has further suggested that problematic substance use may be an adaptive behaviour resulting from developmental deficiencies which disrupt emotional dysregulation and behaviour dating back to childhood (Schiffer, 1988).

## **2.5 Philosophical position of drug treatment services**

These apparently conflicting views of addiction are reflected in the differing positions for the effective treatment of substance addiction. Comiskey (2019), presents these differing positions as abstinence-based philosophy and the harm-reductionist philosophy. The former, abstinence-based philosophy traces its aetiology to the 12-step programme developed by the founders of Alcoholics Anonymous (AA), Bill Wilson and Robert Smith in 1935 (Kurtz & White, 2003; McElrath, 1997). The central concepts of the AA philosophy, of



recovery through complete abstinence were refined and redefined in the 1950s as the Minnesota Model (MM). The MM uses a systematic approach through multidisciplinary teams with the *“blending of professional and trained non-professional recovering staff”* (Anderson et al., 1999, p. 107; McElrath, 1997). The MM suggests that addiction is an incurable disease, therefore, the sufferer will always be in recovery. Thus the involvement of family and the ongoing social support from recovering peers represent central components of the programme (Anderson et al., 1999).

In more recent years, the harm-reductionist philosophy has emerged as an alternative form of treatment for substance addiction, which, according to Fetterman et al. (2004) *“Has been one of the most fruitful developments in the theory and technique of substance abuse treatment”* (Fetterman et al., 2004, p. 3). Unlike the abstinence-based approach, which requires refraining from substance use during treatment, harm reduction accepts active drug users into treatment with a focus on reducing the harms caused by their substance use. The International Harm Reduction Association (IHRA), defines harm reduction as *“policies, programs and practices that aim primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs without necessarily reducing drug consumption”* (Comiskey, 2019, p. 14). The Irish Government’s National Drug strategy, ‘Reducing Harms Supporting Recovery’, recognises that not all people who use substances want to, or can, become abstinent before entering treatment (Department of Health, 2017). The emphasis, therefore, is on reducing the harms caused by unhealthy substance use (Marlatt, 1996).

People with an Opiate Use Disorder (OUD), *“characterised by the persistent use of opioids despite the adverse consequences”* (Blanco & Volkow, 2019, p. 1760) are particularly vulnerable to adverse health related problems, including overdose, premature death, HCV and HIV infection, criminality, and other harms related to injecting drugs. Research has shown that people in treatment, with or without the requirement for abstinence have better outcomes including a reduction in a range of health related problems (Comiskey et al., 2009; Gossop et al., 2003; Teesson et al., 2015).

While recovery from addiction is the objective of both philosophical approaches, the meaning of recovery can be significantly different from the perspective of the individual (Nordfjã et al., 2010). The harm reductionist approach would appear to be more in keeping with the United Nations Universal Declaration of Human Rights, which, under Article 25 (i) outlines the right of all individuals to appropriate medical and social care (United Nations, 2019). Futterman et al. (2004) proposes that the differing positions should be consolidated, arguing that *“if the two theories could be integrated, a broader spectrum of patients could be served in a coherent and individualised fashion”* opening up a wider pathway to recovery and therefore, providing a greater benefit to society as a whole (Futterman et al., 2004, p. 3).

These treatment philosophies appear to present a binary choice of treatment modalities to people suffering from the effects of harmful substance use. However, the choice itself is based on availability of services rather than on the needs of the individual service users (Henwood et al., 2014; McKeganey et al., 2004). A more pragmatic philosophical approach to substance use treatment could recognise that abstinence may be the final destination on the road to recovery and the harm reductionist approach could provide the pathway (Lushin & Anastas, 2011), allowing both philosophical positions to form a continuum, therefore, offering a more robust approach to substance use treatment (Futterman et al., 2004).

## **2.6 Outcomes of Opiate Agonist Treatment**

This section will review several outcomes of Opiate Agonist Treatment. As discussed in Chapter one, OAT follows the harm reductionist philosophy with the primary aim of retaining people in treatment to reduce and potentially eliminate the use of illicit opiates, particularly heroin, therefore, reducing the harms caused by problematic use among people with an OUD. However, the secondary outcomes of retention in treatment can have broader implications for the individual, their family, friends and society in general by reducing substance related mortality and the spread of BBVs (Des Jarlais, 2017; Langendam et al., 2001). Darke et al. (1992), highlighted that one of the major problems for evaluating

research among people in medically assisted treatment for opiate addiction “*has been the non-comparability of research findings*” (Darke et al., 1992, p. 773). Different studies focus on specific domains and outcome variables, and the criteria for ‘success’ within these domains, differ between studies. For example, Darke et al. (1992) proposes that drug use and criminality are very well represented in the literature as outcome variables (Hassan & Le Foll, 2019; Vogel et al., 2011), whereas outcome variables such as employment and psychological well-being are equally important outcomes of treatment. Simpson and Marsh (1986), suggest that the reasons why people relapse are well reported, however, there is a lack of understanding of recovery due to the complex and long-term nature of treatment (Worley, 2017).

The Opiate Treatment Index (OTI), was developed as an instrument to resolve some of these issues for both researchers and treatment providers (Darke, Ward, Hall, et al., 1991). The instrument consists of six independent outcome domains; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning (including employment). These outcome domains reflect the important dimensions for assessing opiate treatment programmes for both evaluating people in long-term treatment and comparing different patient populations in different treatment modalities (González-Saiz & García-Valderrama, 2012). The next sections will discuss in turn the six treatment outcome domains of the OTI.

### **2.6.1 Substance use**

Reducing and eliminating problematic drug use, particularly heroin use, is a primary aim of substance use treatment and OAT has been shown to be highly effective (Mattick et al., 2009). However, polydrug use remains high among patients (Bertschy, 1995; Magura et al., 1998). The drug use domain within the OTI examines the individuals reported drug consumption behaviour within the last 28 days for eleven different substances. The participant is not required to estimate their average usage which according to Gregson and Stacey (1980) can lead to grossly under reported consumption. Del Boca and Darkes (2003), suggest that social context, including social desirability and setting, may be contributory variables to how a person responds when asked about their own alcohol consumption.

### **2.6.2 Social functioning**

Social functioning can be described as the ability to engage with life and fulfil interpersonal roles which develop, perpetuate, and foster, important social relationships with family, friends, and people within the wider social environment, including potential employers (Van Reekum et al., 2020). The social functioning domain within the OTI measures the social integration of an individual, including employment status, residential stability, and interpersonal conflict with friends and family. Among the challenges faced by people who use psychoactive drugs are discrimination, societal stereotyping, and social exclusion (Buchanan, 2004; March et al., 2006; Von Hippel et al., 2017). Problematic drug use can lead to family breakdown, homelessness, incarceration, and low employability (Buchanan, 2004; March et al., 2006; Stein et al., 1998). Empirical research has shown that employment and drug use are related, and that employment for an individual is also seen as a measure of social inclusion (Simpson et al., 1997; Storti et al., 2011). Homer et al. (2008) argue that methamphetamine abuse, and by implication other psychoactive substances, causes neurological damage to areas of the medial frontal cortex of the brain associated with social cognitive functioning which can lead to deficiencies in decision making abilities (Amodio & Frith, 2006). Interestingly Sun et al. (2015), reporting the results of a systematic review, found that the social functioning of service users improved from 26.4% at baseline to 41.6% after six months of treatment. Furthermore, a significant difference was found for family relationships improving from 37.9% at treatment entry to 59.6% at six months and to 75.0% at 12-month follow-up, showing the positive impact that treatment can have on the patient's quality of life (Morgan et al., 2003).

### **2.6.3 Psychological well-being**

The relationship between opioid use and psychopathology has been reported by multiple researchers and is considered a robust finding within the literature (Grant et al., 2004; Khantzian & Treece, 1985; Woody et al., 1983). Among a sample of 222 heroin users, Darke and Ross (1997) found that 60% met the criteria for a lifetime anxiety disorder, whilst a depressive disorder was diagnosed in 41% of the sample. Furthermore, Rounsaville et al. (1982) reported a life-time prevalence of a psychotic disorder for 87% of subjects in OAT.

Mortality among people who use drugs has been found to be considerably higher than what is found in the normal population within similar age characteristics (McDonald et al., 2021; Pavarin & Fioritti, 2018). According to WHO (2021b) the link between suicide and mental health disorders, particularly depression, is well proven in developed countries. Furthermore, research studies have also reported that anxiety disorders and depression (Robinson & Deane, 2022; Williams et al., 2021) and the comorbidity particularly with depression and substance use disorders are considered major risk factors for suicide (Darke & Ross, 2002; Kazour et al., 2016; Pavarin et al., 2021). Teesson et al. (2005) identified high rates of depression at treatment intake among both women and men and those with depression were also more likely to suffer with PTSD. The OTI includes the General Health Questionnaire-28 (GHQ-28) (Goldberg & Hillier, 1979) to measure the psychological wellbeing of the individual. The GHQ-28 was developed to measure non-psychotic psychopathology and provides a global measure for somatic symptoms, anxiety, social dysfunction and severe depression (Goldberg et al., 1997).

#### **2.6.4 Physical health**

A primary goal of health care for people with chronic conditions is to optimise their functioning and well-being in their everyday life (Stein et al., 1998). Therefore, the OTI includes a measure to report on the physical health of people in OAT and is considered an essential treatment outcome for people with histories of excessive substance use, particularly heroin, given the medical morbidity associated with injecting drug behaviour (Darke, Ward, Hall, et al., 1991). Poor physical health is a common characteristic of people who enter drug treatment services (Friedmann et al., 2003; Joe et al., 2019). Harmful substance use has been associated with liver disease, cardiovascular disease, pulmonary disease, and neurological disorders (Benson & Bentley, 1995; Thylstrup et al., 2015). While risky drug injecting behaviours have long been associated with the transmission of life threatening viral infections (Blackard & Sherman, 2021), needle exchange programmes have somewhat curtailed the spread of BBV and bacterial infections (Cooper et al., 2012; Hrycko et al., 2022; Kaplan, 1994). Physical health concerns have also been shown to be motivators for people to enter drug treatment services (O'Toole et al., 2006). The general

health section of the OTI has a symptom checklist which gives an indication of a person's general health and a checklist for the major organ systems of the body.

### **2.6.5 Criminality**

The Criminality Scale within the OTI is divided into four crime areas: property crime, drug dealing, fraud, and crimes involving violence. The relationship between criminal behaviour and drug use, especially violence, burglary, robbery, and drug dealing are well documented in the literature (Dobinson & Ward, 1985; Guimarães et al., 2017; Thomson, 1999). Furthermore, studies show elevated levels of drug use offences among prison populations, particularly in the US, with over half of all federal prisoners incarcerated due to a drug charge (West & Sabol, 2008). Similarly in Canada, drug offences have contributed to a 33% growth in the prison population since the early 1970's (Grant, 2009). Harrison and Gfroerer (1992) suggest that the prohibitive cost of illicit drugs is a significant motivator for an addicted individual to engage in property theft, while selling drugs appears to be the most prevalent criminal behaviour among drug addicted people (Harrison & Gfroerer, 1992; Menard et al., 2001). Among the most common types of criminal behaviours reported among People Who Inject Drugs (PWID) are drug dealing, property crime, fraud and violence (Dobinson & Ward, 1985; Resignato, 2000).

### **2.6.6 HIV Risk-taking Behaviour**

The HIV Risk-taking Behaviour Scale (HRBS) within the OTI is designed to measure the potential likelihood of contracting or transmitting HIV and other BBV's. The sharing of drug injecting paraphernalia and engaging in unprotected sexual intercourse can put the individual at risk of contracting and transmitting BBVs, such as the HIV, HVC and Hepatitis B (HBV) (Crofts & Aitken, 1997; Crofts et al., 1994). Two predominant areas of concern exist in relation to the spread of BBV infections among the wider the population; needle use behaviour and sexual behaviour (Darke et al., 1992). A prolonged history of injecting drug behaviour has been shown to predict whether a person will contract HIV (Robertson et al., 1988; Smyth et al., 1998). A longitudinal study among 82 intravenous drug users (IDU) in Dublin City which began in 1985 and followed up the same cohort 25 years later found that 51 people had died and 26 of these people had died for HIV related diseases (O'Kelly &

O’Kelly, 2012). The second area for concern of the transmission of BBVs is unprotected sexual intercourse, particularly when one of the sexual partners is an IDU, therefore, presenting a dual risk of contracting a BBV (Booth et al., 2000; Neaigus et al., 2013). The current study will use the HRBS to measure both drug injecting behaviour and sexual behaviour among people in OAT.

## **2.7 Theoretical framework: Biopsychosocial model**

The concept of addiction has evolved from a substance-based activity to account for a wide range of obsessive behaviours, including gambling, smartphone use, shopping and eating disorders (Griffiths, 2005a; Kim & Hodgins, 2018; West, 2013). Given the multifaceted nature of addiction and the level of commonalities that exist among excessive behaviours, many commentaries argue that a biopsychosocial approach provides a more complete explanation for, and the etiology of, addictive behaviours than the traditional biomedical approach (Griffiths, 2005a; Kim & Hodgins, 2018; Kovac, 2013; Lende & Smith, 2002). Childhood maltreatment and growing up in a dysfunctional household have been shown to be risk factors for harmful substance use in adulthood (Barahmand et al., 2016; Clemens et al., 2019). Children growing up in social environments with a parent or parents dependent on alcohol or drugs are at an increased risk of intergenerational substance use (Henry et al., 2018; Hoffmann & Cerbone, 2002) and childhood maltreatment (Straussner & Fewell, 2018) which can lead to PTSD and psychological disorders in later life (McLaughlin et al., 2017). Therefore, the social environment a person has grown up within can have a major influence on a person’s mental and physical health in their adult life (Harris, 2020; Mulia et al., 2008; Von Cheong et al., 2017).

The biopsychosocial model developed by George Engel in 1977 is a broad approach to understanding human behaviour and disease within a biomedical, psychological, and social context (see Figure 2.2) (Engel, 1977). Engel (1978) argued that despite its success the biomedical model has served to entrench views on the separation of mind and body, dualism, whilst promoting the biomedical model as the primary explanation for “*all aspects of health and disease*” (Engel, 1978, p. 177). The biomedical model refers to the physical

body, whereas a psychosocial model is primarily focussed on mental health factors and the social functioning of the individual (Borrell-Carrió et al., 2004; George & Engel, 1980). Borrell-Carrió et al. (2004) propose that the biopsychosocial model provides both a clinical care and practical guide within a philosophical framework, incorporating both, the biomedical and psychosocial models as “a way of understanding suffering, disease and illness” (Borrell-Carrió et al., 2004, p. 576). The approach provides health professionals with a method to understand how human suffering is impacted by multiple levels of organisation from societal to molecular structures.

A challenge for the biopsychosocial approach is that, unlike the traditional biomedical model which views illness within the framework of measurable biological variables, the biopsychosocial approach which includes biological, psychological, and social dimensions are difficult to implement within modern biomedical dominant health care systems (Farre & Rapley, 2017; Wade & Halligan, 2017).

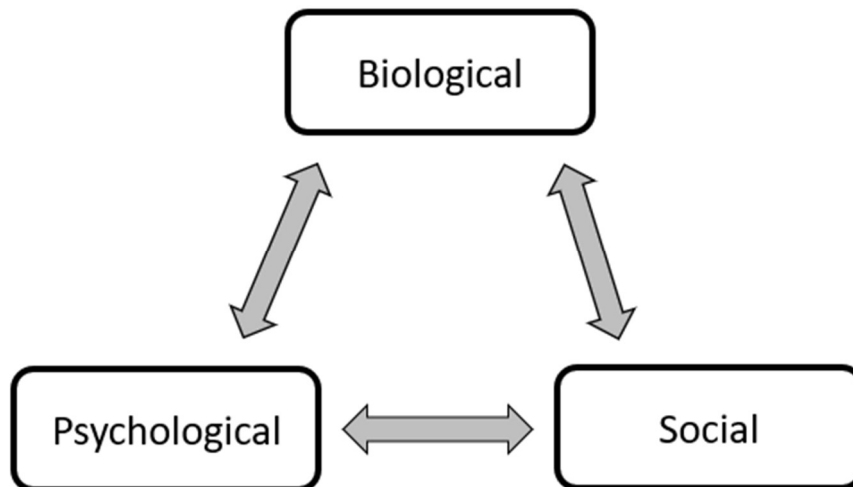


Figure 2.2: The Biopsychosocial Model

The influences of the biomedical model are still strongly dominant in addiction treatment, where the condition is viewed by some commentators as a chronic brain disease (Leshner, 1997; West, 2013). Lende and Smith (2002) suggest that evolutionary theory supports the biopsychosocial model through biological mechanisms (mesolimbic dopamine), developmental psychology (attachment and internal systems of self-regulation) and social



phylogeny (social dependence) as processes underlying addiction. In a study involving gamers and non-gamers Weinstein (2010) reported that the psycho-physiological mechanisms found in computer game addictions, stress coping mechanisms, emotional reactions, sensitisation, and reward, induce similar long-term changes in the dopamine reward pathway as substance use. Furthermore, Kim and Hodgins (2018), posit that the biomedical model does not explain the multifaceted nature of addiction in that behavioural and substance use addictions share similar risk factors. Additionally, Wade and Halligan (2017) argue that despite the evidence supporting the validity of the biopsychosocial approach in treating chronic disease there is little evidence to show the application of the model in healthcare systems. The authors further argue that with the need to improve *“patient-reported outcomes”* and *“reduce healthcare costs”* calls for the implementation of the biopsychosocial model as it is growing (Wade & Halligan, 2017, p. 995).

## **2.8 Chapter Conclusions**

The aim of the current study is to investigate the relationship between ACEs, PTSD, and treatment outcomes among people in OAT. This chapter presented some of the definitions of addiction and modelling of addictive behaviours. The chapter also provided an explanation of ACEs, a definition of PTSD and an overview of the functional relationship between PTSD and SUD. This was followed by a review of the philosophical position of drug treatment services and an overview of the six treatment outcomes variables investigated within the current study. Finally, the biopsychosocial model was presented as the theoretical framework for this study and was reviewed within the context of addiction treatment.

The next chapter will present the findings of a systemised narrative review of the current literature on, ACEs, PTSD, and treatment outcomes of people in OAT.

## **Chapter 3: Narrative review on the role of ACEs and PTSD on treatment outcomes among people in OAT**

### **3.1 Introduction**

This chapter presents a narrative review on the relationships between ACEs, PTSD, and treatment outcomes among people in medically assisted treatment for an opioid use disorder. In chapter two, the relationship between these factors was discussed, in particular the associations between ACEs, substance use, PTSD and mental health disorders among people in OAT. This review is presented using the Introduction, Method, Results and Discussion (IMRAD) format. The IMRAD format is used when presenting and reporting systemised narrative reviews in the social sciences (Sollaci & Pereira, 2004). The aim of the review is to identify studies that investigate the relationship between adverse childhood experiences/childhood maltreatment, trauma related psychological disorders and a broad range of treatment outcomes, with particular emphasis on, current heroin use, current polydrug use, HIV risk taking behaviour, general health, psychological well-being, criminality, and social functioning among people in medically maintained treatment for an OUD.

#### **3.1.1 Limits and scope**

A limitation included in the search was all participants were attending medically assisted treatment for an OUD. Although the studies of interest were all quantitative in nature, no further limits were applied, such as time range and types of study, as the researcher wanted to capture all relevant studies from across different periods and distinct types of methodology. However, to be included the review, all the studies must measure all three variables of interest, i.e., the studies must measure the outcomes of OAT, traumatic childhood experiences and PTSD among people in treatment for an OUD.

### **3.2 Methodology**

An initial comprehensive search of four selected computer databases; PsycINFO, CINAHL, Medline and EMBASE was performed. Additional records were subsequently identified through a search of two other databases; the Web of Science, and the Applied Social

Science Index and Abstracts (ASSIA). All searches were conducted using the key search terms listed in the Table 3.2, covering all years, and was performed on the 4<sup>th</sup> of May 2022. Only quantitative studies were included as the key inclusion criteria states that all studies must measure all of the key variables, see below. Articles were included for the current analysis if they met the following criteria:

1. Participants were 18 years of age or older and in medically assisted treatment for an OUD.
2. Studies included all the variables of interest: ACEs, PTSD, and the outcomes of OAT.

*Table 3.2: Narrative Review Keywords*

<b>Database</b>	<b>Keywords</b>
<b>PsycINFO</b>	"Medication-Assisted Treatment" OR "Methadone Maintenance" OR Opiate* OR heroin* OR methadone* OR opioid* OR Fentanyl* OR Oxycodone* OR Buprenorphine OR Hydrocodone OR morphine* OR Vicodin OR OxyContin OR suboxone OR codeine OR tramadol) N3 (treat* OR detox* OR maintain* OR rehab* OR substitut*) AND (Child* OR teen* OR adolesc* OR school-age* OR youth* OR minor* OR infancy OR infant*) N3 (abus* OR neglect* OR advers* OR violence* OR trauma OR maltreat* OR battered) OR "Adverse Childhood Event"
<b>CINAHL</b>	((Opiate* OR heroin* OR methadone* OR opioid* OR Fentanyl* OR Oxycodone* OR Buprenorphine OR Hydrocodone OR morphine* OR Vicodin OR OxyContin OR suboxone OR codeine OR tramadol) N3 (treat* OR detox* OR maintain* OR recover* ) OR Opiate* OR heroin* OR methadone* OR opioid* OR Fentanyl* OR Oxycodone* OR Buprenorphine OR Hydrocodone OR morphine* OR Vicodin OR OxyContin OR suboxone OR codeine OR tramadol) N3 (treat* OR detox* OR maintain* OR recover* OR rehab* AND "Adverse Childhood Experiences" OR "Adverse Childhood Event" OR ( Pediatric* OR paediatric* Child* OR teen* OR adolesc* OR school-age* OR youth* OR minor*) N3 (abus* OR neglect* OR adverse* OR violence* OR trama* OR maltreat* ) OR AB ( "Adverse Childhood Event" OR (Child* OR teen* OR adolesc* OR school-age* OR youth* OR minor*) N3 (abus* OR neglect* OR adverse* OR violence* OR trama* OR maltreat*
<b>EMBASE</b>	'opiate substitution treatment'/exp OR Opiate* OR heroin* OR methadone* OR opioid* OR Fentanyl* OR Oxycodone* OR Buprenorphine OR Hydrocodone OR morphine* OR Vicodin OR OxyContin OR suboxone OR codeine OR tramadol) NEAR/3 (treat* OR detox* OR maintain* OR recover* OR rehab* OR substitut*)) AND 'child abuse'/exp OR 'childhood adversity'/exp OR 'childhood trauma'/exp OR (Child* OR teen* OR adolesc* OR school-age* OR youth* OR minor* OR infancy OR infant*) NEAR/3 (abus* OR neglect* OR advers* OR violence* OR trauma OR maltreat* OR battered) OR Adverse Childhood Event*

Table 3.2 (continued): Narrative Review Keywords

Database	Keywords
<b>MEDLINE</b>	Opiate* OR heroin* OR methadone* OR opioid* OR Fentanyl* OR Oxycodone* OR Buprenorphine OR Hydrocodone OR morphine* OR Vicodin OR OxyContin OR suboxone OR codeine OR tramadol) N3 (treat* OR detox* OR maintain* OR rehab* OR substitut* AND "Adverse Childhood Experiences" OR Child* OR teen* OR adolesc* OR school-age* OR youth* OR minor* OR infancy OR infant*) N3 (abus* OR neglect* OR advers* OR violence* OR trauma OR maltreat* OR battered) OR "Adverse Childhood Event*" AND post-traumatic stress disorder OR stress disorder* OR PTSD* OR complex trauma*
<b>ASSIA</b>	"Methadone Maintenance Treatment" AND "Adverse Childhood Experiences" AND "Traum*"
<b>Web Of Science</b>	"Methadone Maintenance Treatment" OR "Heroin addiction treatment" OR "Opioid Maintenance Treatment" AND "Childhood abuse" OR "Childhood neglect" OR "Adverse Childhood events"

### 3.3 Quantitative synthesis results

Of the 170 articles identified, ten studies met the inclusion criteria, as indicated in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement, Figure 3.3 below. The PRISMA diagram is a search process widely used for Systematic Reviews and Meta-Analyses (Moher et al. 2009). After the removal of duplicates, the exclusion process started with the 147 studies. The records were then screened based on title and abstract with 60 articles not meeting the eligibility criteria, thus 87 articles were selected for a full text review. Four systematic reviews were returned through the database searches, however, none of the four studies met all the inclusion criteria outlined earlier and were not included in the quantitative synthesis. Two of the systematic review studies (Edwards et al., 2022; Pilarinos et al., 2022) did not specifically measure ACEs or trauma and the review by (Best et al., 2015) was focused on paediatric patients. The systematic review by Santo et al. (2021) did meet the inclusion criteria for ACEs and PTSD, however the study population were people with an OUD and entering OAT, and not currently attending treatment at the time of the review.

Of the 87 studies included for full text review 77 were excluded with reasons;

1. ACEs and/or trauma not quantitatively measured, n= 34

2. Incorrect Population or Setting, n= 14
3. No outcome of treatment, n= 12
4. Review, report or dissertation, n= 8
5. Wrong study design, n= 8
6. Full text not available, n= 1

Data extraction was conducted on the remaining ten studies as shown in the Table 3.3.1 below.

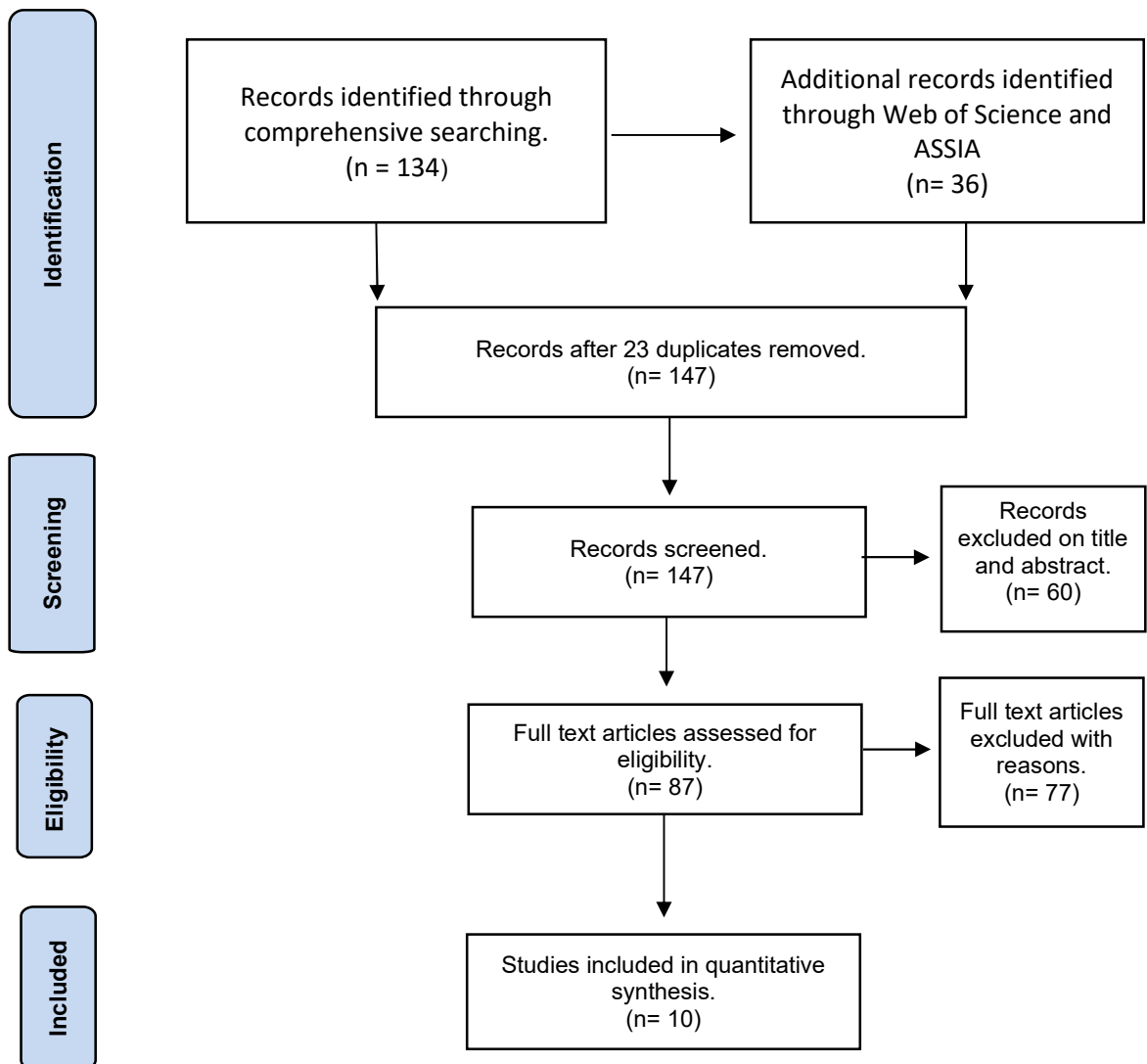


Figure 3.3: Study selection process using PRISMA.

Table 3.3.1: Summary of eligible studies

Author (year), Country	Design	Participants	Methods	Key significant findings on OAT, ACEs, and trauma.	Conclusions relative to the research question
1. Hien et al (2000), USA	Cross-sectional	96 participants (49 female, 47 male) in early methadone treatment	Survey-based data collection Univariate analysis, frequencies, percentages, means and SDs. Correlations, t -tests and chi square tests used to identify potential covariates included in the analyses of covariance (ANCOVAs)	Nearly 30% of the women reported a history of childhood sexual abuse (CSA) in comparison to just 2% of men. No gender difference was noted on childhood physical abuse which was reported by 25% of the sample. Sixty percent of the sample reported a violent event before the onset of substance use disorder. Participants with current PTSD revealed significantly more ongoing cocaine use at 3 months post-admission however no gender interaction was noted.	A physically violent event preceded the participants' SUD. Associations were shown between ACEs PTSD and substance use
2. Schiff et al (2002), USA	Cross-sectional	416 females in methadone treatment interviewed, 378 females eligible for data analysis	Screening interviews and background information. Survey-based data collection Univariate analysis used for descriptive statistic frequencies, percentages, means and SDs. Chi-square tests for categorical variables and t-test and confidence intervals	This study investigated the prevalence of PTSD among women who experienced IPV who had suffered from CSA. No difference was found on polydrug use between women meeting the criteria for PTSD, ( $p = .1$ ), however more post-traumatic symptoms were found among polydrug users than non-polydrug users ( $p = .05^*$ ). Suggesting the severity of the symptoms was similar for both groups. However, women	Associations were shown between childhood sex abuse, PTSD and polydrug use, and depression

Author (year), Country	Design	Participants	Methods	Key significant findings on OAT, ACEs, and trauma.	Conclusions relative to the research question
			for continuous variables	who were current polydrug users had a higher average depressive symptom ( $p = .05^*$ ). CSA was reported by 45.8% of the sample, however, while there was no difference between those reporting CSA and those who did not, women with a history CSA had a higher average of depressive symptoms than did women with no CSA history ( $p < .01^{**}$ ).	
3. Engstrom et al (2008), USA	Cross-sectional and longitudinal	416 females in methadone treatment for more than 3 months	Screening interviews and background information. Survey-based data collection Univariate analysis used for descriptive statistic frequencies, percentages, means and SDs. Odds ratio, confidence intervals and p values, in bivariate and multivariate logistic regression	The mean age of the participants was 39.9 years More than one-quarter of the participants (28.6%) met the DSM-IV diagnostic criteria for PTSD. While 19.5% experienced psychological distress. The most used drug was marijuana, reported by 25.0% followed by crack cocaine (23.8%). The authors suggest that the relationship between childhood sexual abuse (CSA) and intimate partner violence (IPV) can be mediated by financial independence, psychological distress and being widowed. CSA was significantly associated with PTSD and psychological distress.	Associations were shown between childhood sex abuse, crack cocaine and cannabis use, psychological distress, and PTSD

<b>Author (year), Country</b>	<b>Design</b>	<b>Participants</b>	<b>Methods</b>	<b>Key significant findings on OAT, ACEs, and trauma.</b>	<b>Conclusions relative to the research question</b>
4. Engstrom et al (2012), USA	Cross-sectional and longitudinal	416 females in methadone treatment	Screening interviews and background information. Survey-based data collection <hr/> Univariate analysis used for descriptive statistic frequencies, percentages, means and SDs. Odds ratio, confidence intervals and p values in logistic regression modelling.	The report found that after adjusting for confounders, women who were victims of childhood sex abuse (CSA), involving force and family were not at a greater lifetime risk of IPV. However, CSA involving force and family was found to be the strongest predictor of psychological distress (OR=4.36) and CSA involving force and family was associated with greater risk of PTSD, almost doubling the likelihood ratio (OR=2.18).	Childhood sexual abuse involving force and family was a predictor of PTSD and psychological distress
5. Schiff et al (2010), Israel	Cross-sectional and longitudinal	104 females	Survey-based data collection <hr/> Univariate analysis used for descriptive statistics frequencies, percentages, means and SDs. Chi square and logistic regression reported associations and odds ratio with confidence intervals and p values.	54.2% reported symptoms that accede the DSM-IV criteria for PTSD. Among childhood victimized women PTSD is associated with more frequent use of heroin. Logistic regression showed that having PTSD was significantly associated with more frequent use of heroin at 1 year follow-up with the likelihood of frequent heroin use much higher among women with PTSD.	High prevalence of PTSD was found among female victims of childhood distress and continued heroin use was more frequent among women with PTSD
6. Vogel, et al (2011), Switzerland	Cross-sectional	193 psychiatric patients in	Survey-based data collection	Almost half of the participants reported prolonged use of benzodiazepine in the past five	Benzodiazepine use was found to be highest among people with a



Author (year), Country	Design	Participants	Methods	Key significant findings on OAT, ACEs, and trauma.	Conclusions relative to the research question
		opiate agonist treatment	Univariate analysis used for descriptive statistics, frequencies, and percentages. Correlations used Kendall's Tau-b. Chi-square and Fisher's exact tests for categorical variables and Mann-Whitney-U-tests for continuous variables Logistic regression odds ratio and confidence intervals for associations between lifetime and prolonged BZD	years. The odds ratio for prolonged use of benzodiazepine between those with and without childhood trauma was significantly changed for those with a psychiatric family history, however there were no gender associations. The authors reported that psychiatric comorbidity may form an intervening variable between childhood trauma and prolonged benzodiazepine use.	history of childhood trauma and with a comorbid psychiatric disorder. PTSD was shown in 3% of the participants.
7. Peles et al (2014), Israel	Cross-sectional	124 patients, 76 in methadone treatment (MMT) and 48 in treatment for sexual abuse (SA)	Survey-based data collection Univariate analysis used for descriptive statistical frequencies, percentages, means and SDs. Chi square, and Fisher exact tests for categorical variables. Pearson's correlations and	The age at onset of sexual abuse was significantly younger for the Sexual Abuse (SA) group compared to the Methadone Maintenance Treatment (MMT) group (p = .03*, however fewer of the SA group experienced sexual abuse and violence than the MMT group. Furthermore, the rate of complex PTSD did not relate to the age of 1 <sup>st</sup> sexual abuse. Obsessive Compulsive	Between group analysis found an MMT group had higher levels of childhood adversity, OCD, SUD, and PTSD than a SA group without an OUD.

Author (year), Country	Design	Participants	Methods	Key significant findings on OAT, ACEs, and trauma.	Conclusions relative to the research question
			analysis of variance (ANOVA) for continuous variables.	Disorder (OCD) was significantly higher among the MMT group ( $p < .001^{***}$ ). While the average number of adverse life events (severe disease, severe financial problems, divorce, and criminality), other than sexual and substance abuse was significantly lower for the SA group.	
8. Larance et al (2018), Australia	Cross-sectional	1487 adults, 705 male and 782 female	<p>Survey-based data collection</p> <hr/> <p>Univariate analysis used for descriptive statistical frequencies, percentages, means and SDs.</p> <p>Inferential analysis employed, t tests, Mann-Whitney U, Odds ratio, confidence intervals and p values</p>	Participants reported childhood maltreatment (76%) and elevated levels of lifetime comorbid mental health disorders including depression (61%) and PTSD (44%). There were complex patterns of substance use, including prominent levels of overdose and multiple drug dependencies. A large minority of participants reported the onset of comorbid mental health disorders prior to age 18 years: one in three reported early onset of cannabis dependence (33%); one in four reported early onset of PTSD (27%); and one in five reported early onset of alcohol dependence (23%). The mean age of heroin dependence was	High levels of childhood maltreatment were reported with lifetime comorbid mental health disorders, PTSD, and multiple drug dependencies

Author (year), Country	Design	Participants	Methods	Key significant findings on OAT, ACEs, and trauma.	Conclusions relative to the research question
				21 years, while fewer males developed heroin dependence within the first year than females (OR 0.68), however males was slower than females to seek treatment	
9. Hassan et al (2019), USA	Cross-sectional study of secondary data	356	<u>Secondary data study</u>  Statistical comparisons using multivariate binary logistic regression and the results were presented using p values, odds ratios, confidence intervals, means and standard deviations and proportions	The main findings, 332 with OUD (93.3%) used two or more polydrug substances. PTSD was highly prevalent in individuals using multiple substances and significantly different from individuals using only one polydrug substance ( $p = .01^*$ ). The prevalence range of childhood maltreatment scores across those with polydrug use disorder was 21.8% to 59.5%. How the results showed no difference in childhood maltreatment severity or prevalence between the two groups of individuals with or without Polydrug Disorder (PUD).	The prevalence of PTSD was higher among people using more than one drug substance. However the severity of childhood treatment was not significantly different between people with a PUD and those without a PUD.
10. Struble et al (2022), USA	Cross-sectional pilot study	50 African American subjects	<u>Survey-based data collection</u>  Univariate analysis used for descriptive statistical frequencies,	The IDU group were more likely to report PTSD and bi-polar that the non-IDU group. Differences between the two groups on ACE's, PC-PTSD-5, and DASS-21 scores were reported as minimal.	No significant differences were reported for ACEs PTSD and depression/ anxiety/stress between intravenous and non-intravenous drug users.

<b>Author (year), Country</b>	<b>Design</b>	<b>Participants</b>	<b>Methods</b>	<b>Key significant findings on OAT, ACEs, and trauma.</b>	<b>Conclusions relative to the research question</b>
			percentages, means and SDs. Due to the small sample size of this pilot study, results were presented using effect size estimates, Cohen's d for continuous data and Cohen's h		

### **3.3.2 Critical analysis of eligible studies**

This section will provide a critical analysis of the ten eligible studies. Studies are reported based on study design, methodology, key findings, and limitations provided by the authors of each of the studies. A summary of the study's overall findings is supplied followed by a focus on the key variables for the current study and the factors for treatment outcomes, ACEs, and PTSD. As discussed earlier, the studies are eligible for inclusion because they included the key variables and are observed populations who are in treatment for an opiate use disorder. PTSD was not always measured by a clinically trained professional in the studies discussed below, however, the studies did include or supply a validated measure of PTSD. Although many of treatment outcomes varied between the different studies psychological issues emerged as an outcome across all ten studies. The number of ACEs reported by the participants did present a limitation which will be discussed in chapter 9. Divergent measures have been used to assess psychological well-being including depression and PTSD which are discussed for each study below.

#### *1. Hien et al. (2000) - USA*

Hien and associates oversaw a longitudinal study design conducted at two time points; baseline (at treatment entry) and at three month follow-up. Ninety six opiate dependent people participated, all of whom were enrolled within six months of starting methadone maintenance treatment. The aim of the study was to determine levels of treatment adherence compared to the frequency of violence and PTSD and to evaluate childhood physical and sexual abuse.

Data was gathered through a semi-structured interview on lifetime trauma, drug use and psychiatric well-being. Demographic information encompassed a variety of lifetime traumatic events, including frequency of homelessness, adulthood interpersonal violence, child and adult loss, sexual abuse, rape, serious physical accidents, and witness to murder. Psychiatric well-being was measured using the DSM-IV Substance Abuse, Comorbidity Version (SCID-SAC) questionnaire, (Spitzer et al., 1993; revised by Nunes et al., 1996) which was specifically developed to detect mood and anxiety disorders among people with substance use issues based on their self-report. The measure also included

a module to evaluate for lifetime PTSD based on the DSM-IV criteria for PTSD. Lifetime traumatic events were measured by the Traumatic Events Questionnaire (Fullilove et al., 1993; modified by Hien & Scheier, 1996), a structured assessment of the persons exposure to specific traumatic life events, including traumatic childhood events. Drug use history was collected with the 61 item Drug Use Questionnaire (DUQ), (Hien & First, 1991). For each drug type, questions were asked to understand the individuals drug consumption, the age of first use and the duration of use. The outcome measures for treatment adherence included retention in treatment rates and weekly toxicology screening tests for drugs and alcohol.

Among the main findings from the study was almost 30% of the women reported a history of childhood sexual abuse which was statistically different from men (2%). No gender difference was reported for physical abuse in childhood with close to 25% of the sample reporting a positive history of physical abuse. Interestingly, of the 58 participants reporting a history of trauma, the first traumatic event preceded the onset of SUD. The prevalence of PTSD among participants was 19.8%; although not statistically significant, a higher proportion of women (25.5%) met the DSM-IV criteria for PTSD, than men (12.8%). Multivariate analysis with gender and PTSD as the independent variables, and polydrug use as the covariate at both treatment entry and 3 month follow-up, found a statistically significant main effect for PTSD ( $p < .001$ ). Moreover, bivariate analyses found that PTSD predicted higher overall rates of polydrug use at 3 month follow-up. The overarching conclusion of the study proposes that lifetime trauma and PTSD can impede the addiction treatment progress and service providers need to consider PTSD as a commonly occurring disorder in within this population.

A limitation of this study was it did not find evidence to support the relationship between PTSD and the treatment drop-out rates found in other studies, such as motivational level, reason for seeking treatment, or the number of earlier admissions. A further limitation was the overlap and interpretability between PTSD and depressive disorders. Not every subject with depression had PTSD, although almost every person with PTSD also had a depressive disorder.

The aim of this study was to determine levels of treatment adherence, PTSD, and childhood physical and sexual abuse among a population in OAT, therefore eligible for inclusion in this review.

## *2. Schiff et al. (2002) - USA*

Schiff et al. utilised a cross-sectional study design among a random sample of 416 females in treatment for an opiate use disorder. The aim of the study was to examine associations among intimate partner violence (IPV), depression, PTSD, childhood sexual abuse (CSA) and current drug use among a cohort of women in a methadone treatment program.

Eligibility for the study required participants to be between the age of 18 and 55, enrolled in a methadone program, had lived, or living with a person described as a regular sexual partner who they shared economic resources and/or childcare with.

The main outcomes measured included the Revised Conflict Tactics Scales (CTS2), (Straus et al., 1996), which measured; physical assault, injury, sexual coercion, psychological aggression, and negotiation. Depression and psychological distress were measured by the 53-item Brief Symptom Inventory (BSI) (Derogatis, 1993; Derogatis & Savitz, 1999). The level and severity of PTSD was measured using the Posttraumatic Stress Diagnostic Scale (PDS), (Foa, 1995). The PDS scale is a 49 item self-report instrument based on the DSM-IV criteria for PTSD which measures the severity of the PTSD symptoms and the presence of PTSD. Drug use was assessed using an eight-point Likert scale by recording participant responses to frequency of substance use over the past 6 months for different drug types, including heroin, cocaine, and cannabis. Sexual abuse before the age of 18 was measured using the Childhood Sexual Abuse Interview (CSAI), (Finkelhor, 2010; supplemented with questions by Suzanne Sgroi, 1982).

A number of hypotheses were tested and results reported on accordingly. One hypothesis proposed that women in treatment and currently abused by their intimate partner will report higher levels of current polydrug use and injection drug use than non-abused women. The results showed that 60% of the total sample reported using multiple

illicit drugs on at least one occasion during the past 6 months. Although the physically abused women reported higher drug use than the non-abused women the difference was not statistically significant. A second hypothesis asked whether women in treatment and using poly drugs or injecting drugs, will have more depressive symptoms, PTSD, and psychological distress than women who did not use poly drugs. However no significant difference between polydrug use and PTSD among the women was found. However, a significant difference was found between those who injected drugs and those who did not inject drugs on the number of Post Traumatic Symptoms (PTS) ( $p < .050$ ). A third hypothesis proposed that women in treatment with a history of childhood sexual abuse would sufferer more depressive symptoms, PTSD, and psychological distress than women who were not sexually abused in childhood, however no statistical difference was shown between the two groups. Although, women sexually abused in childhood had significantly higher depressive symptoms ( $p < .001$ ) and significantly higher psychological distress ( $p < .001$ ) than women who did not suffer sexual abuse in childhood.

A limitation which should be noted is that it is based upon cross-sectional data which restricts the ability to infer causal relationships. The population ethnicity and comparisons between cultural differences were not reported on, therefore, comparisons to other studies may not be generalisable. A significant number of the women participating in the study had been abused by an intimate partner, this variable was not controlled for in any of the analysis, therefore, the results reported for depression and PTSD may not be comparable to other treatment modalities.

This study examined associations between IPV, depression, PTSD, childhood sexual abuse and current drug use among a cohort of women in a methadone treatment program. Therefore, included in this review.

### *3. Engstrom et al. (2008) - USA*

This research conducted by Engstrom and colleagues is based on the same data as the study by Schiff et al. however, the aim of the study is somewhat different and therefore



the findings of the study present evidence on the mechanisms of risk between childhood sexual abuse and IPV and the potential mediation of PTSD and global psychological distress.

The study design is cross-sectional among a randomly selected population of women in methadone maintenance and described in detail in Schiff et al. (2022) above. The measures included the Childhood Sexual Abuse Interview (CSAI), (El-Bassel et al., 1998; Finkelhor, 2010; Sgroi, 1982) which is conducted among adults and respectively gathers self-reported sexual experiences that occurred prior to the age of 15 years. As also discussed above, the Revised Conflict Tactics Scale (CTS2), (Straus et al., 1996) was used to measure experiences of partner violence; the 49-item PTS accessed the diagnosis criteria and severity for PTSD, (Foa, 1995); the 53-item BRS instrument, (Derogatis, 1993), addresses overall psychological and drug use was measured using the Drug Use and Risk Behaviour Questionnaire, (El-Bassel et al., 1998) an eight-point Likert scale for drug use in the past 6 months. Additionally, the Multidimensional Scale of Perceived Social Support (MSPSS), (Zimet et al., 1988) measured overall social support from family, friends and a significant other.

The demographic findings of the sample reported a mean age of 39.9 years with most either Latina/Hispanic (47.8%) or Black/African American (30.8%), and with an average annual income of \$10,143. The mean years in education was 11 years and most of the women were single or never married (46.6%). A substantial proportion (78.8%) had one intimate partner, and more than half (52.9%) reported a lifetime of homelessness. The prevalence of childhood sexual abuse was reported by 57.9% of women. Findings from the inferential analysis reported childhood sexual abuse was significantly associated with PTSD (OR = 1.95,  $p < .010$ ) and with psychological distress (OR=3.26,  $p < .050$ ). Women with a history of childhood sexual abuse were 2.5 times more likely to report a lifetime history of IPV ( $p = .007$ ).

A limitation discussed by the authors is that study is it is based upon cross-sectional data which restricts the ability to infer causal relationships between the multiple variables

measured including social support, mental health problems, PTSD, childhood sexual abuse and substance use. Additionally, the relationships between the many covariates, such as the relationship between PTSD and reduced social support, may limit an interpretation to fully understand the complex connections of childhood sexual abuse. Given 90% of the participants were either Latina or African American women, the findings may not be representative of the general population in the US.

The study presented evidence on the mechanisms of risk between childhood sexual abuse and IPV, PTSD and global psychological distress, therefore, eligible for inclusion in this review.

#### *4. Engstrom et al. (2012) - USA*

The study conducted by Engstrom, and colleagues (2012) also draws on data reported and discussed from Schiff et. al (2000) and Engstrom et al (2008). The purpose of this study was to examine the relationships between (CSA) characteristics and the presence of force and involvement of the family, IPV, PTSD and mental health issues.

The study design was cross-sectional in nature, with the data for all variables collected at baseline except for the IPV 12-month variable. The outcome measures previously mentioned in the 2008 article were Childhood Sexual Abuse Interview (CSAI), (El-Bassel et al., 1998; Finkelhor, 2010; Sgroi, 1982) and the Posttraumatic Stress Diagnostic Scale (PDS), (Foa, 1995). Univariate analyses were conducted to obtain descriptive statistics for the sample and bivariate and multivariate analyses involved logistic regression analyses the relationship between CSA characteristics and each of the dependent variables of interest. The aims of the statistical analysis were broken down into three hypotheses. Hypothesis 1; Women whose reported CSA histories involving both force and family will have the greatest risk of lifetime and recent IPV. Hypothesis 2; Women whose reported CSA histories involving both force and family will have the greatest risk of PTSD. Hypothesis 3; Women whose reported CSA histories involving both force and family will have the greatest risk of overall psychological distress.

On average, the women were in methadone treatment for 9.3 years, with 63.8% of the sample reporting polydrug use. A main finding from this study showed that CSA was associated with increased risk of PTSD and overall psychological distress. A significant relationship was reported between childhood sexual abuse involving force and family and PTSD ( $p = .017$ ) with a doubling of the odds ratio, however, no other CSA experiences were associated with PTSD. A further finding showed that CSA involving force and family was significantly associated with greater overall risk of psychological distress at the bivariate level ( $p < .001$ ).

Some of the limitations of this study population have been reported in the 2008 study above, which include the reliance on self-reports and retrospective recall data for some of the key variables. Furthermore, the use of the cross-sectional data for associations with PTSD and psychological distress limit the causal inferences that can be drawn from the study's findings.

This study investigated the relationships between childhood sexual abuse characteristics and the presence of force and involvement of the family, IPV, PTSD and mental health issues, therefore, eligible for inclusion in this review.

##### *5. Schiff et al. (2010) - Israel*

Schiff and associates conducted a one-year longitudinal study among 104 female service users attending one of four methadone clinics in Israel. The aim of the study was to investigate the association between PTSD and heroin use in a 1-year follow-up.

Heroin use was analysed at two time points; one year prior to interview (time one) and the day of the interview (time 2) and determined from computerised urine analysis data. Self-report data on PTSD and history of trauma was gathered using the 49 item PTSD questionnaire previously presented above (see 2. Schiff, 2002). Demographic data on age, years in education, and marital and parental status was also collected. Bi-variate analysis using Chi square was conducted for the associations between PTSD and illicit drug use. Logistic regression was used to examine the relationships between PTSD and heroin use one year at follow-up, while controlling for both heroin use at time one and

background traumatic events. The authors reported that a history of childhood sexual abuse was shared by all the participants in this study with 66.3% of the women also reporting non-sexual assault at some point in their lives by a relative or a stranger.

The main finding showed that having PTSD was significantly associated with more frequent heroin use. The results found a high prevalence of PTSD among the women (54.2%), and the use of heroin was significantly higher between those with PTSD and those without PTSD ( $p = .002$ ). Furthermore, a similar significant pattern of association for heroin use was also shown between the PTSD groups at one-year follow-up ( $p = .042$ ). Additionally, age was found to be negatively associated with heroin use, with younger women using less heroin than older women ( $p = .045$ ). Finally, a significant association was also found for the number of traumatic events, excluding childhood sexual events and frequency of heroin use at one year follow-up ( $p = .035$ ).

This study had some limitations which should be noted. The study is based on a sample from four methadone clinics in Israel and although the sample size represented 12% of people in methadone treatment, the number of people interviewed was just 104 female service users and may not be representative of the population in treatment for an OUD. Additionally, given that all the participants were affected by CSA, direct associations between CSA and heroin use cannot be made. Therefore, results on the associations between PTSD and illicit drug use may be influenced by the high prevalence of childhood sexual abuse among this sample. The study did not assess depression or more general psychological well-being; therefore, depression may have been a factor associated with PTSD. Another limitation is that other illicit substances such as cocaine and alcohol were not examined, given the elevated level of polydrug use among people in treatment reported by other studies, the presence of other substances may have been a confounding factor for reduced heroin use amongst some participants. Finally, although data was collected from four clinics for this study, there was no analysis undertaken between the service users in the different clinic to learn whether attending a particular clinic may have been a factor in heroin use.

This study investigated the associations between PTSD and heroin use, depression, and childhood sexual abuse, therefore, eligible for inclusion in this review.

#### *6. Vogel et al. (2011) - Switzerland*

The paper by Vogel et al. conducted among 193 people in OAT investigates the misuse of benzodiazepine (BZD) among people in treatment for an OUD. BZD use has been associated with poor treatment outcomes, including psychosocial functioning, continuing polydrug use, psychiatric comorbidities, and drug-related deaths. The aim of the paper is to examine the factors associated with BZD use particularly traumatic childhood experiences.

The study is cross-sectional and was conducted in two outpatient treatment centres in Basel. Data is based on participants self-reported responses on two questionnaires. A majority of the participants were males (66.3%) and 38.9% of people had been attending the treatment centre for over 10 years. Adverse childhood experiences were collected using the 28-item Childhood Trauma Questionnaire (CTQ). Urinalysis data was compared with self-reported use of BZD for comparison purposes. Prolonged use of BZD was defined as regular use several times a week, for longer than two months. Chi square tests and Fisher exact tests were used to test associations between binary and categorical data. Mann-Whitney-U tests were used to test continuous variables. Logistic regression was used to assess lifetime and prolonged use of BZD and variables including psychiatric family history and traumatic childhood experiences.

The main findings of the study showed that the prevalence of BZD was extremely high with only 29 participants (15%) reporting no lifetime use of BZD. Another key finding showed 67% of the sample reported moderate to severe scores in at least one sub-category of traumatic childhood experiences. Furthermore, women were more likely than men to have higher overall CTQ scores with more moderate to severe scores for emotional abuse ( $p < .001$ ), physical abuse ( $p < .01$ ) and sexual abuse ( $p < .01$ ). Prolonged BZD users were shown to have higher CTQ scores and more moderate to severe scores for emotional abuse and physical abuse than those with no prolonged use of BZDs. The

findings from logistic regression modelling showed that traumatic childhood experiences were significantly related to prolonged BZD use ( $p < .001$ ). Although psychiatric comorbidity was high among participants (70%), PTSD was reported by just 5 participants. Additionally, ACEs may be a consequence of family psychiatric history; regression modelling for BZD use with and without childhood experiences changed the odds ratio for family psychiatric history from 2.3 to 2.7.

A limitation of this study is that the retrospective assessment of traumatic childhood experiences may be prone to recall bias. According to the authors, retrospective studies may be more prone to false negative cases, rather than false positive cases. The definition of prolonged use of BZDs in this study does not correspond to the ICD-10 or DSM-IV criteria of dependence. Several participants reported no use of BZD, however urinalysis suggested that BZD was present in their urine samples, which may be a consequence of contamination with other street drugs, which were not analysed as part of this study. Another limitation is that the study sample were predominantly male, therefore may not generalisable to a broader population in OAT.

The focus of this study was on lifetime benzodiazepine, childhood maltreatment and comorbid psychiatrist disorders, including PTSD, therefore eligible for this review.

#### *7. Peles et al. (2014) - Israel*

The study by Peles et al (2014), compared two groups of women, 68 women in methadone treatment (MMT) and 48 women with no history of opiate addiction with a history of childhood sexual abuse (SATC) on a range of psychological well-being measures including PTSD. The aim of the study was to evaluate the prevalence of obsessive-compulsive disorder (OCD) among two groups of women with and without a history of drug addiction who had been sexually abused in their childhood.

This study utilised a between groups design among 116 women from two patient groups in Tel Aviv, Israel. Data was collected through a structured interview and the outcome measures included; the Modified Addiction Severity Index (ASI) Questionnaire, (for current and historical substance dependence), (McLellan et al., 1984); the PTSD-Sexual

Abuse (an adjusted version of the Clinician-Administered PTSD Scale (CAPS) for sexual abuse trauma), (Blake et al., 1990); the Life Events Inventory Questionnaire (a 15-item instrument that reports on the number of adverse events experienced by the person, excluding sexual events and substance use); the Dissociative Experiences Scale (DES), (an instrument to identify dissociative pathology and severity of dissociative symptoms), (Bernstein & Putnam, 1986; Carlson & Putnam, 1993); and the Yale–Brown Obsessive Compulsive Scale (Y–BOCS) (with subscales to measure the severity of obsessions and compulsions), (Goodman, Price, Mazure, et al., 1989; Goodman, Price, Rasmussen, et al., 1989). Multivariate ANOVA tests were used for continuous variables, Chi-Squared and Fisher exact tests for categorical variables and Pearson’s correlation coefficients were used for linear correlations. The opiate-maintained group provided a urine sample on the morning of the interview.

The findings showed that the MMT group (mean age= 42.9 years) were statistically older than the SATC group (mean age= 36.0 years) and the MMT group spent statistically longer in treatment, 8 years compared to 1.2 years ( $p < .001$ ) for the SATC group. The level of OCD among the MMT group was almost double that of the SATC group ( $p < .001$ ). The mean number of adverse events, which included, criminal involvement, death of a close friend and severe financial problems was also statistically higher for the MMT group ( $p < .001$ ). Curiously the rate of complex PTSD was statistically much higher in the SATC group than the MMT group. Furthermore 78.6% of the SATC women reported having both PTSD-Sexual Abuse and OCD which was statistically significant when compared with the MMT group ( $p < .001$ ). It is also worth noting that 70% of the SATC group reported their sexual abuse occurs before the age of 13 years and 84.2% reported that the perpetrator of the sexual abuse was a family member. Finally, the study also noted that among the SATC group sexual abuse which took place at a later age  $>12$  years, was predictive of a higher rate of psychiatric disorders, OCD, DES, and complex PTSD rather than if the sexual abuse occurred before the age of 13 years.

Additional limitations of this study are that the questionnaires used to collect the information from the SATC patients were self-reported, while those of the MMT patients

were obtained through one-to-one interviews due to the difference in education levels of patients within the MMT group. Therefore, child sexual abuse was measured differently in the two groups which may have affected the results. The authors noted; substantial differences between the two groups on age, the level of education, the treatment duration period, and the small sample size has limitations that might affect the results.

The focus of this study was on polydrug use, childhood maltreatment and psychological well-being and PTSD among people in OAT, therefore, eligible for inclusion in this review.

#### *8. Larance et al. (2018) - Australia*

The overall objective of the study conducted by Larance and colleagues (2018) was to examine the demographic and clinical predictors of pace for the transition from heroin use to dependence and to the initiation of treatment seeking behaviour. The specific aims were firstly, to examine the time taken from the age of first exposure to heroin, to the first use of heroin, to the development of heroin dependence and from dependence to treatment-seeking by gender and secondly, to examine the demographic and clinical predictors of these events.

The study design is cross sectional in nature, however, the sample consisted of 1,149 heroin-dependent individuals recruited from a case-control study in Sydney, Australia. The participants, 705 males and 44 females, were recruited from 34 OAT centres and took part in a face-to-face structured interview. The socio-demographic data collected, included age, gender, educational attainment, and parental status/dependent children. Childhood maltreatment, specifically, physical abuse and sexual abuse was assessed using the Christchurch Health and Development Study assessment questionnaire, (Fergusson et al., 1989). The clinical characteristics of the sample were assessed using Semi-Structured Assessment of the Genetics of Alcoholism-Australia (SSAGA-OZ), (Bucholz et al., 1994; Hesselbrock et al., 1999) a DSM-VI validated diagnostic instrument for substance dependence, conduct disorder, depression, and PTSD. Data analysis for comparisons between the groups were computed using odds ratios (OR) with 95%



confidence intervals. Means, standard deviation (SD) and parametric tests of significance were used for normally distributed continuous data, for skewed data, non-parametric Mann-Whitney-U test, medians, and Inter-Quartile Ratio's (IRQ) were used.

The primary outcomes in this study were the transitions from first heroin use to heroin dependence, and from heroin dependence to treatment seeking. The results showed that participants reported elevated levels of social disadvantage including, low educational attainment, problematic family environments with prominent levels of childhood maltreatment. Participants also reported important levels of comorbid mental disorders, including depression (61%) and PTSD (44%). Early onset PTSD was reported by 26.9% of participants. The median age of first use of heroin was 18 years with a median age of heroin dependence of 21 years, however, there was a significant association with gender, with women reporting a median age for heroin dependence of 20 years ( $p = .005$ ). Opioid overdose was reported by 59% of people and 39% reporting three or more overdoses episodes requiring medical treatment. Emotional abuse in childhood was reported by 52% of participants with 49% reporting physical abuse and 48% having experienced sexual abuse. The study found there were multiple drug dependencies among the sample in particular cannabis (58%), stimulants (52%), and alcohol (41%). Treatment seeking behaviour started at a median age of 24 years, with women seeking treatment at 23 years, significantly different to males ( $p < .001$ ). Childhood and adolescent experiences were identified as important predictors of risk in this study. After controlling for confounders, the risk characteristics shown for transitioning from awareness to dependence included; experiencing more forms of childhood maltreatment, having dependent children, and first taking heroin at an older age.

Limitations of this study included the assumption by the authors that reports of opioid use and dependence, equate to heroin use and dependence given the sample had long histories of heroin use at the time of interview. All age of onset variables were collected through retrospective assessment and may therefore be subject to recall bias.

While the study did not focus on the relationship between ACEs, PTSD, and treatment outcomes; it did measure and report on these three variables, supplying detailed analysis which showed, elevated levels of childhood maltreatment, high rates of current drug use and higher levels of PTSD among people in OAT, therefore, included in this review.

*9. Hassan and Le Foll (2019) - USA*

The study by Hassan and colleagues examined the use of poly drugs among individuals with OUD. The purpose of the study was to examine associations between childhood maltreatment, and a range of psychological disorders including mood disorders, anxiety disorders, personality disorders, and PTSD among individuals with polydrug use disorder (PUD).

The study is a retrospective cross-sectional design using a random sample of data taken from the third wave of the National Epidemiologic Survey on Alcohol and Related Disorders in the USA. The sample of 356 included only individuals diagnosed with an OUD, including both illicit and licit opiates in the 12 months prior to the onset of this study. The sample was segmented into a non-PUD group (n= 152) and those with PUD (n= 204). The PUD group was split into PUD users using 1 substance (OUD+1, n= 111) and PUD users using 2 or more polydrug substances, (OUD +2, n= 93). The clinical diagnosis of OUD, psychological disorders, including PTSD, and demographic information was gathered through a semi-structured interview, using the Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS-5), (Grant et al., 2015). Childhood abuse and neglect was collected on 19 questions adapted from two validated Likert scales from The Conflict Tactics Scale (CTS), (Straus, 1979) and the Childhood Trauma Questionnaire (CTQ), (Bernstein et al., 1994). Statistical comparisons between the groups were performed using multivariate binary logistic regression and the results were presented using p values, odds ratios, confidence intervals, means and standard deviations.

Of the 332 participants with OUD (93.3%) two or more polydrug substances were used, in addition to opioids, in the past year. PTSD was highly prevalent in individuals using multiple substances and significantly different from individuals using only one polydrug substance ( $p = .010$ ). The OUD + 2 group had a higher percentage of males (62.3%) and 34.2% of the group had a diagnosis of PTSD in the past year compared with 16.5% of the OUD only group and 19.6% of the OUD + 1 group. Furthermore, over a quarter of the OUD + 2 group had at least three classes of substance use disorders, including OUD, within the same period. Alcohol use disorder was the most prevalent PUD (68.4%), followed by cannabis use disorder (50.9%) and sedative use disorder (41.1%). The prevalence range of childhood maltreatment scores across the PUD groups was 21.8% to 59.5%. The results showed no difference in childhood maltreatment severity or prevalence between the two groups of individuals with or without PUD. Furthermore, there were no statistically significant differences in the childhood maltreatment scores or each type of maltreatment between any of the three groups. Additionally, the OUD + 2 group were found to have a high childhood maltreatment severity mean score (35.1) than the OUD only group (32.6), however, no significant difference was found between the mean scores for emotional abuse, physical abuse, sexual abuse, physical neglect, or emotional neglect.

Limitations of this study which should be considered include the cross-sectional design does not allow for causal inferences and the retrospective design may also be subject to recall and information bias. Additionally, the relatively small group sample sizes could have impacted the results, in particular the association with childhood maltreatment.

The focus of this study is on polydrug use, childhood maltreatment and psychological well-being including PTSD. The results informed on the relationship between PTSD and polydrug use, a primary outcome of OAT. Furthermore, the authors concluded that multiple substance use disorders are associated with PTSD symptomology, and childhood maltreatment may be a precursor of many types of substance use and mental health disorders. Therefore, this study is eligible for inclusion in this review.

#### 10. Struble et al. (2022) - USA

The purpose of this pilot study by Struble et al. (2022) was to explore the differences of injection drug rates (IDU) among a population of African Americans in OAT programs. The study was guided by a framework influenced by factors, including social networks and risk-taking characteristics, along with mental health symptoms, needle phobia, and injection perception variables.

The study design is cross-sectional among a purposeful sample of 50 participants, 58% of whom were male from an opioid treatment program in Detroit, USA, with injection the preferred method of drug consumption for 16 of the participants. The Depression, Anxiety, and Stress Scales-21, (DASS-21), (Brown et al., 1997) was used to explore these emotional states with the past week symptoms Cronbach  $\alpha$ 's ranging from 0.84 to 0.94). For social network influences, three questions were routinely collected at the clinic about substance use and injection histories among the participant's parents, siblings, spouse/partners, and close friends.

Data was collected using self-report. The measures included a demographic questionnaire for age, education, and drug use characteristics. The Adverse Childhood Experiences (ACE) (Felitti et al., 1998) questionnaire was administered to assess childhood traumatic events. The Primary Care PTSD Screen (PC-PTSD-5), (Prins et al., 2016) assessed trauma-related symptoms in the past month. The DASS-21 was used to investigate the individual's emotional state and a sub-scale of the Phobic Stimuli Response Scale, (Cutshall & Watson, 2004) was used to measure needle phobia symptomology. Social network influences were collected which relate to substance misuse history among parents, siblings, partner, family, and close friends. Due to the small sample used in the study the results were reported using Cohen's  $d$  effect size measurements for continuous data and Cohen's  $h$ .

The results found that the IDU group was more likely to report PTSD and bi-polar disorder (BPD) than the non-IDU group ( $h = .45$ ). Differences between the two groups on ACE's, PC-PTSD-5, and DASS-21 scores were reported as minimal. However, the IDU

group were more likely to have a partner ( $h = 0.87$ ) and/or close friend ( $h = 0.36$ ) who injected opioid drugs than were the non-IDU group.

As mentioned, the small sample size of this research is a limitation which prevented multivariable and gender analyses. Data was also gathered using self-reports on whether the participant had received a diagnosis of PTSD, therefore, subject to recall bias. Furthermore, this study excluded participants who had been in OAT longer than one year and may not reflect the prevalence of PTSD and IDU found in the wider population in OAT, specifically people in long-term treatment.

The focus of this short study was on drug injecting behaviour, social influences ACEs and psychological well-being, including PTSD, therefore eligible for including in this review.

### **3.4 Discussion**

The ten studies discussed above supplied evidence for the relationships between childhood sexual abuse, PTSD, and outcomes of methadone maintenance treatment. Three of the studies (Engstrom et al., 2012; Engstrom et al., 2008; Schiff et al., 2002), reported findings from the same sample of female subjects in the USA, while Schiff et al. (2010) also reported on female only subjects. Continued drug use was the treatment outcome most reported across the different studies and the related associations with PTSD and mental health problems. Larance et al. (2018) reported complex patterns of substance use, including prominent levels of overdose and multiple drug dependencies among participants with lifetime comorbid mental health disorders including depression, and PTSD. The study by Vogel et al. (2011) found that almost half of the 193 psychiatric patients reported prolonged use of benzodiazepine in the past five years, with those who experienced childhood trauma having a significantly greater odds of prolonged use if they came from a family with a history psychiatric problem. Furthermore, emotional abuse, emotional neglect, physical neglect was significantly associated with prolonged benzodiazepine use with no differences observed between males and females. Larance et al. (2018) included measures for demographic variables for social functioning and childhood physical, emotional, and sexual abuse. The authors

found elevated levels of social disadvantage including, low educational attainment, problematic family environments with important levels of childhood, physical, emotional, and sexual abuse among the 1,149 participants.

Most of the studies presented in this chapter confirmed the high prevalence of PTSD among people in OAT. The prevalence of PTSD varied from between 28.6% (Engstrom et al., 2008) and 54.2% (Schiff et al., 2010), suggesting that PTSD is an important risk factor interfering with the recovery of people in treatment. The adverse childhood experiences reported by the studies tended to focus on childhood sex abuse (CSA). Engstrom et al. (2012) identified CSA as a predictor of psychological distress and with a strong association to PTSD (Engstrom et al., 2008). Additionally, this finding was indirectly supported by Peles et al. (2014) who reported that there was not a significant difference on age of first sexual abuse between CSA women in OAT and women not in OAT.

Schiff et al. (2010) found that women with a history of CSA did not differ significantly on PTSD from those without a history of CSA, however, sexually abused women did differ significantly on the number of PTSD symptoms. The comorbidity between substance misuse and psychological distress was reported by most of the studies discussed. Larance et al. (2018) reported that a large minority reported the onset of comorbid mental health disorders before the age of 18 years, with 61% of participants reporting prominent levels of comorbid mental disorders, including depression. Furthermore, the early onset of cannabis dependence was reported by almost a third of participants with 25% reporting early onset of PTSD (Larance et al., 2018). Hassan and Le Foll (2019), reported that PTSD is highly prevalent in individuals with OUD which could influence polydrug use, therefore, recommending the screening for PTSD in cases of polydrug use.

As presented in Section 3.3.1, all of the studies had a number of limitations which were reported by the authors for each study. In general, the treatment outcomes that were measured, while well-defined, were narrow in scope. For example, none of the studies measured physical health, social functioning, or criminality. A further limitation was the paucity of reporting on gender differences. Four studies investigated female only

participants, therefore, there was a gender imbalance across the review. Although six of the studies surveyed both male and females, reporting on gender differences within the studies was extremely limited. Many studies focused on CSA as the adverse childhood experience with three of the studies measuring a range of different childhood experiences. However, only two of the studies supplied any in-depth reporting of the link between ACE's, PTSD, and treatment outcomes.

The overarching research question which the current study aims to answer is what are the relationships between ACEs, PTSD, and treatment outcomes; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning, among people in OAT.

The next chapter will provide a detailed description of the methodical approach used to answer the research question.

## **Chapter 4: Methodological considerations and study design**

### **4.1 Introduction**

Research has been described as a systematic enquiry or investigation, where the data collected are elucidated to make something clear or understandable (Mackenzie & Knipe, 2006). The choice of paradigm sets out the way knowledge is interpreted and lays down the intent and “expectations for the research” (Mackenzie & Knipe, 2006, p. 2). This chapter outlines the aims, the philosophical paradigm, the research design, and the methods employed within the current study. This project is constructed within the postpositivist paradigm; the reasons for applying this paradigm to the current study are discussed in detail following a presentation of the studies aims. The methodological components; ethics, role of the researcher, study design, data collection, management, security, and quality control are also discussed. In addition to the quantitative part of the study a qualitative analysis of the responses from participants to the quantitative questions asked during the interviews was also conducted. The chapter concludes with a presentation of the quantitative data analysis plan (SAP) and a presentation of the explanatory qualitative analysis plan.

### **4.2 Aims and research questions.**

The aim of the study is to investigate the relationship between adverse childhood experiences, trauma, and treatment outcomes among people in OAT in Ireland. Earlier research on OAT within an Irish context has primarily focused on the importance of harm reduction and the success of the methadone protocol in maintaining people in treatment (Irish College of General Practitioners, 2018; Mayock et al., 2018). However, there appears to be a dearth of previous research into the impact of childhood trauma on people in OAT and the relationship of trauma on successful treatment outcomes among people with an OUD in Ireland. The narrative review presented in chapter three found a high prevalence of PTSD and childhood maltreatment among people in OAT. However, the studies did not investigate family dysfunction or extensively explore the relationships between childhood maltreatment and PTSD. Furthermore, the ten studies



primarily focused on two forms childhood maltreatment, sexual abuse, and physical abuse with minimal reporting on emotional abuse or neglect. Additionally, the relationships between childhood maltreatment, PTSD and treatment outcomes were not fully explored. Based on this, the specific research questions this study aims to answer are:

1. What is relationship between ACEs and PTSD and treatment outcomes among people in OAT?
2. Are ACEs predictors of treatment outcomes; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, or social functioning?.
3. Is PTSD a predictor of treatment outcomes; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, or social functioning?.
4. What are the differences in PTSD between males and females in OAT.
5. What are the differences in ACEs between males and females in OAT.
6. What are the individual ACE factors that predict PTSD?

The aims of the current study are to quantitatively measure and examine associations between ACEs, PTSD and six treatment outcome domains within the psychometrically validated Opiate Treatment Index (OTI): Furthermore, the study will qualitatively explore people's first-hand experiences of trauma and childhood events from a selected sample of the study's participants.

The aims of the current study are to:

1. Investigate the relationship between summative ACEs and PTSD, among a sample of people in OAT?
2. Explore the relationships between ACEs, PTSD, and current drug use; HIV risk taking behaviour; physical health; psychological well-being; criminality; or social functioning?

3. Examine gender differences on the level of PTSD and the summative number of ACEs among this sample of people OAT.
4. Investigate whether any of the ten individual ACE factors measured within the ACE instrument are predictors of PTSD.
5. Provide recommendations for practice following the findings of the study.

The objectives for the study are:

- I. Using a systematic approach, provide a narrative review of the literature on associations between childhood adversity, trauma, and treatment outcomes among people in treatment for opiate use disorder (OUD).
- II. Measure the scale of self-reported ACE's and current PTSD.
- III. Statistically investigate whether there is a relationship between ACEs, PTSD, and the six treatment outcome domains contained within the OTI.
- IV. Statistically investigate the relationships between the individual ACE factors and PTSD.
- V. Qualitatively explore participants experiences of childhood trauma from a representative mixed gender sample of sixteen participants.
- VI. Make recommendations for treatment providers based on the study's findings.

The research predictions (RP) which the current study will test through statistical analysis are:

- RP1. There will be a significant difference between males and females on the summative number of ACEs?
- RP2. There will be a significant difference between males and females on the level of PTSD.
- RP3. There will be a significant relationship between the level of PTSD and the summative number of ACEs?

- RP4. There will be a significant relationship between ACEs, PTSD, and any of the six-treatment outcome domains; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, or social functioning.
- RP5. PTSD or summative ACEs will significantly predict one or more of the treatment outcomes; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, or social functioning.
- RP6. One or more of the individual ACE factors will significantly predict PTSD.

### **4.3 Philosophical and theoretical approach**

According to Kuhn (1962) a research paradigm is a shared perspective which embodies the beliefs and values in a specific discipline. It describes the philosophical position adopted by the researcher which drives the substance of the research question and guides the interpretation of their findings. The primary purpose of research is to investigate a question or an event of interest. There are three aspects of research which allows the researcher to investigate the occurrence of interest: ontological, epistemological and methodology which according to Carter and Little (2007), *“provide the framework for planning, implementing, and evaluating the quality of qualitative research”* (2007, p. 1316).

The ontological position of the current study seeks to quantitatively inquire about the kind of relationships that exists between adverse childhood experiences, PTSD and treatment outcomes among subjects in long-term OAT (Slevitch, 2011). Epistemology is a branch of philosophy that refers to a theory of knowledge. The study of epistemology concentrates on how information is acquired and how the discrepancy between truth and falsehood, relating to what is known about reality, are resolved (Corry et al., 2019). The two broadly differing epistemology positions relating ‘to how we know and what we know’ are positivism and interpretivism/constructivism (Tuli, 2011). The current study seeks to find knowledge that exists among subjects attending addiction treatment centres. Data from the subjects was collected quantitatively using validated psychometric instruments and analysed using existing validated statistical procedures,

therefore following the scientific methods of positivism. Methodology is concerned with whether a scientific enquiry is qualitative, quantitative or a combination of both qualitative and quantitative mixed methods (Creswell & Plano Clark, 2018) and also the why, what, where, when and how data is collected and analysed (Scotland, 2012). The current study followed the cycle of the scientific method to generate research questions, develop research predictions, and gather evidence and use the evidence to support the generated conclusions from the study (Schacter et al., 2012).

#### **4.3.1 Post-positivism**

Positivism is a term used to describe an approach to the study of society that relies specifically on scientific evidence, such as experiments and statistics which are testable and falsifiable, to reveal how society works (Turner, 1985). The epistemology of the positivist perspective accentuates the view, that regardless of the researcher's beliefs or perspective the knowledge they seek does exist (Anderson Hudson & Ozanne, 1988). The positivist's approach to research is achieved through the replication of observations of factors or variables that are perceivable and directly observable and measurable. According to Wolfer (1993) achieving truth in positivist inquiry is obtained through the confirmation of findings observable through perceivable entities or processes. Therefore, truth is not dependent on beliefs but the comparability to the facts present in external reality (Clark, 1998). The current study investigated the relationship between ACEs, PTSD and health and well-being outcomes among a cohort of people, many of whom had left school before the age of 16 and with a lower literacy level than one would expect to find in the general population. Moreover, many of the participants were also active drug users and the researcher was required to take an active role in asking all the questions, completing the questionnaire booklet and at times explaining the options and purpose of a particular question to the participants. Therefore, the researcher was not a completely passive observer in the data collection process.

Furthermore, the study included an explanatory qualitative section that reported participants' verbal responses to the quantitative questions asked during the interviews, therefore, positioning the analysis towards pragmatism, a philosophical perspective that

views agency in the world as being inseparable from knowledge of it (Legg & Hookway, 2008). According to Morgan (2014) the resurgence in pragmatism can be viewed as an attempt to resolve issues within mixed method research, however the current study did not follow a mixed method study design (Creswell & Plano Clark, 2018). The philosophical underpinnings of current study follow more closely with the epistemological position of post-positivism, where scientific inquiry involves precision and logical reasoning that pay close attention to the evidence, without the confinement 'to that which could be directly perceived' (Clark, 1998). This study incorporates an approach that may be rejected by positivism as unscientific (Fox, 2008), therefore, more closely aligned with the post-positivist approach, where knowledge is gathered in a reliable manner using validated psychometric measures and analysed with close attention to the evidence.

#### **4.4 Study design and methods**

This study is a cross-sectional correlational quantitative study design with an explanatory qualitative component. Quantitative cross-sectional observational data has been gathered on client's current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning, among service users attending drug treatment centres. Data was also collected on people's adverse childhood experiences and PTSD to answer the research questions in paragraph 4.2.

##### **4.4.1 Setting**

This study followed up a cohort of 131 subjects attending OAT centres between April and November 2019, who had participated in a study to develop a new addiction based nursing model in North Dublin, Ireland between April, and October 2017. This baseline study referred to as the 'HAT Study' was developed by Trinity College in co-operation with the addiction nursing staff in North Dublin City with the specific aim of developing a new nursing model of care for the treatment of people addicted opiates and other harmful substances. As a result of the baseline study 'The Healthy Addiction Recovery Model' was developed and subsequently implemented within selected OAT centres in

North Dublin from 2019 (Comiskey et al., 2019; Comiskey et al., 2018). OAT centres are specialist treatment clinics which provide medical assisted treatment to individuals with an addiction to heroin, illicit synthetic opioids, or any form of opiate based analgesic. Service users attending OAT centres fall into two broad categories; those who are allowed by the prescribing doctor to consume their opiate agonist medication in a location other than the prescribing treatment centre (TC) and TC's that require the service users to consume their medication within the TC facility. Therefore, there are two types of treatment centres; those supplying medical and prescription services, referred to as 'scripting clinics' and centres which supply both medical, prescription and onsite pharmacy dispensing services for onsite consumption, defined as 'dispensing clinics'. A contingency management protocol operating within the dispensing clinics can also authorise a service user to 'take-home' a controlled amount of methadone for off-site consumption at the discretion of the prescribing doctor (Health Service Executive, 2016). Although the OAT clinics are run separately from other health related services, three of the clinics share the physical building with other primary health care services and operate in a structurally separate part of the shared building; three of the TC's in the current study were situated in standalone buildings (see Table 4.4.2). One service (TC6) is run one evening per week when the primary health care centre is closed to the public. Some of the buildings were purposefully built for the provision of healthcare services. Two of the clinics (TC1 and TC5) had limited physical space, without the capacity to supply waiting areas for large groups of patients simultaneously, however all the buildings have separate nursing and doctor consulting rooms.

Recruitment of the participants required a significant amount of flexibility on behalf of the researchers who had to be cognisant of the physical limitations within each building and the strict opening hours when planning a research visit. Opening times for each centre differed between location and category of service. Furthermore, if the clinic location was close to a school, the clinic was restricted from running its dispensing services during school times when children were in attendance.

*Table 4.4.1: Number of interviews by setting*

<b>(n= 104)</b>	<b>n</b>
<b>Original Treatment Centre</b>	91
<b>Client's home</b>	5
<b>Alternative Treatment Centre</b>	2
<b>Café</b>	2
<b>Telephone interview</b>	3
<b>Prison</b>	1

Most of the interviews were conducted within the TC the participant attended during the HAT baseline study conducted in 2017 (see Table 4.4.1); however, addiction treatment services are fluid; several service users had changed to a different clinic or GP service, while others had either left the service or completed treatment in the two years between the studies. Service users who moved clinics or had left the service were followed up through phone calls, text messaging and electronic or physical mail. Therefore, the setting for the follow-up interview was dependent on the client's and in some cases their personal preference. Table 4.4.1. presents a summary of the interviews by setting used in this research.

#### **4.4.2 Eligibility criteria**

Service users were recruited from six OAT centres during the baseline phase of the study between May and November 2017 (see Section 1.3). All the 131 service users recruited at baseline were eligible to take part in the current study.

##### **4.4.2.1 Inclusion criteria**

1. All service users who had taken part in the baseline phase of the study.
2. Any service user who was prepared to give explicit consent to take part in the study.

##### **4.4.2.2 Exclusion criteria**

1. Service users who did not take part in the baseline phase of the study.
2. Service users who declined to take part in the current follow-up study.
3. Service users who refused to give written consent to partake in the study.

#### **4.4.3 Sample size and power**

According to the Assistant Director of Nursing, Dublin North City and County Addiction Services, there are 2000 service users on the nursing client caseload list (Comiskey et al., 2018). During the planning for the baseline phase of the study in 2017, it was decided to aim for a study sample size of at least 5% of the current caseload or 100 service users. A sample of 6.6 % (n= 131) was achieved. For statistical modelling Tabachnick and Fidell (2014) suggest a sample size of  $N > 50 + 8m$  is required to investigate 'm' independent factors on the dependent outcome variable. The current follow-up study re-interviewed 104 participants therefore, the dependent outcome variables, PTSD and treatment outcomes variables can be statistically modelled with up to 6 independent factors, given the sample size of n= 104 exceeded the required sample size of n= 98, ( $104 > 50 + 8(6)$ ), (Tabachnick & Fidell, 2014), to find a medium effect size at a probability  $\alpha = .05$  (Cohen, 1992).

#### **4.4.4 Recruitment process and follow-up**

The current study followed up 112 service users who had taken part in the HAT study (see Section 1.3). At the baseline phase of the study, service users were approached by the researcher or another member of the research team during their clinical treatment visit and asked to participate in the study. If the service user met the inclusion criteria and gave informed written consent to take part, they were interviewed within the clinical setting. Participants also provided their written consent to be contacted for any future follow-up studies. No gratuity was given to participants during the baseline phase.

Previous research has highlighted the attrition rate of participants in follow-up studies among people who use substances (Comiskey et al., 2009; Darke et al., 2007). Therefore, to maximise participation for the current follow-up study a gratuity of a €20 mobile phone credit was offered to all eligible participants who completed the survey.

Prior to beginning recruitment, the researcher created a Microsoft Excel database using the contact information data collected during the baseline study. The Director of Nursing gave approval to approach and engage the clinical staff in identifying the whereabouts



of the 131 service users and their attendance at the TC. This information allowed the researcher to create a data collection plan for each TC and locate service users who were sadly deceased, unavailable due to serious health issues or had left the addiction services. This research was primarily conducted in both scripting and dispensing clinics (see Section 4.4.1) therefore, requiring different follow-up strategies by the researchers.

Service users attending scripting clinics have appointment days organised in advance with the doctor and clinical staff, usually on a fortnightly attendance cycle. This modality improved the probability of the researcher meeting a client by working closely with the clinical staff in the scripting TC. The researcher attended the clinics on the days an eligible service user usually attended the service. When identified, the service user was approached, informed about the follow-up study, and later interviewed if they agreed to give informed consent. In instances where the person was unable to take part in the first meeting an alternative appointment time was made with the person for their next attendance at the clinic. This method ultimately proved successful in recruiting most of the participants attending the scripting clinics. Table 4.4.2 presents a breakdown of client follow-up and completed interviews by the original treatment centre.

*Table 4.4.2: Follow-up breakdown by original treatment center.*

<b>Clinic</b>	<b>Baseline</b>	<b>Interviews</b>	<b>Deceased</b>	<b>Unavailable</b>	<b>Refused</b>	<b>Completed follow-up</b>	<b>Not Contactable</b>
<b>TC 1</b>	49	40 (82%)	2	1	1	43 (88%)	5
<b>TC 2</b>	31	25 (81%)	1	1	0	27 (87%)	4
<b>TC 3</b>	26	19 (73%)	0	0	1	19 (73%)	6
<b>TC 4</b>	12	9 (75%)	1	0	0	10 (84%)	2
<b>TC 5</b>	7	6 (86%)	0	0	0	6 (86%)	1
<b>TC 6</b>	6	5 (83%)	0	0	0	5 (83%)	1
<b>Totals</b>	131	104 (79%)	4 (3%)	2 (1.5%)	2 (1.5%)	112 (84%)	19 (15%)

*\* Dispensing and prescription clinic*

*# Prescription only clinic*

The attendance of service users in the dispensing clinics and receiving their medication for onsite consumption, tended to be more unplanned and at times chaotic, particularly early in the mornings and after lunch. Service users typically attended the service in

groups of 20 or more. They could be gathered into a relatively small physical waiting area, making it very difficult to successfully identify and recruit an eligible participant. Although time consuming, the initial recruitment strategy followed by the researchers for TC 1 and TC 3 was to attend the dispensing clinic each day during the times recommended by the clinical staff when the eligible service users were most likely to attend. When identified, the service user was approached, the purpose of the study explained, and the person was interviewed if they had time available to take part. If time was not available, similar to the approach taken at the scripting clinics, a time was arranged at their next attendance in the TC.

As the number of successful interviews increased, the number of potential participants decreased, therefore, a more targeted strategy was necessary as the study progressed. Text messages, phone calls, emails and letters were used to contact eligible service users who had provided contact details during the baseline phase. The primary reason phone and text messaging was not used in the early stages of recruitment was due to the fact that most of the phone numbers provided by the service users in 2017 were no longer in service. Therefore, the clinical staff supported recruitment by providing undated contact information and/or arranging appointment days on behalf of the researchers. A number of people had left the service, either completed treatment, had transferred to a community GP service, or had left treatment altogether. Of these participants, thirteen people were successfully contacted, agreed to take part and the interview was conducted in a location or modality of their choosing. An interview rate of 79% (n= 104) with a follow-up rate of 84% (n= 112) was achieved (see Table 4.4.2).

#### **4.4.5 Data collection procedure**

Although the measures were self-report surveys, an observed reality of data collected during the baseline study highlighted a deficit in literacy skills within the cohort, with 80 (77%) people leaving school without completing 2<sup>nd</sup> level education (see Chapter 5, Table 5.2.1). Therefore, data for the current study followed a semi-structured one to one interview. The service users were asked to respond to questions on a series of psychometrically robust measures to assess their current treatment outcomes, levels of

PTSD and early childhood experiences with their responses recorded both electronically using an audio recorder and on a physical questionnaire (see Section 4.4.6 for details of the instruments administered). During the semi-structured interviews, many participants wanted to share some of their life experiences during the interviews. The researcher’s objective was to create an open environment where participants felt comfortable to provide accurate and honest responses. Therefore, emphasis was placed on listening skills by the researcher. The time taken to complete an interview was not predetermined and left to the discretion of the participant with many people adding a personal narrative when answering the quantitative questions. Data accuracy was confirmed post interview using the audio recordings in conjunction with the paper questionnaire. All the measures used in the study were validated and reliable questionnaires widely used in research among people with substance use problems. The survey instruments will be discussed in the next section.

#### 4.4.6 Instruments

The research instruments used in this study were the opiate treatment index (OTI) incorporating the General Health Questionnaire (GHQ-28), to assess treatment outcomes; the DSM-5 based PCL-5, a 20-item measure of PTSD and the Adverse Childhood Experiences questionnaire. Demographic questions were also asked to provide a broader view of the participant’s education, family background, age of drug initiation and treatment history (see Table 4.4.3).

*Table 4.4.3: Summary of treatment outcome measures, PTSD, and ACEs.*

<b>Profile questionnaire</b>	Demographic information	Self-report
<b>Opiate Treatment Index</b>	Drug use	Self-report
	Physical Health	Self-report
	GHQ 28 – Psychological well-	Self-report
	HRB- HIV Risk taking behaviour	Self-report
	Social Functioning	Self-report
	Criminal behaviour	Self-report
<b>Post-traumatic stress disorder (PTSD)</b>	20 item PCL-5 for DSM-5	Self-report
<b>Adverse Childhood Experiences (ACEs)</b>	10 item ACE questionnaire	Self-report

#### **4.4.6.1 Profile questionnaire: a measure of demographic information**

The profile questionnaire was specifically developed by the research team for people in addiction treatment (Comiskey et al., 2009). It gathers a broad range of data including information on education background, employment status, relationship status and drug treatment history. This questionnaire was used in the baseline phase of this study (see Appendix 2).

#### **4.4.6.2 Opiate Treatment Index: a measure of drug treatment outcomes**

The OTI is a validated, structured instrument designed to provide a measure of the effectiveness of drug treatments. It measures treatment outcomes across six domains and was originally developed by Darke et al. (1992) in Australia as a research tool for the evaluation of people in opiate treatment (see Appendix 2). Since its development, the OTI has been validated for use in a range of methadone programmes and has proved to illustrate similar results, whether administered by treatment staff or by independent researchers (Adelekan et al., 1996; Darke et al., 1992; Deering & Sellman, 1996). The instrument consists of a standardised range of measures covering six treatment outcome domains, namely; drug use, HIV risk taking behaviour, physical health, criminality, social functioning, and psychological adjustment as measured by the General Health Questionnaire (GHQ-28), (Goldberg & Hillier, 1979). All questions relate to self-reported behaviour in the last month except for the questions on social functioning in which the information relates to the six months prior to interview. Each outcome domain provides a numerical score with higher scores indicating a greater level of dysfunction. Reliability analysis for the measures found Cronbach's alpha values ranging from 0.25 to 0.93 (see Table 4.4.4). A Cronbach's alpha of 0.7 and above indicates good internal consistency (Pallant, 2011). Analysis of items within the social functioning scale found that if item five was deleted, 'How often in the last 6 months have you had conflict with your partner?', the Cronbach's alpha reliability statistic would increase from 0.68 to 0.73. Furthermore Pallant (2011) posits that scales with five or less items are prone to have a Cronbach's alpha of .5 or less therefore an inter-item correlation of between 0.2 and 0.4 is an indicator of internal reliability (see Table 4.4.4).

*Table 4.4.4: Reliability analysis for the Opiate Treatment Index measures*

<b>Treatment Outcome</b>	<b>Cronbach's Alpha</b>	<b>No of Items</b>	<b>Inter-item correlation</b>
<b>Drug Use</b>	0.55	5 *	0.34
<b>Physical Health</b>	0.86	48	
<b>HIV risk taking behaviour</b>	0.55	8	
<b>Criminality</b>	0.25	4 *	0.11
<b>Social Functioning</b>	0.68 #	12	
<b>Psychological adjustment</b>	0.93	28	

*\* Indicates 5 items or less*

*# Cronbach's alpha .73 with item 5 deleted.*

The 28-item GHQ-28 (Goldberg & Hillier, 1979) is incorporated into the OTI to provide a global measure of an individual's current psychological adjustment. Each item is scored 0 or 1 based on the absence or presence of the symptom in the four weeks prior to the interview. For example, question one asks, have you recently: 'Been feeling well and in good health?' Each item is scored, 0 for better than usual/same as usual, or 1 for worse than usual/much worse than usual. With a score of 1 representing the presence of a symptom. The global scales range from 0-28, with higher scores indicating higher degrees of psychopathology. Scores ranging from 0-7 can be computed for each GHQ sub-scale, somatic symptoms (items, 1 to 7), anxiety (items, 8 to 14), social dysfunction (items, 15 to 21) and depression (items, 22 to 28).

An overall cut-off score above 4/5 indicates psychopathology in the sample population (Goldberg & Williams, 1988). The Cronbach's alpha for the four dimensions of the GHQ-28 within the current study ranged from 0.79 to 0.93, with an overall Cronbach alpha of 0.93 indicating good reliability and internal consistency for the measure (see Table 4.4.4).

#### **4.4.6.3 ACE Questionnaire: a measure of childhood experiences**

The Adverse childhood experience (ACE) questionnaire is an instrument to measure childhood maltreatment and household dysfunction in a person's life before they reach 18 years of age (Zarse et al., 2019), The ACE is a 10-item questionnaire investigating five areas of childhood maltreatment and five questions to collect data of family and

household dysfunction (Dube et al., 2003). For example, question one asks, “*did a parent or other adult in the household often or very often swear at you, insult you, put you down, or humiliate you? Or act in a way that made you afraid that you might be physically hurt*” (Felitti et al., 1998, p. 248). Each item is scored, yes = 1 or no = 0, with a range between 0 and 10. Higher scores increase an individual’s probability of experiencing a range of poorer than average health and social outcomes over their life-course (Centers for Disease Control and Prevention, 2019). Reliability analysis conducted on the 10-item scale among the sample (n= 102) found a Cronbach’s score of  $\alpha = 0.81$ , demonstrating a high level of reliability for the instrument.

#### **4.4.6.4 PCL-5 Questionnaire: a measure of PTSD**

PTSD was measured by the PCL-5, an instrument designed on the 20 items defined within the DSM-5 for a diagnosis of PTSD (Bovin et al., 2015). With the introduction of the DSM-5, trauma was removed from the anxiety disorders category and placed in a new category referred to as “*Trauma and Stressor-related Disorders*” (Pai et al., 2017, p. 2). This new diagnostic category is different from other psychiatric disorders in that exposure to a traumatic life event, serious injury or sexual violence event is a prerequisite, for a diagnosis of PTSD (Weathers et al., 2014). Each of the twenty items in the PCL-5 are scored within a range of 0 representing ‘not at all’ to 4 representing ‘extremely’. For example question one asks, ‘In the last month how much were you bothered by: Repeated, disturbing, and unwanted memories of the stressful experience’, 0 = Not at all; 1 = A little bit; 2 = Moderately; 3 = Quite a bit; 4 = Extremely. The scoring range for the instrument is 0 to 80, with higher scores indicating a higher level of PTSD. The Cronbach’s  $\alpha = 0.94$  demonstrated good internal consistency among participant responses within this study, confirming the reliability of the instruments in previous studies (Blevins et al., 2015; Bovin et al., 2015). Armour (2015) and (Bovin et al., 2015) reported that scores on the PCL-5 instrument of between of 31 to 33 were appropriate for a preliminary diagnosis of PTSD, while Walker et al. (2002) suggests a score of 30 on the instrument is appropriate for a diagnosis of PTSD. The current study

has taken a cautionary position, therefore, a score of  $\geq 33$  has been chosen as the cut-off score for a PTSD for the descriptive and categorical analysis.

#### **4.5 Role of the researcher**

The researcher assumed the roles of project manager, field researcher and data security manager to ensure a successful and smooth data collection process. The researcher was part of the data collection team during the HAT study in 2017 and had previously interviewed 37% (n= 49) of the service users and was therefore, known to the clinical staff prior to commencement of data collection. For the current study the researcher interviewed 92 (88%) participants and an experienced research colleague completed 12 of the interviews. Following ethical approval from the Facility Research Ethics Committee (TCD) (see Appendix 1), and the Assistant Director of Nursing for community health area 09 (CH09), the researcher constructed a comprehensive database of all the service users who participated in the 2017 study. This was followed by a physical visit to each treatment centre to collect information and build a picture of the whereabouts of all the eligible participants. A field worker, who had interviewed service users during the HAT study was recruited to assist in collecting data from TC1, as this clinic provided the largest number of participants during the baseline study. The data collection plan followed the same timeline as the baseline study, to re-interview service users within two years of the first interview, therefore, data collection commenced sequentially beginning in TC1 and continued sequentially through to TC 6. Treatment centres TC1 and TC2 represented 81% (n= 106) of the original sample (n= 131).

Addiction centres are busy and complex environments, with many factors to consider. Of primary consideration for the researchers, was the uninterrupted provision of treatment services for both the clinical staff and the users of the service. As already mentioned above, clinic opening times differed between the various centres and the availability of a secure private space to conduct interviews presented many daily challenges for the research team to negotiate. Furthermore, as the duration time of an

interview was not fixed, coordinating appointment times with participants was extremely difficult and very time consuming.

Following each interview, the survey questionnaires were placed in a holdall and removed from the interview setting at an appropriately convenient time. The security of the researcher's holdall during interview times required continuous vigilance, particularly given the researcher did not have sole access to the consulting rooms within any of the clinical settings. When the questionnaires reached a secure location, they were checked for completeness. If any data was missing or ambiguous, a review of the audio recording was conducted, and anomalies corrected during the data validation process. Data management, data security and quality control provided different and equally time-consuming challenges.

#### **4.5.1 Data management and security**

During baseline, each participant was assigned a unique ID code corresponding to the treatment centre, the participants initials and date of birth. Although this ID code could only be identified by the research team, it did include potentially identifiable information. To ensure total anonymity for participants, the order in which the questionnaires were first entered into the SPSS database, was recorded, and used as the unique identifier for each participant. Information such as full name, address, phone numbers and email addresses were stored separately on a password protected excel database file created for follow-up study. This data was saved on a password protected server which can only be accessed on Trinity College password protected computers. The signed participant consent forms and the completed questionnaires were stored in separate physical locations within the college campus. Data security procedures were in place to ensure only authorised researchers had access to the study files or the survey materials. Quantitative data entry and analysis were conducted on IBM SPSS Statistics 26 (IBM Corp, 2019). Qualitative data entry and analysis was conducted on NVivo version 1.6.1 (QSR International, 2022). Personal client information was not stored on either SPSS or NVivo databases. Hardcopy questionnaires with personal information were stored in a locked filing cabinet by the researcher.



#### **4.5.2 Quality control and data auditing**

Quality control of the data collected involved two primary processes. Firstly, an examination of all the questionnaires was conducted prior to data entry for accuracy and missing data. If any of the data was missing, the corresponding audio recording of the interview was reviewed, and any missing data was corrected. Secondly the checking and auditing the SPSS database was conducted following data entry for errors. The process was conducted in four main stages: Screening, checking, entering, and auditing. The researcher initially screened the questionnaires on the day of collection or when received from the fieldworker. Data entry was performed by a member of the research team. To ensure the accuracy of the data, every questionnaire entered was checked thoroughly. Once the data were entered, a random sample of 11 questionnaires was selected for audit, representing 10% of questionnaires entered. The audit involved a complete check of each question on the 11 questionnaires. A total of 4,930 data points were checked, and 55 errors were found and corrected, representing an error rate of 1.25% which was less than the 5% error accounted for during statistical analyses.

#### **4.6 Ethical procedures, consent, and risk**

Ethical approval for the baseline cross-sectional study was obtained from the Health Service Executive (HSE) Primary Care research ethics committee (REC). This committee also gave approval for further follow-up studies. An amendment to include two additional instruments specifically measuring PTSD and adverse childhood experiences was required and sought from the HSE research ethics committee. However, with the introduction of the General Data Protection Act (GDPR) this REC was reported as dysfunctional by the HSE Assistant Director for Research Development, with no ethics committee covering community health area (CH09), North Dublin, at that time. Therefore, after consultation and agreement with the Assistant Director of Nursing, Dublin North City and County Addiction Services, a further ethical application was made to the Faculty of Health Sciences Ethics Committee, Trinity College Dublin, in December 2018 and approved in March 2019 (see Appendix 1). Information leaflets explaining the research were provided again to all participants and with the implementation of GDPR,

new explicit consent was sought for this study in addition to the consent already provided by participants during the baseline phase (see Appendix 2). Furthermore, participants were also asked to provide explicit consent to allow the interview to be audio recorded.

Some of the participants were still active drug users, therefore, confidentiality of the data collected and anonymity of the participant was a key ongoing ethical concern. Additionally, the baseline phase had revealed that many participants had minimal formal education and as a result possessed a lack of literary skills. This placed a greater burden on the researchers to ensure that participants were fully aware of the risks of participating and their rights under GDPR. The researchers recognised that they had a duty of care to the participants, therefore, each aspect of the informed consent was read to the participant and explained, if required, before it was signed by the participant. Gaining people's trust to provide honest and accurate responses to the questions asked was an extremely important consideration often requiring continual reassurances during the interview process that their responses were confidential. The questionnaires also asked extremely sensitive and personal questions which could cause upset, placing a psychological burden on the participant. A considerable amount of care and sensitivity was needed in both verbal and nonverbal communication to mitigate the possible risk of causing upset. A debrief sheet providing information on support organisations was provided to all participants following the interview.

#### **4.7 Statistical analyses plan (SAP)**

A detailed description of the statistical analyses conducted to answer the research questions is provided in the following section. The aims of the statistical models are to investigate the relationships between PTSD, ACEs and six treatment outcomes, accordingly, several statistical methodologies were employed for data analysis. These included descriptive analyses, correlational analyses, and statistical modelling. The key variables on PTSD, ACEs and treatment outcomes did not meet the assumptions of the normal distribution therefore, a number of data transformation techniques were used

to reduce skewness and kurtosis (Tabachnick & Fidell, 2014). However, when transformed, the variables did not meet the Shapiro-Wilks test for normally distributed data as the probability statistic, p value was less than .05 (see Appendix 4 for ACE & PCL-5), therefore, non-parametric Spearman's Rho were employed for correlational analysis and Mann Whitney U tests were computed for differences between groups. Chi square tests were used where the data was categorical. To identify the predictor variables for each of the outcome variables, multiple regression modelling was used (Tabachnick & Fidell, 2014).

#### **4.7.1 Descriptive analysis**

The demographic information for participants is presented in percentages, frequencies and where applicable, the mean, standard deviation and median is provided. These data include a broad outline view of the participants age, gender, education, employment, family, and drug treatment histories. Treatment outcomes measured using the Opiate Treatment Index are presented for each of the six treatment outcome variables by gender; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning, by gender. Data on current PTSD, collected using the PCL-5, is presented by gender, while adverse childhood experiences are broken down by gender and presented for each of the 10 items in the questionnaire (see Section 5.4).

#### **4.7.2 Inferential analyses**

The aims of the statistical modelling were to:

1. To identify the relationships between the six treatment outcomes (current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning) ACEs and PTSD, using correlational analysis.
2. To identify the relationships between the individual dichotomous ACE items and PTSD using Pearson's Chi Square analysis

3. To investigate the individual predictors of PTSD, current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning using multivariate multiple regression.
4. To investigate the individual predictors of PTSD among the ten adverse childhood experiences factors, using multivariate multiple regression.

Inferential analyses were conducted to measure the correlation between variables, and differences between groups. The aim of the inferential analyses is to provide an overview of client treatment outcomes, current levels of PTSD, and ACEs to explore relationships between these variables. Correlation analyses were conducted for each of the individual treatment outcome variables with PTSD and ACEs using a Spearman's Rho correlation. Moreover, associations were also performed between PTSD and each of the ten ACE nominal items using Chi-Squared tests. Mann Whitney U tests were used to analyse differences between gender for each of the treatment outcomes, PTSD and ACE variables. All analyses were conducted in SPSS version 26 (IBM Corp, 2019).

The relationship between PTSD, ACEs, and treatment outcomes were assessed using multiple regression models with backward elimination. The multiple regression model is commonly used for analysing quantitative data or a combination of continuous and categorical data, where the outcome variable is continuous (Tabachnick & Fidell, 2013). All the predictors are first placed in the model and the SPSS software then calculates the contribution of each predictor based on the significance value from a t-test (Field, 2018). The significance values are compared and the least statistically significant variable is then removed from the model in a backward elimination method. Field (2018) suggests the forced entry method is most suitable for theory testing while forward elimination is more likely to produce a Type II error.

According to Tabachnick and Fidell (2014), for a multiple linear regression model to be valid there are six assumptions which need to be met when conducting multiple linear regression (Field, 2018; Tabachnick & Fidell, 2014):

1. The dependent variable (DV) is continuous, either an interval or ratio variable. This assumption was met as all of the outcome/dependent variable was collected at a quantitative contentious level.
2. Sample size calculation: According to Tabachnick and Fidell (2014), in regression analysis a sample size is calculated using the formulae,  $N \geq 50+8m$ , where  $m$  is the number of independent predictors (i.e., if the model has six independent predictor's the sample size required is,  $50 + 8(6) = 98$ . Furthermore, Cohen (1992) suggests that to detect a medium effect size, at  $\alpha = .05$ , a sample size of 97 is appropriate to analyse six predictor variables using multiple regression. The maximum number of factors analysed within the regression models was six, therefore, as the total sample size used during analysis exceeded 98 ( $n= 104$ ), the sample size assumption was met for all the regression models.
3. Absence of extreme outliers which can have too much impact on the regression model. This assumption will be tested using Mahalanobis distance for each model. The Mahalanobis distance follows a chi square distribution and was calculated by selecting the degrees of freedom, (number of independent factors) for an alpha value of  $p = .05$  using the Chi square distribution table (Field, 2018; Wilson & Hilferty, 1931).
4. Absence of multicollinearity and singularity: Multicollinearity exists when the independent variables (IV) are highly correlated with each other ( $r \geq .9$ ). Singularity occurs when one IV is a combination of other IV's in the model. This assumption will be tested using the critical values for tolerance,  $\geq .2$  and variable inflation factor (VIF) values  $\leq 10$ , contained in the tables presented below for each regression model (Field, 2018).
5. Normality, linearity, and homoscedasticity of residuals: The residuals are normally distributed around the predicted dependent variable scores. There is a linear relationship between predicted DV scores and the errors of the predicted score. Homoscedasticity assumes that the standard deviation of

errors of prediction are approximately equal for all predicted scores. This assumption will be tested through examination of scatter plots diagrams of the residuals presented for each regression model.

6. Independence of errors: Errors of prediction are independent of each other. This assumption will be tested using the Durbin-Watson statistic. A value of two indicates no autocorrelation, a value close to 0 indicates positive autocorrelation while a value close to four indicates negative auto correlation (Field, 2018).

While some of these assumptions can be tested prior to commencement of computing regression modelling, other assumptions are tested through examination of the SPSS output file data. A further consideration was the methodology for variable entry into the regression models. Tabachnick and Fidell (2014), outline three methods for entering variables into a multiple linear regression model; standard multiple regression, sequential or hierarchical multiple regression and statistical or stepwise multiple regression. The standard method is where all predictor variables are entered into the model and are evaluated together as significant or non-significant predictors of the dependent variable. Therefore, the degrees of freedom are defined by the total number of predictor variables within the model.

The researcher must interrogate the data in the output file to identify the significant predictor variables for the dependent variable under investigation. In sequential multiple linear regression, the order the variables entered is decided by the researcher based theoretical considerations of which variables provide the highest predictive value for the regression equation. Statistical multiple regression is a method where all predictor variables are entered into the regression model together and the statistical software package decides which variables remain in the final model. This procedure can use, the forward method, where variables remain in the final model based on the level of significance of the predictor variables, the backward method, where variables are evaluated for inclusion or removal in the final model based on the level of significance of the predictor variable and the individual contribution of the variable to the

explanation of variance for the dependent variable. The last statistical method, stepwise, is a combination of both, the forward and backward methods. With the stepwise method the degrees of freedom are based on the number of predictor variables remaining in the final regression model.

The backward elimination method retained non-significant predictor variables in instances where these independent variables added to the overall goodness of fit of the model; the percentage of variance in the dependent variable ( $R^2$  value), explained by the independent variables, thus, the results of the backward elimination method are presented for the regression modelling in this chapter (Tabachnick & Fidell, 2014). The backward elimination method was chosen for the current study as the more appropriate procedure for this analysis over the entry and sequential methods. The 'enter' method reduces the degrees of freedom based on the number of variables entered into the model and this may result in a violation of sample size requirements for multiple linear regression. While the sequential method may add an unnecessary layer of complexity to the analysis as theoretical considerations of specific variables do not form part of this thesis.

#### **4.8 Explanatory Qualitative Analysis Plan.**

The purpose of this qualitative analysis is to provide some explanatory context to this quantitative study. As discussed in Section 4.3.1, the current study is not a mixed or multi method study, all the variables collected were quantitative and no specific qualitative questions asked during data collection. However, throughout the semi-structured interviews many participants openly provided an explanation for their response to a quantitative question and many of the responses mentioned traumatic childhood events and experiences. The overarching aim of the study, outlined in Chapter 1, was to investigate the relationships between ACEs, PTSD, and treatment outcomes, therefore, explanatory analysis of the personal comments and narratives from a selection of the participants may contribute to the interpretation of the overall quantitative findings of this study. Thematic analysis has been selected for the

qualitative analysis due to its epistemological flexibility and widespread application in health research (Braun & Clarke, 2014). According to Braun and Clarke (2006) thematic analysis (TA) is considered a flexible method for creating themes, which according to Holloway and Todres (2003) are a central element in qualitative analysis. The approach can be applied to a range of theoretical or epistemological approaches, however, the process of conducting thematic analysis requires the researcher to, state what is being done, how the analysis is conducted and actively select and report on the identified codes and themes in the final analysis (Braun & Clarke, 2006). To conclude, thematic analysis using the deductive method of analysis at the semantic level of coding will be conducted among a selected sample of males and females participants in the current. The participant selection process will be discussed in Section 4.9.3 and in Chapter 7.

#### **4.8.1 Decisions for conducting thematic analysis.**

Before conducting thematic analysis, Braun and Clarke (2006) outline a number of decisions that need to be taken before, during and after the analysis, for example; What counts as a theme?; Will the analysis to be performed using an inductive or deductive approach?; Will the analysis be conducted at a semantic or latent level?; Will the full dataset or a section of the dataset be analysed?

A theme should capture something important about the data which links to the research question to provide some level of meaning in the dataset. A theme is an outcome of coding which should occur a number of times, however, depending on the size of the dataset the number of times a theme is mentioned does not make it any more or less important than another theme (Javadi & Zarea, 2016). The inductive approach is usually applied in the absence of a specific research question, where the research question emerges from the data coding process. Whereby the deductive method is more theoretical in nature and driven by a detailed analysis of some aspect of the data. Given this study has a specific research question of interest and the epistemological underpinning of the current study is post-positivism, the deductive method of analysis was employed in the qualitative analysis (Braun & Clarke, 2016).



Furthermore, the semantic level for coding and analysis are used to guide the interpretation of the data. The themes are based on the participant's responses. Development of the themes will progress from the organisation of the data into thematic patterns to give explanatory meaning to the overall findings of this study.

#### **4.8.2 Steps for conducting thematic analysis.**

According to Braun and Clarke (2006), the processing for conducting thematic analysis is not linear. In contrast, the process requires the analyst to constantly move back and forth between the dataset, the coded extracts of data being analysed, and the analysis being produced. Documenting and developing emerging ideas, coding schemes, analysis occurs throughout this process, unlike quantitative analysis where it is the final step of the process.

The six steps for conducting thematic analysis outlined by Braun and Clarke (2006) are,

1. Familiarise oneself with the data.
2. Create initial codes.
3. Search for themes
4. Review these themes and refine themes.
5. Define these themes and name themes.
6. Produce a report on the themes supporting them with quotes.

Familiarity with the data is the first important step before commencing coding. Following familiarity with the data an initial list of ideas and interesting aspects begin to emerge to aid initial codes for organising the data into meaningful groups or categories. At stage three, a code may form part of multiple themes and the dataset should be coded for as many themes or patterns as possible. Following the coding, a review enables the sorting of codes into candidate themes with the supporting data extracts. During stage four, themes created in stage three are reviewed and refined, for relevancy and heterogeneity. Where a theme is similar to another candidate theme, a decision should be taken whether to collapse a theme into a sub-theme or recode the data items into other more homogeneous themes. The penultimate stage is where themes are

defined and refined to highlight what is of interest in the data extracts that tell a story of the theme in relation to the research question. The final stage involved writing a detailed report highlighting the evidence from the data extracts for each theme to provide merit and validity to the analysis (Nowell et al., 2017).

#### **4.8.3 Participant selection and analytical method.**

The aim of the qualitative analysis is to provide explanatory evidence for the findings of the quantitative analysis. The guidelines for “*sample size in TA range from 2 to over 400*”, and “*it is unclear how to choose a value from the space between*” (Braun & Clarke, 2016, p. 741). Given the total number of participants interviewed for the current study was 104, a sample of 15% of participants (n= 15.6) was considered appropriate for this analysis. Therefore, a representative sample of eight male and eight female participants (n= 16) were selected. The specific selection process from among the 104 qualifying participants will be discussed in Chapter 7. Analysis of the data was conducted using NVivo (version 1.6.1) (QSR International, 2022).

#### **4.9 Chapter Conclusions**

The philosophical and methodology background to this quantitative investigation between ACEs, PTSD, and treatment outcomes are discussed throughout the chapter. The epistemological position of post-positivism is presented in Section 4.3.1 and is justified based on the role taken by the researcher during the data collection process and the inclusion of an explanatory qualitative section that explored participant’s comments and remarks during the semi-structured interviews. The methods used in this study for the design; sample size; the management, protection, and collection of the data; have been discussed in detail. Also discussed are, participant recruitment, ethical procedures, and the role of the researcher in the study. The chapter concluded with a presentation of the quantitative SAP and a presentation of the qualitative thematic analysis procedure that were implemented during data analysis.

The next chapter provides a detailed description of the participants demographic data and descriptive analysis of the key variables presented within this study.

## **Chapter 5: Findings on demographics, relationships, and substance use.**

### **5.1 Introduction.**

The aim of this study was to investigate the relationship between ACEs, PTSD, and treatment outcomes among people in OAT. This chapter is divided into two sections. The first section will present details of the participants; describe their personal attributes, their social and living relationships, and physical and psychological well-being. The second section will include a description of outcomes of current treatment, PTSD and ACE's using descriptive and straightforward inferential statistics. The results of inferential statistics in this chapter will be used to test a number of the research predictions presented in Chapter 4 and present the overall descriptive findings for the outcomes of current treatment, PTSD and ACEs.

### **5.2 Demographics of the sample**

A total of 112 (85.5%) subjects were successfully followed up and 104 (79.4%) participants were reinterviewed from among a cohort of 131 service users. Of the 131 participants who took part in the baseline study, four people had sadly passed away, two people had suffered from a stroke, two people refused to participate and 19 people were uncontactable (see Figure 5.1).

All participants were ethnic European; the majority were either Irish or Northern Irish with just one person from the island of Britain. The average age of the participants was 42.7 years (SD= 7.4; 95% CI, 41.27 – 44.17). Ages ranged from 28 years to 50 years for females (n= 38) with an average age of 39.2 years (SD= 5.0; 95% CI, 37.62 – 40.84). For males, ages ranged from 29 years to 68 years (n= 66) with an average age of 44.8 years (SD= 7.9; 95CI, 42.85 – 46.78) (see Table 5.2.1). Additionally, 87% of the sample were aged 35 years and over, providing further evidence of an aging population of people in OAT across Europe (A. M Carew & C. Comiskey, 2018; Mayock et al., 2018) (see Table 5.2.1).

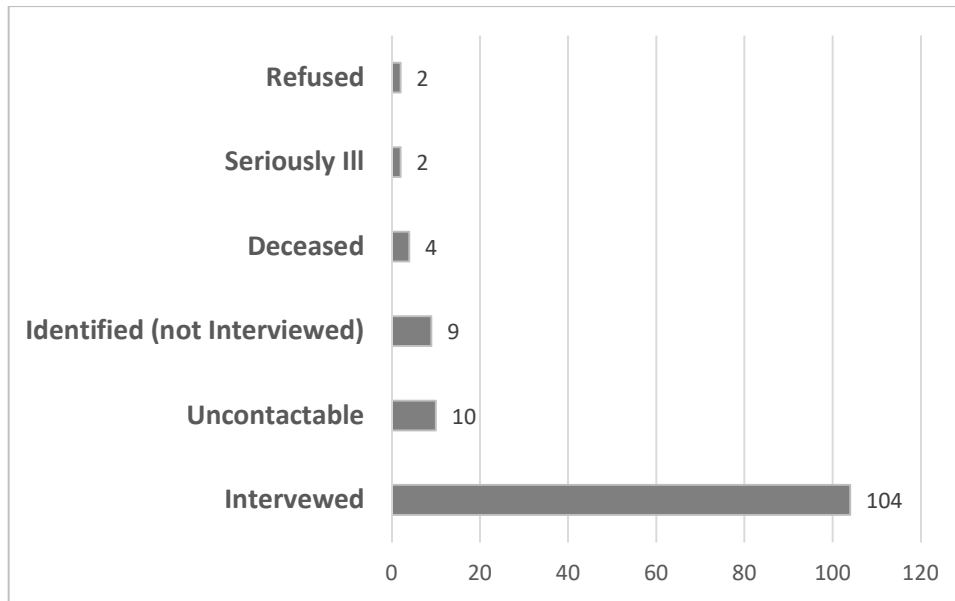


Figure 5.1: Follow-up of the 131 participants

### 5.2.1 Education and employment

The minimum number of years participants had spent in formal education was two years with a maximum of thirteen years. Females spent more years in education than males, with a median school leaving age of 16 years for females and 15 years for males. Pupils are enrolled in the Irish Post-Primary programme usually between the ages of 12 to 18 years (Department of Education, 2019). Furthermore, the legal minimum school leaving age is 16 years or after 3 years of post-primary education, whichever is later (Department of Education, 2019). Within this cohort 77% (n= 80) left school with a lower secondary education, preparing for, or completing the lower secondary junior certificate. Additionally, just two participants attended third level college after completing the leaving certificate programme (see Table 5.2.1).

Most of the participants, 76% (n= 79) were unemployed at the time of interview, with 45% of people in receipt of disability benefit. A significantly higher proportion of males, 59.1%, had spent time in prison compared to 34.2% of females ( $\chi^2 (1, N = 104) = 5.97, p = .015$ ) with those spending time in prison representing 50% of the total sample. It is worth noting that this proportion is higher than that reported in the Treatment

Outcome Study (DATOS) (Friedmann et al., 2003) and the Australian Treatment Outcome Study (ATOS) (Ross et al., 2005).

*Table 5.2.1: Demographic information of the service users by gender*

<b>(n= 104)</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>
	<b>38, 37%</b>	<b>66, 63%</b>	<b>104, 100%</b>
<b>Age range in years</b>			
25 to 34	6, 16%	7, 11%	13, 13%
35 to 49	31, 82%	42, 64%	73, 70%
≥ 50	1, 3%	17, 26%	18, 17%
<b>Mean= 42.72, SD= 7.44; 95% CI, 41.27 – 44.17</b>			
<b>Education attainment</b>			
No formal	1, 1%	1, 1%	2, 2%
Primary education	9, 9%	23, 22%	32, 31%
Lower secondary	19, 18%	27, 26%	46, 44%
Upper secondary	8, 8%	14, 13%	22, 21%
Third level	1, 1%	1, 1%	2, 2%
<b>Years in school, Mean= 9.94, SD= 2.04; 95% CI, 9.54 – 10.33</b>			
<b>Employment</b>			
Unemployed	30, 29%	49, 47%	79, 76%
Full time	2, 2%	12, 12%	14, 13%
Part time	6, 6%	1, 1%	7, 7%
Home Duties		4, 4%	4, 4%
<b>Disability Allowance</b>			
	18, 17%	29, 28%	47, 45%

### 5.2.2 Relationship status and family

The living situation and relationship status of participants is detailed in Table 5.2.2 below. Over half of the subjects (53%, n= 55) said they were single, while 45% (n= 47) were either married or in a relationship. A majority, 57% (n= 59), had children under 18 years, while 16 participants did not have any children. Participants reported a total number of 110 children under the age of 18, with 44 participants living with their children under 18 years; 47 children living with the other biological parent and 17 children living with another family member or in care. Most participants said they have a good or very good relationship with their children (66.3%, n= 69), with 16% (n= 17) defining their relationship as very poor to alright (see Table 5.2.2).

Table 5.2.2: Relationship status and children

(n= 104)		Female	Male	Total
<b>Relationship status</b>				
	Single	23, 22%	32, 31%	55, 53%
	Married	2, 2%	10, 10%	12, 12%
	In a relationship	13, 13%	21, 20%	34, 33%
	Engaged	0, 0%	1, 1%	1, 1%
	Other	0, 0%	2, 2%	2, 2%
<b>Children under 18</b>				
	1 Child	7, 7%	18, 17%	20, 19%
	2 Children	10, 10%	12, 12%	22, 21%
	3 Children	2, 2%	7, 7%	9, 9%
	4 Children	3, 3%	0, 0%	3, 3%
	No Children under 18	10, 10%	19, 18%	29, 28%
<b>Relationship with children</b>				
	Very poor	1, 1%	5, 5%	6, 6%
	Poor	2, 2%	2, 2%	4, 4%
	Okay – Alright	2, 2%	5, 5%	7, 7%
	Good	1, 1%	6, 6%	7, 7%
	Very good	26, 25%	36, 35%	62, 59%
	Not applicable or missing	6, 6%	12, 12%	18, 17%

### 5.2.3 Living arrangements

The social functioning section of the questionnaire asked questions to understand a participant’s current living arrangements. Participants were asked, ‘Where have you been living for the past 3 months’, 62% (n= 64) said they lived in a house or flat, with 25% (n= 26) living with relatives. Just one participant was sleeping rough (see Table 5.2.3). Home ownership in Ireland was 70% in the last published population census data in 2016, which contrasts sharply with the 11% reported by this sample (Central Statistics Office, 2022a, para 2). Over a quarter of people (28.8%, n= 30) lived with parents or family, while 30 participants (28.8%) were living alone or alone with children. Additionally, 87% (n= 90) had lived in one place for the previous 6 months with just 5 people having lived in more than two places (see Table 5.2.3). The definition of homelessness provided through the National Advisory Committee on Drugs (NACD)

included anyone living rough, in a hostel, B&B, squat or bedsit, or living with friends or family (Lawless & Corr, 2005) (see Table 5.2.3).

*Table 5.2.3: Living accommodation.*

<b>(n= 104)</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>Where have you been living for last 3 months?</b>			
Own house or flat	5	6	11, 11%
Rented house or flat	29	24	53, 51%
Bedsit/Hotel/Boarding House	3	1	4, 4%
Hostel/Shelter	2	0	2, 2%
Sleeping rough	1	0	1, 1%
House of relatives	21	5	26, 25%
House of friends	3	0	3, 3%
Prison	1	0	1, 1%
Other	1	2	3, 3%
<b>Whom do you live with?</b>			
Alone	10	9	19, 18%
Parents or family	24	6	30, 29%
Alone with children	1	10	11, 11%
Alone with partner	7	7	14, 14%
Partner and children	13	5	18, 17%
Friends	7	1	8, 8%
Other	4	0	4, 4%
<b>Number of places lived in over the last 6 months</b>			
One	57	33	90, 87%
Two	4	5	9, 9%
Three	4	0	4, 4%
Four	1	0	1, 1%

### **5.2.3 Current treatment and substance use history**

The amount of time people had been in their current treatment ranged from 3 months and 27 years. The average number of years in their current treatment was 11.2 years (SD= 6.9, 95% CI: 9.88 – 12.56) and there were minimal differences between men and women (males, mean= 11.4, SD= 6.8; females, mean= 11.0, SD= 7.2). Furthermore, for 59% of participants (male = 36, 54.5%; female = 25, 65.8%) this was not their first time in treatment. The main opiate agonist treatment medication was methadone with just

two male participants (1.9%) prescribed suboxone by their doctor (see Table 5.2.4).

*Table 5.2.4: Treatment modality*

<b>(n= 104)</b>	<b>Male (n= 66)</b>	<b>Female (n= 38)</b>	<b>Total</b>
<b>Treatment type</b>			
<b>Methadone</b>	62, 94%	33, 87%	95, 91%
<b>Suboxone</b>	2, 3%	0, 0%	2, 2%
<b>Completed treatment</b>	1, 1%	4, 11%	5, 5%
<b>Not in treatment</b>	1, 2%	1, 2%	2, 2%
<b>Methadone dose in mls (mean= 67.88, S.D= 28.73: 95% CI, 62.03 – 73.74)</b>			
<b>Main reason for attending treatment</b>			
<b>Methadone and support</b>	20	15	35, 34%
<b>Stay stable and well</b>	17	9	26, 25%
<b>Access to methadone</b>	15	3	18, 17%
<b>To get off drugs</b>	11	6	17, 16%
<b>Completed Treatment</b>	1	4	5, 5%
<b>Not in Treatment</b>	1	1	2, 2%
<b>In Prison</b>	1	0	1, 1%
<b>How do you access your medication</b>			
<b>Daily dispensing</b>	26	10	36, 35%
<b>Prescription</b>	31	20	51, 49%
<b>Completed treatment</b>	1	4	5, 5%
<b>Take home for offsite consumption</b>	7	3	10, 10%
<b>Not in treatment</b>	1	1	2, 2%

A total of five people interviewed had completed treatment and of those, two were still attending drug counselling services within their original treatment centre. A much higher proportion of women had completed treatment than men, (see Table 5.2.4). Two participants who had left treatment, disclosed that they were taking heroin once per day, while one participant was continuing OAT in prison. Access to methadone and other clinical supports was the main reason cited for attending treatment in 34% (n= 35) of cases. However, 17% (n= 18) said they only attended the treatment centre to get



methadone and did not use any other clinical service. Almost half of participants (n= 51) obtained their medication in a community pharmacy through a prescription issued by the treatment centre doctor or a qualified community GP. The remaining 46 participants received their medication directly from a treatment centre, either ingesting it on the premises or taking the medication away for offsite consumption (see Table 5.2.4).

*Table 5.2.5: Age of first use by substance type*

<b>(n= 104)</b>	<b>n</b>	<b>Mean</b>	<b>S.D.</b>	<b>Min age</b>	<b>Max age</b>
<b>Heroin</b>	102	20.3	7.4	12	64
<b>Other Opiates</b>	67	22.2	9.1	12	54
<b>Alcohol</b>	98	14.9	3.7	7	29
<b>Cannabis use</b>	93	15.4	4.4	7	35
<b>Amphetamines</b>	74	18.1	4.8	12	35
<b>Cocaine</b>	94	25.3	8.9	12	48
<b>Tranquilliser</b>	92	24.7	10.4	4	51
<b>Barbiturates</b>	15	20.1	7.8	13	35
<b>Hallucinogens</b>	67	16.6	3.9	8	32
<b>Inhalants</b>	31	14.1	3.3	7	27
<b>Tobacco</b>	102	14.4	3.0	7	33

The average age of first use of heroin was 20 years (SD= 6.7; 95% CI, 18.82 – 21.72). The youngest person to first use any substance (tranquillisers) was just 4 years old, while the oldest person to first use heroin was 64 years. Heroin was the illicit drug with the highest prevalence among the cohort, used by 102 participants, followed by cocaine (n= 94) and cannabis (n= 93) (see Table 5.2.5). Furthermore, the age of first use for cannabis was much lower at 15 years (SD= 4.5; 95% CI, 14.4 – 16.3) when compared to cocaine at 25 years (SD= 8.9; 95% CI, 22.8 – 26.6). The age range of first cannabis use was between 7 and 35 years. Prevalence estimates for the general population in Ireland suggest that 5% of 15 to 34 year old people consumed cocaine in 2019, with 8% of people between 15 and 64 reporting lifetime use, considerably lower when compared to 89% of this sample (Millar, 2021). Furthermore, cannabis with a lifetime prevalence rate 24% in Ireland, and 27.3% throughout Europe is the highest for all illicit drugs (EMCDDA, 2022). Among this cohort, 89% reported using cannabis in their lifetime, with 52% of the current sample using cannabis in the last month. Mann Whitney U tests found no significant

difference between men and women and the age of first use of any substance, except for other opiates, with females taking the substance at an earlier age than males (see Table 5.2.6).

*Table 5.2.6: Gender differences in age of first use by substance type*

	U	Z	P	Mean age	
				n, Female	n, Male
<b>Heroin</b>	1181.000	-.243	.808 ns	38, 20.1	64, 20.4
<b>Other opiates</b>	335.000	-2.005	<b>.045*</b>	21, 19.4	46, 23.4
<b>Alcohol</b>	888.500	-1.600	.110 ns	35, 15.8	63, 14.4
<b>Cannabis</b>	781.000	-1.357	.175 ns	30, 16.3	63, 14.8
<b>Amphetamines</b>	556.000	-.513	.608 ns	24, 17.7	50, 18.2
<b>Cocaine</b>	905.000	-.805	.421 ns	33, 26.0	61, 25.0
<b>Tranquilliser</b>	888.500	-.790	.430 ns	34, 25.3	58, 24.0
<b>Hallucinogens</b>	310.000	-.748	.454 ns	13, 17.0	55, 16.5
<b>Inhalants</b>	89.500	-.418	.676 ns	9, 13.7	31, 14.3
<b>Tobacco</b>	1095.000	-.412	.680 ns	36, 14.3	64, 14.4

*Significance levels: \* p<.05: \*\* p<.01: \*\*\* p<.001: ns = not significant*

### 5.3 Descriptive statistics for Treatment Outcomes, PTSD and ACEs

The section will present findings for the descriptive statistics and differences between males and females for the treatment outcomes variables, PTSD and ACEs. As discussed in Chapter 4, the OTI provides a standardised set of measures for the evaluation of six treatment outcomes for people in OAT; current drug use, HIV risk taking behaviour, general physical health, psychological well-being, criminality, and social functioning.

#### 5.3.1 Recent substance use

Retention in OAT might be considered a way of putting an end to substance use, this is not how it worked for the participants in the study. While methadone may assist the participants in coping with their dependence on opiates the use of a variety of substances continued. In the study, the variable recent drug use is interpreted within the OTI as the consumption of a particular substance within the 28 days prior to being interviewed. The findings for recent drug use are presented in Table 5.3.1 and with a gender breakdown. The drug consumed most frequently was tobacco, used by 85% (n=

88) of all participants. An unspecified number of people anecdotally reported receiving tranquillisers on prescription from doctors, both in the treatment centres and from their own community based GP during the interviews, while others also reported purchasing pills illicitly on the street.

*Table 5.3.1: Drug use and gender difference by substance within the previous 28 days (n= 104)*

<b>Substances used within the last 28</b>	<b>n, %</b>		
	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>Heroin</b>	19, 29%	12, 32%	31, 30%
<b>Other Opiates</b>	3, 5%	3, 8%	6, 9%
<b>Alcohol</b>	19, 29%	16, 42%	35, 34%
<b>Cannabis</b>	41, 62%	13, 34%	54, 52%
<b>Amphetamines</b>	1, 2%	0, 0%	1, 1%
<b>Cocaine</b>	20, 30%	6, 16%	26, 25%
<b>Tranquillisers</b>	43, 65%	28, 74%	71, 68%
<b>Tobacco</b>	52, 79%	36, 95%	88, 85%
<b>Prescription methadone</b>	61, 92%	34, 89%	95, 91%

The questionnaire did not differentiate between prescription and illicitly purchased tranquillisers; therefore, the data presented in Table 5.3.1 is for all tranquilliser substances consumed within the previous 28 days. Tranquilliser use was proportionally highest among females used by 74% compared to 65% of males, however, the difference was not statistically significant (see Table 5.3.2). Furthermore, there was no statistical gender difference for the average amount of methadone prescribed to participants (males, mean= 0.5mls; females, mean= 3.2 mls).

The Q score is an indication of the quantity of a drug used within the previous 28 days and is determined for each drug within the OTI. A Q score of  $\geq 1$  indicates daily use while scores between 0.14 – 0.99 indicate a person is consuming the substance more than once per week. The Q score is calculated by dividing the quantity of a drug used by the number of intervening days between each drug use episode. For example, a person interviewed on Monday is asked the last time they used heroin within the last 28 days and reported taking heroin three times on the previous Friday (time 1, benchmark), and a time before that, was four times on the previous Wednesday (time 2) and four times

on the previous Sunday (time 3). The Q score for that person is calculated by dividing the sum of the amount consumed on the last and second last occasion (3 + 4 = 7), by the sum of the interval between drug use episodes, time 1 and time 2, and time 2 and time 3, (2 + 3 = 5 days) giving a Q score for that person (7/5 = 1.4) therefore, a score of 1.4 indicates daily use.

*Table 5.3.2: Mean Q scores by substance type in the previous 28 days*

Substance type	Usage	Male	Female	Total	p
		Mean, SD	Mean, SD	Mean, SD	
Heroin	More than once per week	.16, .39	.15, .41	.16, .39	.957 ns
Other Opiates	Weekly use	.03, .17	.03, .16	.03, .17	.504 ns
Alcohol	More than once per week	.84, 2.61	.37, 1.3	.68, 2.23	.460 ns
Cannabis	Daily use (male only)	2.12, 3.44	.77, 2.30	1.65, 3.13	<b>.003**</b>
Cocaine	More than once per week	.36, 1.11	.19, .30	.30, .93	.127 ns
Tranquillisers	Daily use	2.59, 3.18	2.53, 3.02	2.57, 3.11	.921 ns
Tobacco	Daily use	8.56, 7.41	10.79, 7.71	9.37, 7.56	.130 ns

*Significance levels: \* p<.05: \*\* p<.01: \*\*\* p<.001: ns = not significant*

The mean Q scores for heroin at 0.16 and cocaine at 0.30 suggesting these drugs are being consumed more than once per week by this sample of participants. Moreover, the Q scores indicated daily use of cannabis for males with daily consumption for tranquillisers and tobacco found for both males and females (see Table 5.3.2). Statistical tests were computed to identify whether there were any significant differences between males and females for each substance and reported as the p value (see Table 5.3.2). No statistical differences were found between males and females drug on consumption for any substance with the prior 28 days except for cannabis (p = .003) with daily consumption shown for males 62% (n= 41) and more than once a week for females (see Table 5.3.2).

### **5.3.2 General physical health**

The general health scale is a symptom check-list within the OTI designed to give an indication of the participants present physical health status (Darke, Ward, Zador, et al., 1991).

The instrument is divided into seven subscales for males with an eighth (gynaecological health) included for females. Each subscale addresses symptoms related to the major organ systems of the body (see Table 5.3.3). Higher scores on the measures indicate a greater number of general health related problems. Table 5.3.3 presents the results for selected health categories. A full list of the health categories is provided in Appendix 5.

*Table 5.3.3: Selected general health problems by category and gender.*

<b>Health Problem = yes</b>		<b>Female n, %</b>	<b>Male n, %</b>	<b>Total n, %</b>
<b>Cardio</b>				
	Persistent coughing	16, 42%	19, 29%	35, 34%
	Coughing up phlegm	18, 47%	39, 59%	57, 55%
	Coughing up blood	4, 11%	5, 8%	9, 9%
	Wheezing	26, 68%	35, 53%	61, 59%
	Sore throat	12, 31%	12, 18%	24, 23%
	Shortness of breath	28, 74%	35, 53%	63, 61%
	Chest pains	7, 18%	20, 30%	27, 26%
	Heart fluttering or racing	20, 53%	29, 44%	49, 47%
	Swollen ankles	14, 37%	10, 15%	24, 23%
<b>Gynaecological</b>				
	Irregular periods	20, 53%	n/a	n/a
	Miscarriage	1, 3%	n/a	n/a
<b>Neurological</b>				
	Headaches	21, 55%	17, 26%	38, 37%
	Blackouts	3, 8%	8, 12%	11, 11%
	Tremors	21, 55%	14, 21%	35, 34%
	Numbness	17, 45%	18, 27%	35, 34%
	Dizziness	17, 45%	19, 29%	36, 35%
	Fits or seizures	3, 8%	7, 11%	10, 10%
	Difficulty walking	8, 21%	17, 26%	25, 24%
	Head injury	2, 5%	6, 9%	8, 8%
	Forgetting things	16, 42%	36, 55%	52, 50%

When gynaecological problems were controlled for, females were shown to have a greater number of overall health problems (mean= 16.0) compared to males (mean= 13.2). However, the difference was not significant ( $p = .074$ ). The data showed that six males had injected drugs in the previous month with three males reporting injecting related problems.

The cardio/respiratory systems were shown to represent the highest number of problems. According to the Irish Heart Foundation, Cardiovascular Disease (CVD) is one of leading causes of death and disability in Ireland (Irish Heart Foundation, 2022). Among the leading causes of CVD are smoking, high blood pressure and unrelieved stress (Irish Heart Foundation, 2022). The average number of cardio/respiratory symptoms reported by participants was 3.4 out of 9 symptoms. Although there was not a statistical difference between males and females, proportionally females were shown to have a higher highest average number of Cardio/respiratory problems (female, mean= 3.8; male, mean= 3.1;). Furthermore, 59% (n= 61) of participants reported 3 or more problems with 29% (n= 30) reporting five or more problems, which suggests that a large portion of the participants are at risk of developing CVD. Participants were asked to rate their own general health, 'In general how would you rate your general health', 56% of participants stated their health was either poor or fair, while 44% said it was either good or excellent.

### **5.3.3 HIV risk taking behaviour**

The HIV Risk-taking Behaviour Scale (HRBS) measures the risk of contracting and spreading HIV and other blood borne viruses. The scale has two dimensions; the injecting drug behaviour section and the sexual behaviour section. A total score for the scale is calculated by adding the scores for each of the dimensions together. A statistical difference was observed between men and women with males at a greater risk of contracting HIV and other blood borne viruses than females ( $U= 866.500$ ,  $Z= -2.810$ ,  $p =005$ ). An explanation for this gender difference may lie in the injecting drug behaviour of the sample. The number of people who injected drugs within the previous 28 days were all male (n= 6) representing 8% of the total sample, with only one person injecting drugs more than once per week.

The sexual behaviour section showed 97 participants reported having no sexual intercourse or were intimate with only one person in the previous 28 days (see Table 5.3.4). The data was generally in line with what one would expect to find in the general

population with 36% of adults over 50 sexually active once or twice a month (Orr et al., 2017). Results also showed 38 people never used condoms when having sexual intercourse, while 12% used condoms, on every occasion (see Table 5.3.4). Of the six people who injected heroin in the previous 28 days, two people said they had no penetrative sex, one participant said they often use condoms while three people said they never use condoms. Of particular note, four of the six people also reported having been diagnosed with Hep C in their lives. However, all six people said they never use injecting equipment after another person, indicating a lowering of the risk of acquiring HIV and other BBVs (Homer & St. Clair, 1991). Given the very low level of drug injecting behaviour and the low level of sexual promiscuity among the participants these findings would suggest there is a low risk of contracting a BBV infection among this cohort.

*Table 5.3.4: Sexual behaviour*

<b>(n= 104)</b>	<b>Male n, %</b>	<b>Female n, %</b>	<b>Total n, %</b>
<b>Sexual relations in the last month</b>			
<b>None</b>	26, 39%	24, 63%	50, 48%
<b>One person</b>	33, 50%	14, 37%	47, 45%
<b>Two people</b>	4, 6%	0, 0%	4, 4%
<b>Three to Five</b>	3, 5%	0, 0%	3, 3%
<b>Condom use with casual/regular</b>			
<b>Every time</b>	7, 11%	5, 13%	12, 12%
<b>Often</b>	3, 5%	0, 0%	3
<b>Sometimes</b>	1, 2%	0, 0%	1
<b>Never</b>	29, 44%	9, 24%	38, 37%

### **5.3.4 Criminality**

This section examined how often participants engaged in four categories of criminal behaviour, property crime, drug dealing, fraud, and violent crime. Half of the participants (n= 52) said they have served time in prison. Results show that offences against property, although the most reported crime were very low at just 8%. Furthermore, the number of people involved in drug dealing and violent crime was

similarly very low with no participant involved in any fraudulent behaviour (see Table, 5.3.5), therefore, providing support for OAT in reducing criminality.

*Table 5.3.5: Criminal activity in the last 28 days*

<b>(n= 104)</b>	<b>Male (n)</b>	<b>Female (n)</b>	<b>% of total</b>
<b>Property crime</b>			
No property crime	63	35	92%
Less than once per week	1	3	4%
More than once per week	2	0	2%
<b>Drug dealing</b>			
No drug dealing	63	38	97%
Less than once per week	1	0	1%
Once per week	1	0	1%
More than once per week	1	0	1%
<b>Violence crime</b>			
No violent crime	64	38	98%
Less than once per week	1	0	1%
More than once per week	1	0	1%

### 5.3.5 Social functioning

The social functioning (SF) scale measures an individual’s social integration with friends, family, employers, and the community. The measure assesses a person’s level of employment, social support, inter-personal conflict and whether a person is living with or engaging with people who are current heroin users. The scale is reverse scored with higher scores indicating lower levels of social functioning. Data in Table 5.3.6 show that 20% (n= 21) of participants have just one close friend, while 12% (n= 12) said they have no friends. Statistical analysis showed that there was no statistical difference between males and females for overall social functioning ( $p = .385$ ).

However, there was a statistical difference in social functioning between those living in your own house or flat (n= 64) and those living in alternative accommodation or with relatives (n= 39), ( $U= 889.000$ ,  $Z= -2.085$ ,  $p = .037$ ). Fortier et al. (2015) suggest that SF scores  $>6$  indicate poor social functioning and is associated with unemployment and “*moderate to extremely severe symptoms of depression, anxiety and stress*” Fortier et



al. (2015, p. 1098). The mean score for the current study was 13.8, much higher than 6, indicating poor social functioning among the study sample with 47% of scores between 13 and 20. Furthermore, the SD of 5.3, suggests that 68% of participant SF scores fall within a range of 8.5 to 19.1 (see Table 5.3.6).

*Table 5.3.6: Social functioning in the last 6 months*

(n= 104)	Male n, %	Female n, %	Total n, %
<b>How many close friends do you have</b>			
<b>Four or more</b>	22, 33%	6, 16%	28, 27%
<b>Three</b>	10, 15%	5, 13%	15, 14%
<b>Two</b>	14, 21%	14, 37%	28, 27%
<b>One</b>	13, 20%	8, 21%	21, 20%
<b>None</b>	7, 11%	5, 13%	12, 12%
<b>Social functioning scoring</b>			
<b>0 to 6</b>	2, 5%	8, 12%	10, 10%
<b>7 to 12</b>	12, 32%	21, 32%	33, 32%
<b>13 to 20</b>	19, 50%	30, 45%	49, 47%
<b>&gt; 20</b>	5, 13%	7, 11%	12, 11%
<b>Mean= 13.77, S.D= 5.32: 95% CI, 12.73 – 14.80</b>			

### 5.3.6 Psychological adjustment

The general health questionnaire GHQ-28 provides a measure of the current psychological well-being of people in treatment. The instrument contains four, seven-item subscales, the Somatic Symptoms subscale, the Anxiety and Insomnia subscale, the Social Dysfunction subscale, and the Severe Depression subscale, with all items rated on a four-point Likert scale; ‘better than usual’, ‘no more than usual’, ‘worse than usual’ and ‘much worse usual’ (Trujols et al., 2012). The GHQ scoring procedure (0, 0, 1, 1) was used to obtain a continuous measure of symptomatology for each of the four subscales and the overall instrument with higher scores indicate lower levels of psychological adjustment. The average score for each of the subscales and overall total is presented in Table 5.3.7. by gender.

Table 5.3.7: Gender differences by GHQ symptom

Dimensions	U	Z	P	Mean		
				Female	Male	Total
Somatic symptoms	1001.500	-1.777	.076 ns	2.2	1.5	1.7
Anxiety	994.000	-1.788	.074 ns	2.9	2.1	2.4
Social dysfunction	1220.000	-.245	.806 ns	1.6	1.5	1.5
Severe depression	940.500	-2.344	<b>.019*</b>	2.2	1.2	1.5
GHQ total scores	991.000	-1.783	.075 ns	8.8	6.2	7.1

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

While females were shown to have higher average scores for the four subscales, there was no statistical difference between males and females for somatic symptoms, anxiety, social dysfunction, or overall psychological dysfunction. However, a significant statistical gender difference was shown for severe depression ( $p = .019$ ) with females reporting more depressive symptoms than males (see Table 5.3.7).

Goldberg and Hillier (1979) suggest that overall GHQ scores of  $\geq 4/5$  indicate psychopathology, the findings for the current study showed that 62% of this sample have four or more symptoms while 55% had 5 symptoms or greater. This indicates lower levels of psychological well-being among this sample than one would expect to find in the general population (see Table 5.3.7). These results indirectly support the findings of a study by Trujols et al. (2012) among people in OAT. The authors found higher overall scores for, psychological adjustment (mean= 8.2); somatic symptoms (mean= 2.3); anxiety and insomnia (mean= 2.7); and social dysfunction (mean= 1.8) than the current study, with a similar score for severe depression. However, Trujols et al. (2012), did not include a gender breakdown, therefore, the results for the female cohort in the present study demonstrate higher levels of anxiety, severe depression and poorer overall psychological well-being than what was reported by Trujols et al. (2012).

#### 5.4 Adverse Childhood Experiences

Adverse experiences were measured using the 10 item adverse childhood experiences questionnaire. One female participant refused to complete the ACE questionnaire and

one male participant refused to answer the question on sexual abuse (ACE 3). The proportion of responses for each item are presented in Figure 5.4.

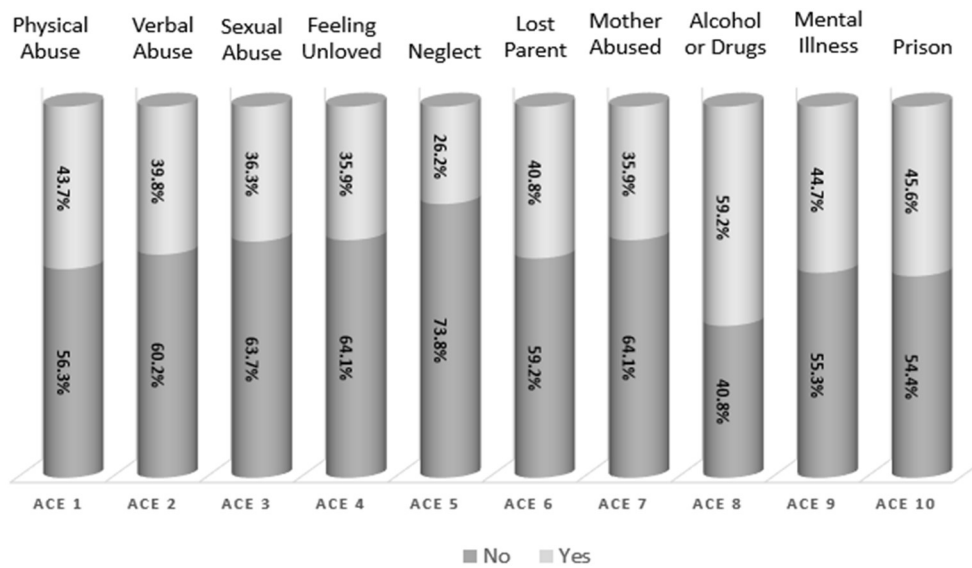


Figure 5.4: Lifetime prevalence of ACE

Two thirds of participants reported between 1 and 6 ACEs, with 12% reporting no ACEs, and 23% having experienced 7 or more ACEs out of a possible 10. The average number of ACEs among the cohort was 4.1 (SD= 2.9). The average number of ACEs was higher among females (mean= 4.5, SD = 3.1) than males (mean= 3.9, SD= 2.8). Table 5.4.1 presents the overall responses for the 10 items contained within the ACE questionnaire and the percentages represent the proportion for males and females who answered ‘yes’ for each of the 10 questions with the overall proportions reported within the total.

Multiple researchers have reported that people who have experienced four or more ACEs are at greater risk of a range of health problems including harmful substance use (Felitti et al., 1998; Harris, 2020; Nelson et al., 2020), therefore, a dichotomous variable was computed to create two ACE groups, group 1 were those who self-reported 0 to 3 ACEs and group 2 contained those who reported 4 or more ACEs. The number of people who reported four or more ACEs was 57 (female= 23, 60.5%; male= 34, 51.5%), additionally 33 people reporting six or more ACEs.

Table: 5.4.1: Gender differences in adverse childhood experiences by item

(n= 103)	Male	Female	Total %	
Item score = yes	n, %	n, %	n, %	p
ACE 1. Push grab of slap or throw something at you	27, 41%	18, 49%	45, 44%	.447 ns
ACE 2. Swear at you insult or put down	27, 41%	14, 38%	41, 40%	.760 ns
ACE 3. Touch or fondle you or have you touch them in a sexual way	24, 36%	13, 35%	37, 36%	.857 ns
ACE 4. Nobody loved you/ thought you were important	17, 26%	20, 54%	37, 36%	<b>.004**</b>
ACE 5. Feel that you didn't have enough to eat, wear dirty clothes	16, 24%	11, 30%	27, 26%	.544 ns
ACE 6. Lost a biological parent	26, 39%	16, 43%	42, 41%	.703 ns
ACE 7. Mother ever pushed grabbed slapped or repeatedly hit #	25, 38%	12, 32%	37, 36%	.580 ns
ACE 8. Lived with a problem drinker or used street drugs	37, 56%	24, 65%	61, 59%	.383 ns
ACE 9. Household member depressed or had a mental illness	25, 38%	21, 57%	46, 45%	.064 ns
ACE 10. Did a household member ever go to prison	30, 45%	17, 46%	47, 46%	.962 ns

**Mann Whitney: U=1084.000, Z= -.948, p =.343**

Significance levels: \* p <.05: \*\* p <.01: \*\*\* p <.001: ns = not significant

Question 8 'did you live with someone who is a problem drinker or use street drugs' elicited the highest response with 59% of people responding 'yes'. A larger percentage of females, 65% (n= 24) lived with someone who had a substance use problem in comparison to 56% of males (n= 37). Statistical analysis between gender and each of the questions asked within the ACE questionnaire is presented in Table 5.4.1. A higher proportion of females reported 'feeling unloved' as a child (54.1%) compared to males (25.8%) and the difference was statistically significant (p =.004). Research question five asked 'what are the differences in ACEs between males and females in OAT'? A between groups Mann Whitney U test showed there was not a statistical difference between males and females on the summative number of ACEs, therefore, research prediction

RP1 that there are gender differences on the number of ACEs among people OAT is not supported (see Table 5.4.1).

### **5.5 Post Traumatic-Stress Disorder**

As discussed in Chapter 4, the 20-item PCL-5 instrument was used to collect participant's responses for PTSD. Blevins et al. (2015) suggest a score between 31 and 33 is considered reliable for a preliminary diagnosis of PTSD for the PCL-5 instrument. A cut off score  $\geq 33$  was chosen to compute a dichotomous variable for PTSD by dividing the participants into two groups, group 1 contained all participant scores from 0 to 32, and group 2 contained all participant scores  $\geq 33$ . These data revealed that over 40% of the sample (female = 23, 62%; male = 34, 53%) returned scores  $\geq 33$ , therefore, suggesting a preliminary diagnosis of PTSD would be appropriate for this cohort of participants. The average scoring for all participants was 30.0 (SD= 20.4) with females returning an average score of 37.0 (SD= 20.9), 11 points higher than males (mean= 26.0, SD= 19.2). Research question four asked whether there was a significant difference between males and females for PTSD. A Mann Whitney U test found the gender differences for the continuous PTSD variable to be statistically significant ( $U= 1084.000$ ,  $Z= -.948$ ,  $p = .010$ ), therefore, the results support research prediction RP2 of a significant gender difference for PTSD among people in OAT.

### **5.6 Summary of participant demographics, Treatment Outcomes, PTSD and ACEs**

A total of 104 participants in OAT were recruited for the current study. The average age of people in the sample at 42.7 years was relatively old when compared to a median age of 32 for people in overall drug treatment services in Ireland (Kelleher et al., 2022) The proportion of cases in drug treatment services in Ireland, for an opiate use disorder decreased from 50.0% in 2014 to 36.7% in 2020 (Kelleher et al., 2021). Although, the prevalence of opioid use has declined overall, this decrease has occurred among the 15 year-old to 34 year-old population in Ireland (Millar, 2023), while the prevalence of problematic opioid use among 35 year-old to 64 year-old has increased between 2015

to 2019 (Millar, 2023). This data provides further evidence of an aging opiate using population, both in Ireland and Internationally (A. M. Carew & C. Comiskey, 2018; International Narcotics Control Board, 2020).

A majority of participants left school before their leaving certificate with just two people going forward to third level education, considerably lower than the population norm presented earlier. Some males were shown to leave school before the minimum school leaving age and achieve a lower level of overall education than females. Apantaku-Olajide et al. (2014) found that school dropout was a risk factor for increased levels of substance use and contact with the criminal justice system when compared to mainstream students. Half of the participants had spent time in prison which was also considerable higher than the .1% reported among the general population (Irish Penal Reform Trust, 2022). This proportion is also higher than that the 44.3% reported the Drug Abuse Treatment Outcome Study (DATOS) (Friedmann et al., 2003) and those entering methadone treatment in the Australian Treatment Outcome Study (ATOS) (Ross et al., 2005).

The level of unemployment at 76% was demonstrable different from the 5% unemployment rate published by the CSO (Central Statistics Office, 2022b) with further anomalies for the number of people on a disability allowance, 45% versus 14% for the general population (Central Statistics Office, 2017). Kelleher et al. (2022) report that while, the proportion of unemployed people attending drug treatment services is declining, the overall proportion, at 59%, remains very high. Moreover, this report indicates that the unemployment rate among this cohort of people in OAT is much higher than it is for people in other drug treatment services in Ireland (Kelleher et al., 2022).

There were 59 people with children under the age of 18 years, with 27 (45.8%) saying they lived with their children. The total number of children under 18 across all of 104 participants was 110 children, a ratio 1 child to .95 adults. This child to adult ratio supports the prevalence estimates by Galligan and Comiskey (2019) for children living in

a home with caregivers who have substance use issues. Living in their own house was reported by 62% of participants, with the remainder of people living with family friends, bedsit/hostel, or boarding house. Just one participant reported sleeping rough in the previous six months, which is a good sign. As mentioned in Section 5.2.3 homelessness has been defined as living rough; living in a hostel/bedsit/boarding house/hotel or living with friends or family (Lawless & Corr, 2005). Using this definition suggests that 38% of this cohort would be classified as homeless. However, these findings also indicate that the vast majority of participant's are living in stable accommodation for more than six months.

The average number of years spent in their current treatment was 11.2, and for 59% of people this was not their first time in treatment. The main reasons given for attending their current treatment was to gain access to methadone, support from the treatment centre, and to stay stable and well. A small proportion of people (16%), said they were in treatment to get off drugs, with just five of the people interviewed having completed treatment from baseline at two year follow-up. Furthermore, a majority of participants (59%) were consuming their prescribed opiate agonist medication away from the treatment centre. Overall there was no significant gender differences found for the age an individual first took a particular drug except for 'other opiates', with first females consuming the substance at significantly younger age than males. Heroin and tobacco were the drugs consumed by the largest majority of people (n= 102) at some stage in their lifetimes. Tranquillisers, tobacco, and cannabis were the drugs with the highest consumption rate within the previous 28 days. A statistical difference was not shown between males and females for any substance except cannabis, with more males consuming the drug daily.

Problems with the cardio/respiratory system were the highest reported physical health symptoms among participants with 61% reporting shortness of breath. Moreover, memory loss was reported by 50% of the cohort. The International Narcotics Control Board (2021) report suggested that the physical health problems reported by people with substance use issues are typical of older people citing evidence for prematurely

ageing among this group of “*at least 15 years*” International Narcotics Control Board (2021, p. 2). Additionally, evidence from a systematic review by Rosen et al. (2011) reported that health functioning among people in OAT was worse for their own age group than it is for older age cohorts found within the normal population (Rosen et al., 2008).

The findings for HIV risk taking and criminal behaviour among the participants support the research evidence of the effectiveness of OAT in reducing the spread of BBVs and reducing criminality among people retained long-term treatment (Iacob et al., 2017; Robertson et al., 1988; Teesson et al., 2015). Drug injecting behaviour was shown to be just 6%, and all of these male participants said they never shared injecting equipment. Additionally, 48% of participants did not have any intimate sexual relationships in the previous month with 45% of people reporting having just one intimate partner, indicating a lower risk on acquiring HIV. The findings for criminal behaviours were shown to be very low, with 94% of people reporting no form of criminal activity in the last month.

The average SF score of 13.8 indicates poor social functioning among the study sample, with almost 60% of participants scoring 13 or above, however, no significant gender difference was shown. Furthermore, 59% of participants reported having two or less good friends and 82% said they do not associate with people who use heroin, which may suggest that most people have severed social ties with friends from their past and at a time when they were actively using heroin. Meta analysis reviews by Klostermann and O'Farrell (2013) concluded that partner and family involvement in recovery treatment produces better outcomes in reducing substance use and improving intimate relationships and family functioning. Moreover, Van Reekum et al. (2020), report that unemployment is an important factor for good SF. The high level of unemployment (76%) among the cohort may be contributing to the poor level of social functioning among this sample. Furthermore, given the statistical difference between those living in their own house or flat and those that were not, homelessness may also be having an influence on SF scores (Lawless & Corr, 2005).



These findings confirm that this sample of people in OAT have poorer mental health than would be found in the general population (Swift et al., 1990; Trujols et al., 2012; Woody et al., 1983). Compared to males, females were shown to have significantly higher levels of depression. Although not significant, it is also worth noting that females had higher average scores on the anxiety measure and poorer overall psychological well-being than males. These results support previous research that females in drug treatment services have higher levels of depression (Frem et al., 2017) and poorer overall mental health than males (Helen E. Ross et al., 1997; Ross et al., 2005).

The ACE with the highest number of positive responses (59.2%) was 'growing up in a household with someone who was a problem drinker or who used street drugs' and lowest for 'physical neglect' reported by 26% of participants. The average number of ACEs was 4.1 with 55.3% of all participants and 62% of females reported four or more ACEs. Furthermore, a gender difference was shown for ACE 4, 'emotional neglect', with females reporting a higher average score than males providing support from the findings of a meta-analysis by Santo et al. (2021), that females with an OUD reported higher levels of 'emotional neglect' than males. However, in contrast to the review by Santo et al. (2021), significant gender differences were not found for the physical abuse, sexual abuse or growing up in a dysfunctional household among the current sample.

The prevalence of PTSD among the cohort was 40%, with 46% of females meeting the requirements for a preliminary diagnosis of PTSD. Furthermore, a statistically significant difference was found between males and females for PTSD supporting research prediction RP2 that 'there will be a significant difference between males and females on the level of PTSD' and also supporting the findings from the Australian Treatment Outcome Study (Mills et al., 2005).

## **5.7 Chapter Conclusion**

The results in this chapter were presented in two sections. The first section provided a demographic description of the participants personal attributes, family and living conditions, personal relationships and employment and early substance use. The section

was completed with a summary of the key findings within the context of the literature. The second section of the chapter presented a description and gender differences of the outcomes of opiate agonist treatment; current drug use, general health, HIV risk taking behaviour, criminality, social functioning, and psychological well-being. A description of adverse childhood experiences and PTSD was also provided. The second section was completed with a summary of the key findings within an empirical viewpoint.

The conclusions from this chapter provide support for OAT in stabilising and maintaining people retained in long-term treatment. Therefore, OAT is important in reducing the harms caused by opiate addiction, through reducing the spread of BBVs, reducing criminal behaviour, and stabilising the living arrangements of participants. However, evidence was found to support the view that this is an ageing cohort from a substance use perspective, with physical health symptoms more representative of older cohorts in the general population. Furthermore, evidence on the prevalence of PTSD, the high number of ACEs, psychological dysfunction and poorer social functioning of this sample suggests psychopathology and social dysfunction among people in OAT is higher than the general population. Finally, the findings support previous research that females have higher levels of PTSD and depression than males in OAT.

## **Chapter 6: Findings on Modelling Treatment Outcomes, PTSD and ACEs**

### **6.1 Chapter Summary**

The previous chapter provided evidence that OAT is effective in retaining people in treatment and reducing; heroin use, HIV risk taking behaviour and criminality among the participants'. However, polydrug use remains relatively high and people were shown to have reduced social functioning, and poorer physical and mental health than would be found in the general population. Furthermore, the average number of ACEs and high average PTSD scores could present as risk factors for poorer treatment outcomes, therefore, preventing people from advancing towards a substance free lifestyle. This chapter will present the findings of five multiple linear regression models for the treatment outcomes variables measured within the OTI instrument; polydrug use, general health, HIV risk taking behaviour, psychological well-being, and social functioning. While the instrument measured six treatment outcomes, criminality is not included in the modelling as the number of people involved in some form of criminal activity in the three months prior to the interview was only 8%, (male= 5, female = 3) of the total sample (see Section 5.4.4). Furthermore, modelling of PTSD as the outcome variable will also be conducted with six of the ACE factors as the independent variables. This section begins by presenting some procedures for conducting multiple regression and a correlation matrix of the key variables within the current study.

#### **6.1.2 Predictors of Treatment Outcomes**

The multiple regression models presented below individually assess the predictors for the continuous dependent treatment outcome variables; polydrug use, general health, social functioning, psychological well-being, and HIV risk taking behaviour. The independent predictor variables employed within the modelling were; polydrug use, general health, social functioning, psychological well-being, HIV risk taking behaviour, ACE score, and PTSD. The backward elimination procedure outlined in Section 4.7.2 was employed where all the predictor variables are entered simultaneously into the model. The contribution of each predictor variable is based on the significance value from a t-

test with the least significant variable removed from the model in a stepwise manner until all the non-significant variables have been removed (Field, 2018).

### 6.1.3 Multiple regression: Data types

The Table 6.1.1 provides a description of the continuous variables included within the regression models, whether the data met the requirement of the normal distribution and the data range for each variable.

*Table 6.1.1: Variables used in modelling for treatment outcomes.*

	<b>Variables</b>	<b>Normally Distributed</b>	<b>Scale Range</b>
<b>Dependent Variables</b>	General Health #	Yes	0 - 48
	Social Functioning	Yes	0 - 48
	Polydrug use	No	0 - 11
	Psychological Well-being	No	0 - 28
	HIV Risk Taking Behaviour	No	0 - 55
<b>Independent Variables</b>	General Health #	Yes	0 - 48
	Social Functioning	Yes	0 - 48
	Polydrug use	No	0 - 11
	Psychological Well-being	No	0 - 28
	HIV Risk Taking Behaviour	No	0 - 55
	ACEs	No	0 - 10
	PTSD	No	0 - 80

*# Excluding Gynaecological (women only)*

### 6.2 Correlations between variables.

Spearman Rho correlations were conducted between age, treatment years, methadone dosage, polydrug use, general, health, psychological well-being, social functioning, HIV risk taking behaviour, opiate use duration, ACEs, and PTSD (see Table 6.2.1). The findings showed statistically significant correlations between ACEs, and the five treatment outcome variables ( $p < .001$ ) for polydrug use, general health, and psychological well-being, and ( $\leq .05$ ) for social functioning and HIV risk taking behaviour. Significant correlations were also found between PTSD and the five treatment

outcomes, with p values  $<.01$  for polydrug use, general health, and psychological well-being and social functioning and a p value  $\leq .05$  for HIV risk taking behaviour. The r values presented in Table 6.2.1 are a measure of the size of the correlation. According to Cohen (1992), a correlation greater than .5 indicates a strong correlation, r values between .3 and .5 indicate a moderate correlation while values between .1 and .3 indicate a small correlation. Negative r values indicate negative correlations and positive r values indicate positive correlations. As discussed in Chapter 4, a higher score indicates higher levels of dysfunction for all of the treatment outcomes, PTSD and ACEs. A positive, statistically significant small to moderate correlation was found between polydrug use and psychological well-being ( $r = .269$ ), indicating that as a person's poly drug use increases their overall level of psychological dysfunction also increases. Furthermore, as polydrug increases social dysfunction also increases ( $r = .270$ ). A strong positive correlation was found between psychological well-being and general health ( $r = .673$ ), indicating that as a person's psychological dysfunction increases the number of health related problems also increases. HIV risk taking behaviour was not significantly correlated with any of the treatment outcomes variables. The strongest correlation among all the key variables was found between ACEs and PTSD ( $r = .708$ ) with a p value of  $<.001$ , indicating that as the number of ACEs increases there are corresponding increases in PTSD scores, therefore, supporting the research prediction RP3. that 'there will be a significant relationship between the level of PTSD and the summative number of ACEs among people in OAT'. Moreover, medium to strong correlations were shown between ACEs, PTSD, psychological well-being, and general health providing support for research prediction RP4, that 'there will be a significant relationship between ACEs, PTSD, and any one of the six-treatment outcome domains; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, or social functioning (see Table 6.2.1)

Table 6.2.1: Spearman's Rho correlation between key study variables.

Variables	1	2	3	4	5	6	7	8	9	10
	Age Years	Treatment Years	Methadone Dosage	Polydrug use	General Health	GHQ 28	Social Functioning	HIV Risk Taking	ACEs	PTSD
<b>Age in years</b>										
<b>Treatment years</b>	.169									
<b>Methadone dosage</b>	-.103	.203*								
<b>Polydrug use</b>	-.072	-.001	.124							
<b>General health</b>	.044	.136	.047	.199*						
<b>Psychological well-being</b>	-.023	-.008	-.004	.269**	.673**					
<b>Social functioning</b>	-.039	-.010	.064	.270**	.169	.244*				
<b>HIV risk taking</b>	-.090	.046	.039	-.045	.129	-.180	-.122			
<b>ACEs</b>	.024	.188	.139	.260**	.442**	.395**	.205*	-.196*		
<b>PTSD</b>	-.035	.098	.132	.622**	.622**	.666**	.309**	-.215*	.708**	

**\*\*.** Correlation is significant at the 0.001 level (2-tailed).

**\*** Correlation is significant at the 0.05 level (2-tailed).

Effect size is small when  $r = +.10$  to  $+.29$ ; medium when  $r = +.30$  to  $\pm.49$ ; and large when  $r = +.50$  to  $+1.0$  (Cohen 1988)

### 6.3 Multiple regression findings for model 1: General health

The first multiple regression model was conducted with general health as the dependent variable. The predictor variables were, psychological well-being, social functioning, HIV risk taking behaviour, polydrug use, ACE score, and PTSD. The Table 6.3.2 below indicated the stage at each non-significant predictor was removed from the model 1.

Table 6.3.1: Statistics for predictors of general health.

Predictor variables	$\beta$	t	p	95% CI		Collinearity	
				Lower	Upper	Tolerance	VIF
Psychological well-being	.414	4.429	<.001***	.262	.688	.567	1.763
PTSD	.366	3.913	<.001***	.067	.206	.567	1.763
$R^2 = .50, F(2, 100) = 50.989, p < .001^*$							

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

Table 6.3.2: Variables removed from model using backward elimination.

Model	Variables Entered	Variables Removed	Probability to remove
1*	All variables entered		
2		Polydrug Use	$p = .962$
3		HIV Risk taking Behaviour	$p = .831$
4		Social functioning	$p = .792$
5#		ACEs	$p = .239$

\*Dependent variable, general health and all predictor variables entered in model 1.

# Variables in model 5: Psychological well-being and PTSD

The results of the multiple linear regression analysis indicated that two predictors explained 50% of the variance in general health scores ( $R^2 = .50, F(2, 100) = 50.989, p < .001$ ). It was found that psychological well-being ( $\beta = .41, p < .001, 95\% CI = .26 - .67$ ) and PTSD ( $\beta = .37, p < .001, 95\% CI = .06 - .21$ ), (see Table 6.3.1). The model showed that psychological well-being was the strongest predictor of general health with a standardised  $\beta$  value of .414; therefore, as the number of negative psychological well-being symptoms increased by one standard unit (SU) the number of general health problems increased by .414 SU's, indicating a causal relationship between mental and physical health. Furthermore, as the level of PTSD increased by one SU, the number of general health problems also increased by .366 SU's. A complete summary of the assumption tests for general health are provided in Appendix 6. It was shown that as overall psychological well-being decreased (the number of negative symptoms

increased), the number of general health problems increased. Research question three asked whether PTSD or summative ACEs would predict any of the of six treatment outcomes. Therefore, as PTSD was shown to significantly predict general health, the results provide support for research prediction RP5 that ‘PTSD or summative ACEs will significantly predict one or more of the six treatment outcomes. Moreover, the model explained 50% of the variance in general health, suggesting a strong causal interrelationship between physical health, psychological health, and PTSD among this sample of participants in OAT, with increases in general health problems resulting from increases in PTSD and psychological dysfunction. Furthermore, these results confirm the findings of the strong significant correlation between psychological well-being, physical health, and PTSD presented in Table 6.2.1.

#### 6.4 Multiple regression findings for model 2: Social functioning

The second multiple regression model was conducted with social functioning as the dependent variable. The predictor variables were, general health, HIV risk taking behaviour, psychological well-being, polydrug use, ACE score, and PTSD. The Table 6.4.2 below indicated the stage at each non-significant predictor was removed from the model 2.

Table 6.4.1: Statistics for the predictors of social functioning.

Predictor variables	$\beta$	t	p	95% CI		Collinearity	
				Lower	Upper	Tolerance	VIF
PTSD	.258	2.733	.007**	.018	.116	.952	1.050
Polydrug use	.235	2.480	.015*	.193	1.736	.952	1.050

$R^2 = .13$ ,  $F(2, 100) = 8.70$ ,  $p < .001^*$

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

Table 6.4.2: Variables removed from model using backward elimination.

Model	Variables Entered	Variables Removed	Probability to remove
1 *	All variables entered		
2		General health	$p = .809$
3		HIV risk taking behaviour	$p = .773$
4		Psychological Well-being	$p = .707$
5#		ACEs total	$p = .592$

Dependent variable social functioning and all predictor variables entered in model 1.

# Variables in model 5: Polydrug and PTSD



The results of the multiple linear regression analysis indicated that two predictors explained 13% of the variance ( $R^2 = .13$ ,  $F(2, 100) = 8.70$ ,  $p < .001$ ). It was found that PTSD, ( $\beta = .26$ ,  $p = .007$ , 95% CI = .018 – .116), and polydrug use, ( $\beta = .24$ ,  $p = .015$ , 95% CI = .193 – 1.736) significantly predicted social functioning (see Table 6.4.1). Although, PTSD was shown to be the strongest predictor the difference between the standardised  $\beta$  values for the two predictor variables were similar (see Table 6.4.1). Increases in social functioning scores indicate reduced levels of social integration with employers, family, and friends. Two predictor variables, polydrug use and PTSD only explained 13% of the variance in social functioning, therefore, this result indicates that other factors not analysed within the modelling may be influencing social functioning. The findings show that as polydrug use increases overall SF decreases as the variable is reverse scored; increases in polydrug use by one SU predicts social dysfunction scores increase by .245 SUs, while increases in PTSD by one SU predicts increases in social dysfunction scores of .266 SUs. This finding provides further support for research prediction RP5 of the significant relationship between PTSD and treatment outcomes among people in OAT.

### 6.5 Multiple regression findings for model 3: Polydrug use

The predictor variables for modelling the outcome variable polydrug use were, general health, HIV risk taking behaviour, psychological well-being, social functioning, ACE score, and PTSD. The Table 6.5.2 below detail results which indicate the stage at which each non-significant predictor was removed from the model 3.

Table 6.5.1: Statistics for the predictors of polydrug use.

Predictor variables	$\beta$	t	p	95% CI		Collinearity	
				Lower	Upper	Tolerance	VIF
Psychological well-being	.193	1.938	.050*	-.00002	.075	.930	1.075
Social functioning	.240	2.468	.015*	.011	.105	.930	1.075
$R^2 = .10$ , $F(2, 100) = 10.289$ , $p = .002$							

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

Table 6.5.2: Variables removed from model using backward elimination.

Model	Variables Entered	Variables Removed	Probability to remove
1 *	All variables entered		
2		General health	p = .962
3		PTSD	p = .562
4		HIV risk taking behaviour	p = .321
5#		ACEs total score	p = .266

\* Dependent Variable Polydrug use and all predictor variables entered in model 1.

# Variables in model 5: Psychological well-being and social functioning

The results of the multiple linear regression analysis indicated that two predictors explained 10% of the variance ( $R^2 = .10$ ,  $F(2, 100) = 10.289$ ,  $p = .002$ ). It was found that psychological well-being ( $\beta = .19$ ,  $p = .050$ , 95% CI =  $-.00002 - .079$ ) and social functioning ( $\beta = .24$ ,  $p = .015$ , 95% CI =  $.011 - .015$ ) significantly predicted polydrug use (see Table 6.5.1). As overall social functioning reduced as indicated by the increase in the scoring by 1 SU, polydrug use increased by .240 SUs. As psychological dysfunction increased polydrug use also increased, however, it should be noted that the confidence interval for this predictor variable was found to have crossed zero. Social functioning emerged as the strongest predictor of polydrug use. Although, this model only explained 10% of the variance in polydrug use, a potential interrelationship between polydrug use and social functioning was shown.

## 6.6 Multiple regression findings for model 4: Psychological well-being

Regression modelling was conducted with psychological well-being as the dependent variable, with the predictor variables, general health, HIV risk taking behaviour, polydrug use, social functioning, ACE score, and PTSD. The Table 6.6.2 below indicates the stage at which each non-significant predictor was removed from the model 4.

Table 6.6.1: Statistics for the predictors of psychological well-being.

Predictor variables	$\beta$	t	p	95% CI		Collinearity	
				Lower	Upper	Tolerance	VIF
PTSD	.554	5.147	<.001***	.111	.249	.391	2.560
ACEs	-.221	-2.372	.020*	-.923	-.082	.523	1.912
General health	.401	4.586	<.001***	.198	.500	.592	1.688

$R^2 = .54$ ,  $F(3, 99) = 40.556$ ,  $p < .001^*$

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

Table 6.6.2: Variables removed from model using backward elimination.

Model	Variables Entered	Variables Removed	Probability to remove
1 *	All variables entered		
2		Social functioning	p = .675
3		HIV risk taking behaviour	p = .476
4 #		Polydrug use	p = .106

\* Dependent variable, psychological adjustment and all predictor variables entered in model 1.  
# Variables in model 4: PTSD, ACEs, and general health

The results of the multiple linear regression analysis for psychological well-being indicated that three predictors explained 54% of the variance ( $R^2 = .54$ ,  $F(3, 99) = 40.556$ ,  $p < .001$ ). It was found that PTSD, ( $\beta = .554$ ,  $p < .001$ , 95% CI = .111 – .249), ACEs ( $\beta = -.221$ ,  $p = .020$ , 95% CI = -.923 – -.082) and general health, ( $\beta = .401$ ,  $p < .001$ , 95% CI = .198 – .500), significantly predicted psychological well-being, (see Table 6.6.1). PTSD was shown to be the strongest predictor of psychological well-being ( $\beta = .554$ ), therefore, implying that as PTSD increased by one SU psychological dysfunction increased by .554 SU's.

This is a key finding from the analysis which showed three predictor variables explained a considerable proportion (54%) of the variance for psychological well-being with PTSD emerging as the strongest predictor with a 95% confidence interval between .111 and .249. General health was also found to be a strong predictor with one SU increase in general health problems predicting a .401 SU increase in psychological symptomology. ACEs were found to be a negative predictor, with psychological well-being symptomology decreasing by .221 standard units, from a one unit increase in the mean ACE scores (see Table 6.7.1), implying that as the mean number of ACEs increases psychological well-being symptomology decreases. This result also answers research question five that PTSD is a predictor of treatment outcomes among people in OAT. This finding also provides additional support for research prediction RP5 that PTSD or summative ACEs will significantly predict one or more the treatment outcomes. Furthermore, given PTSD, ACEs and general health significantly predicted psychological wellbeing, the findings suggests that there is an interrelationship between mental and physical wellbeing among people in OAT.

## 6.7 Multiple regression findings for model 5: HIV risk taking behaviour.

The final multiple regression model for the treatment outcomes domains was conducted with HIV risk taking behaviour as the dependent variable. The predictor variables were, general health, polydrug use, social functioning, ACE score, psychological well-being, and PTSD. The Table 6.7.2 below indicated the stage at which each non-significant predictor was removed from the model.

*Table 6.7.1: Statistics for the predictors of HIV risk taking behaviour.*

Predictor variables	$\beta$	t	p	95% CI		Collinearity	
				Lower	Upper	Tolerance	VIF
ACEs	-.175	-1.726	.092 ns	-.397	.031	1.000	1.000

$R^2 = .01$ ,  $F(1, 101) = 10.103$ ,  $p = .092$

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

*Table 6.7.2: Variables removed from model using backward elimination.*

Model	Variables Entered	Variables Removed	Probability to remove
1*	All variables entered		
2		General health	$p = .829$
3		Social functioning	$p = .773$
4		PTSD	$p = .606$
5		Polydrug use	$p = .349$
6#		Psychological well-being	$p = .269$

\* Dependent variable, HIV risk taking behaviour and all predictor variables entered in model 1.

# Variables in model 6: ACEs

The results of the multiple linear regression analysis indicated that one predictor, ACEs explained 1% of the variance ( $R^2 = .01$ ,  $F(1, 101) = 10.103$ ,  $p = .092$ ). However, it was also shown that there were no significant predictors found for HIV risk taking behaviour from among the six predictor variables, (see Table 6.7.1).

The result for the dependent variable HIV risk taking behaviour did not find statistical evidence to support any of the independent variables employed in the modelling as predictors for HIV risk taking behaviour. While ACEs were found to explain 1% of the variance in HIV risk taking scores, the result was not shown to be statistically significant.

## 6.8 ACE factors as predictors of PTSD

Thus far, we have looked at the ACEs as a composite variable in the analysis of their predictive value. In this section we will analyse how each separate ACE predicts PTSD. This section will therefore present the findings of a multiple linear regression model for

PTSD as the outcome variable from six independent ACE factors. Previous research has identified specific ACEs such as childhood sexual and physical abuse as significant factors in the development of PTSD (Howard et al., 2017; Schiff et al., 2015). One of the main aims of this thesis was to identify associations between ACEs and PTSD, however, evidence from the narrative review presented in Chapter 3, suggests that there is limited research on the association between ACE factors, such as emotional abuse and neglect and PTSD among people in OAT. Although ACEs were strongly correlated with PTSD (see Table 6.2.1) the overall ACE score were only identified as a significant negative predictor for psychological well-being. This section will present the results of a multiple linear regression model to identify whether any of the ten ACE factors within the ACE questionnaire significantly predict PTSD. As discussed in Chapter 4 the sample size for the study restricted the modelling to six independent factors therefore, Pearson’s Chi square analysis was computed to identify the six ACE factors with the strongest association with the binary PTSD variable discussed in Chapter 5 (see Section 5.6).

*Table 6.8.1: Chi square analysis for the association of PTSD and ACEs factors.*

<b>ACE question</b>	<b>df</b>	<b>n</b>	<b>X<sup>2</sup></b>	<b>p</b>
<b>ACE 1. Push grab of slap or throw something at you #</b>	1	103	18.5377	<.001***
<b>ACE 2. Swear at you insult or put down #</b>	1	103	25.308	<.001***
ACE 3. Touch or fondle you or have you touch them in a sexual way	1	102	6.624	.010**
<b>ACE 4. Nobody loved you/ thought you were important #</b>	1	103	29.1224	<.001***
ACE 5. Feel that you didn’t have enough to eat, wear dirty clothes	1	103	5.176	.023*
ACE 6. Lost a biological parent	1	103	10.321	.001**
<b>ACE 7. Mother ever pushed grabbed slapped or repeatedly hit #</b>	1	103	13.874	<.001***
<b>ACE 8. Lived with a problem drinker or used street drugs #</b>	1	103	20.609	<.001***
<b>ACE 9. Household member depressed or had a mental illness #</b>	1	103	17.0669	<.001***
ACE 10. Did household member ever go to prison	1	103	.546	.460 ns

*Significance levels: \* p<.05; \*\* p<.01; \*\*\* p<.001; ns = not significant*  
*# Factors chosen for regression analysis*

The results from the Chi Sq. analysis are presented in Table 6.8.1. Nine of the ACE factors were shown to have a significant association with PTSD, with just one factor, ‘Did a household member ever go to prison’ not shown to be significantly associated with PTSD. Interestingly, the ACE 3 question on ‘sexual abuse’ did not emerge among the six factors with the strongest  $\chi^2$  association with PTSD and therefore not chosen for further analysis (see Table 6.8.2).

### 6.8.1 Predictors of PTSD

The multiple linear regression model presented below assess the predictors for PTSD. The independent predictor variables employed within the modelling were six of the items from the ACE questionnaire presented in table 6.8.2.; ACE 1 ‘physical abuse’, ACE 2 ‘verbal abuse’, ACE 4 ‘feeling unloved’, ACE 7, ‘mother physically abused’, ACE 8 ‘household member was a problem drinker or used street drugs’, and ACE 9 ‘a household member suffered from depression’. Table 6.8.2 presents the stage where each non-significant predictor variable was eliminated from the model.

Table 6.8.1: Statistics for predictors of PTSD.

Predictor variables	$\beta$	t	p	95% CI		Collinearity Statistics	
				Lower	Upper	Tolerance	VIF
ACE 2. Swear at you insult or put down	.219	2.517	.011*	2.148	16.099	.641	1.559
ACE 4. Nobody loved you/ thought you were important	.328	6.921	<.001***	7.182	20.707	.710	1.408
ACE 8. Lived with a problem drinker or used street drugs	.280	5.396	<.001***	5.489	17.796	.818	1.223
ACE 9. Household member depressed or had a mental illness	.197	3.709	.009**	2.340	14.105	.831	1.204

$R^2 = .54$ ,  $F(4, 97) = 30.285$ ,  $p < .001$ \*\*\*

Significance levels: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; ns = not significant

Table 6.8.2: Variables removed from model using backward elimination.

Model	Variables Entered	Variables Removed	Probability to remove
1*	All variables entered		
4		Physical abuse	$p = .847$
7 #		Mother physically abused	$p = .237$

\*Dependent Variable: PTSD and all predictor variables entered in model 1.

# Variables in model 7: Verbal abuse, feeling unloved, living with problem drinker or user of street drugs, and living with a person who was depressed or mentally ill.

The results of the multiple linear regression analysis for PTSD indicated that four predictors explained 54% of the variance ( $R^2 = .54$ ,  $F(4, 97) = 30.285$ ,  $p < .001$ ) in PTSD scores. It was found that ACE 2, verbal abuse, ( $\beta = .16$ ,  $p = .011$ , 95% CI = 2.15 – 16.10), ACE 4, feeling unloved, ( $\beta = .322$ ,  $p < .001$ , 95% CI = 7.18 – 20.71), ACE 8, living with a problem drinker or who used street drugs ( $\beta = .280$ ,  $p < .001$ , 95% CI = 5.49 – 17.80), and ACE 9, living with a person who was depressed or mentally ill, ( $\beta = .205$ ,  $p = .009$ , 95% CI = 2.34 – 14.11), significantly predicted PTSD, (see Table 6.8.1). Four ACE factors significantly predicted PTSD. Given the average age of participants was almost 43 years, these childhood events, although occurring a long time in their past, appear to still have an influence on participant’s current levels of PTSD. The feeling they were unloved as a child or adolescent was found to be exerting the greatest influence on current levels, explaining 34% of the variance in PTSD scores. Whilst growing up in a household with a person who was a problem drinker or used street drugs explained 12% of the variance (see Figure 6.8.1). This result supports the research hypothesis H6 that ‘one or more of the individual ACE factors will significantly predict current PTSD’. This is a key finding of the study.

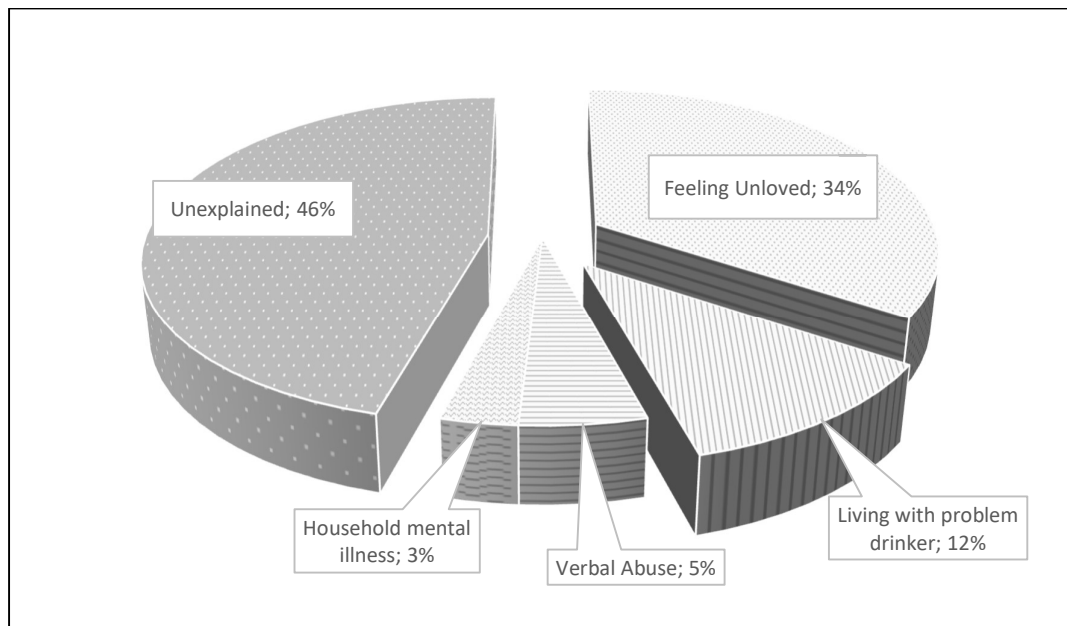


Figure 6.8.1: Distribution of variance for PTSD.

## 6.9 Chapter Conclusions

The findings from this chapter presented evidence to support the research hypothesis of a significant relationship between ACEs, PTSD, and three of the treatment outcomes; psychological well-being, general health, and polydrug use. Two of the regression models for general health and psychological well-being, were shown to have a goodness of fit of 50% or greater indicating strong evidence of a causal relationship between mental health and physical health dysfunction among people in OAT. Moreover, ACEs were shown to positively correlate with psychological well-being (.395) and subsequently shown to be a negative predictor which may suggest that there is an interaction effect between ACEs and other predictor variables in the regression modelling for psychological well-being. Interestingly, emotional neglect in childhood was shown to have the stronger predictive value for PTSD. Furthermore, what was a surprising findings was the lack of statistical support for sexual abuse, among the six factors with the strongest association with PTSD and the lack of support for physical abuse as a predictor of PTSD. This may suggest that some people may recover emotionally from early life adversities which originated outside of their own locus of control, however, some forms of ACE which interact with the inner emotional feelings of a person, may become chronic over time.



## **Chapter 7 Findings of the explanatory qualitative analysis**

### **7.1 Introduction**

This chapter will present the findings of the qualitative responses from a selected number of males and females who participated in the current study. As discussed in Section 4.9.3, there appears to be no fixed guidelines for an appropriate sample size when conducting thematic analysis (Braun & Clarke, 2016). Therefore, given that the overall sample size of this study was 104, a representative sample of 15% (n= 16) of the participants was considered appropriate for the explanatory analysis and the selection process is presented in the next section. The survey booklet did not contain any specific qualitative questions, therefore, the findings reported in this chapter are the analysis of the audio recorded transcripts collected concurrently during the semi-structured interviews. One of the main aims of the current study was to investigate associations between ACEs, PTSD, and treatment outcomes among people in OAT. Throughout the interviews many participants provided a personal narrative in response to the questions asked, for example 'at what age did you first take heroin', participants would often provide some background as to why they started using heroin and when they realised they were addicted, subsequently, this analysis attempts to provide some explanatory context to the quantitative data in exploring participants personal experiences of childhood trauma from a representative mixed gender sample of sixteen participants. Geographical references and people's names have been anonymised using the term '[name anonymised]' and expletives have been replaced with '#####'.

### **7.2 Participant selection**

One of the main objectives of the study presented in Chapter 1 was to investigate the relationship between ACEs and PTSD. Therefore, the selection of participants who consented to having the interview audio recording, was based on the findings of the regression analysis between the binary ACE factors and the outcome variable PTSD, where ACE 4, 'feeling unloved as a child' emerged as the strongest predictor of PTSD (see Section 6.8.3). To be eligible for selection all participants must have returned scores for PTSD of  $\geq 33$ , and the rationale in participant selection was an attempt to provide explanatory evidence for the differences in PTSD between those who 'felt loved' as

children and those who did not ‘feel loved’ as children for both males and females. Therefore, the data was custom sorted into two groups: those who said ‘yes’ and those who said ‘no’ to ACE 4. The PTSD scores for the two dichotomous ACE 4 groups were then sorted from highest to lowest and by male and female participants. Four males and four females who said ‘no’ to ACE 4 and who had the highest PTSD scores were selected for group 1, ‘Emotional neglect = no’. Four males and four females who said ‘yes’ to ACE 4 and who had the highest PTSD scores were selected for group 2, ‘Emotional neglect = yes’. Providing a total of sixteen participants for the transcription and analysis of the data. Additionally, if two or more participants returned the same scores for PTSD, the participant with the highest number of ACEs was selected (see Table 7.2).

*Table 7.2: Participant selected for qualitative analysis.*

<b>ID</b>	<b>Gender</b>	<b>ACE 4</b>	<b>PTSD</b>	<b>ACEs</b>	<b>Interview Time (minutes)</b>
82	Female	Yes	79	9	44
93	Male	Yes	70	9	32
19	Female	Yes	62	9	68
118	Male	Yes	57	9	68
79	Female	Yes	49	9	27
92	Female	Yes	47	9	55
77	Male	Yes	45	9	44
31	Male	Yes	38	9	92
65	Male	No	51	7	38
7	Male	No	48	7	62
69	Female	No	70	6	49
11	Male	No	42	6	41
75	Female	No	58	4	33
90	Female	No	57	4	42
103	Male	No	56	4	49
81	Female	No	44	4	82

### **7.2.1 Process stages.**

Following the selection of the participants, the sixteen audio interviews were transcribed into individual Microsoft word documents and each document uploaded into the NVivo software package for analysis. As discussed in Chapter 4, the first step in analysis is familiarisation with the data. The initial coding stage, the stage where all the interesting data is identified and organised into meaning groups resulted in the creation

of 42 items, broken down into 8 themes; treatment outcomes, traumatic events, social functioning, education, personal stories, other codes, OAT experience, health, and drug use, which was generally based around the structure of the questionnaire and 32 subthemes (see Appendix 8). The procedure selected for analysis and, described in Chapter 4 was the top down deductive method therefore, the development of themes involved looking over the results from the initial stage and attempting to group the data into more heterogeneous groups based on participants experiences of childhood trauma and PTSD. The final stage of coding stage collapsed the codes from the three initial stages into two main themes and eight sub-themes (see Figure 7.1).

### 7.3 Results for thematic analysis

Two main themes were identified during the analysis with multiple sub-themes (see Figure 7.1) to explain the relationships between ACEs and PTSD. The first theme was critical incidents, described as incidents in the person’s life which had a long lasting effect on the individual. The second main theme, trauma response, is defined as the person’s response to the critical events. All participant quotes presented under each theme are shown as per participant selection for ACE 4 groups, (group 1; Emotional neglect = no) and group 2 Emotional neglect = yes).

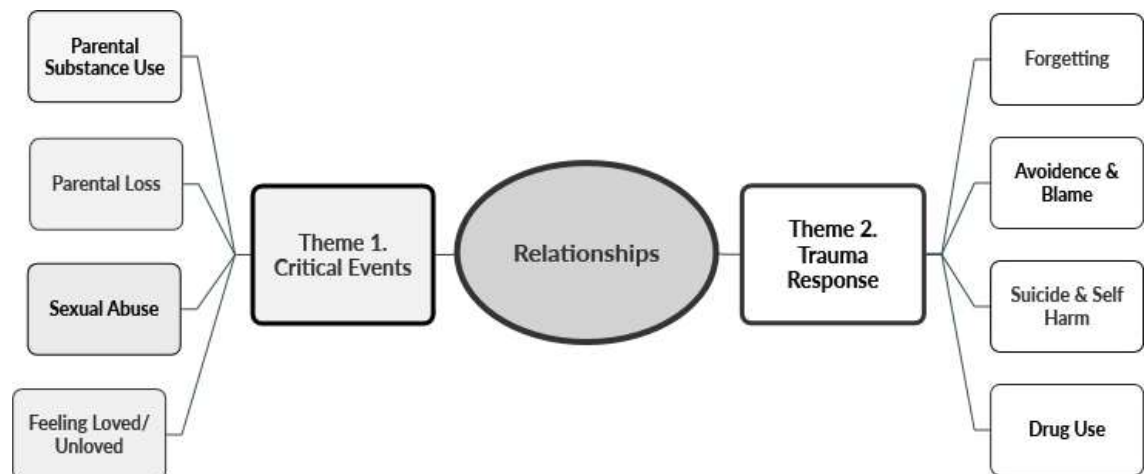


Figure 7.1: Final Thematic Map

#### 7.3.1: Theme 1. Critical events

The critical events most reported by the respondents before they were 18 years of age included being sexually abused, the loss of a parent, growing up in a household with a

parent addicted to drugs and/or alcohol. Given the findings of the quantitative analysis discussed in Chapter 6, sub-theme 4 investigated some of the explanations provided by the participants for feeling loved/unloved or important or special as a child.

#### **Sub-theme 1: Parental substance use**

Parental substance misuse was the most commonly occurring childhood event cited by 59% (n= 61) of the 103 participants during the descriptive analysis (see Table 5.4.1), however, all of the sixteen participants selected for the qualitative analysis reported living with someone who was a problem drinker or who used street drugs. Furthermore, this event was also identified as a significant predictor for PTSD during the quantitative analysis (see Figure 6.8.1). Alcohol was the most commonly reported misused substance, however, in other cases illicit drug use and the dual use of alcohol and other substances was also mentioned. A number of participants reported that both their parents were addicted to some form of substance.

#### **Emotional neglect = No**

Three people from this group mentioned a parent who had substance use issues.

*“Me father was a ‘####’ headcase, took PCP regularly, ripped the radiator off the wall, psychopath, shot me in the leg, it’s only a scratch, stop moanin” (# 7).*

*“As a child, me da was very hard on us”, was he an alcoholic? “Yeah”, “we were stripped naked and hit with a belt” (# 11).*

*“yeah, he (father) was a binge alcoholic” (# 81).*

#### **Emotional neglect = Yes**

In contrast to the ‘no group’, participants from the ‘yes group’ talked about both parents having problems with substance use. Participant 92 spoke about both parents and the consequential impact it had on her particularly when she was made homeless:

*“Well, me Da’s an alcoholic so we didn’t get along” and “me mother is a raven alcoholic so she had all these kids and I brought them all up like. Then I lost my apartment and then I had to separate them all into foster homes and*

*everything”...“The landlord didn’t pay their mortgage so the banks took it back so I went homeless then for three years and what a homeless life that was, never again” (# 92).*

She added that when her father stopped drinking it had a very positive impact on her life and her use of drugs:

*“I am back in me Da’s four months now so he’s looking after me. I’m not on any drugs or anything, like I’m drug free, so I’d rather stay that way”... “We’re real close now, I think he opened his eyes when he stopped drinking, you know, my kids need my help, you know, which we did like I was crying out for help” (# 92).*

Another person gave some personal insight into what life was like growing up from a young age in a household where both her parents were dependent on alcohol:

*“Like it was out robbing giving me mother money and me father he was an alcoholic giving him money for his drink”... “As long as I was out robbing, and getting money, robbing for food as well, starving, be robbing, starving like buying food and giving me mother money for her few cans me da his money for his drink”... “They’d wait for us to come back from robbing like they’d call us like on a Saturday you know, are you going into town, this was at 13, 13 or 14” (# 19).*

*“On Christmas it wasn’t pass the presents it was pass the parcel, uh, which would you, like, what tablet is it blue or yellow would you like this year, like, since I’m bleedin 12 like, I’m taking benzos like crazy” (# 19).*

A number of the participants did not give a detailed personal narrative on the effect parental substance had on their lives, preferring instead to make a comment during the interview as witnessed by the following participants remarks.

*“Yeah he was a heroin addict...and an alcoholic”...“She (mother) had a problem with pain killers but not alcohol” (# 79).*

*“Me, Ma, and Dad they were alcoholics” (# 82).*

## **Sub-theme 2. Parental Loss**

The second most common critical event in childhood reported by the 16 participants was the loss of a parent growing up (88%, n= 14). A number of people shared their stories and the effect it had on them. For those who lost a parent through suicide, the event was mentioned as the reason they turned to substance use, possibly as a way to soothe their trauma.

### **Emotional neglect = No**

Participant 81 lost her father when she was 12. However, when she was 16 years old, she found out through the unkind taunts of a neighbour that her father had committed suicide.

*“There’s been a lot of things in my life that can, like when me Da died and I understand it, now I understand it, that we were told that me Da had a heart attack but he didn’t, he killed himself. Everyone else knew that but we didn’t know that it was ‘####’ god forgive me, it was a ‘####’ bitch of an old woman that screamed at me and me brother when we were 16, well I was 16,”... “no wonder your father killed himself with children like you”....” [name anonymised] would’ve have only been about 12 at the time” (# 81).*

*“At the moment, I can live my life as regularly as anybody else out there. I know you have people that, you know, think you’re a functioning and addict, no I don’t, I’m just a functioning person who happens to take methadone” (# 81).*

Participant 103 said he has suffered with anxiety and stress all his life from a very young age. He believes it was caused by the death of his mother through suicide, an event he never properly dealt with or was unable to deal with:

*“I’d just stressed meself, I’d be worried about everything. I wouldn’t just let things happen as they happen in life, I’d be like what if this happens, what if so and so knocks at the door, what would happen that’s what I’d be like, that would be me personality in a sense”....“Ma died when I was younger and I never really dealt with it, to be honest with ya, that’s probably what it is, more than likely. She died in a sudden way you know what I mean, she committed suicide when I was younger to be honest with ya and that’s one thing I never really dealt with it” (# 103).*

He also pointed out his inability to deal with this event as the reason for turning to drug use:

*“Ah I was 10 but like, to be honest with ya, me and me brother had the same thing happen to us and me brother is a successful businessman. He has his own scaffolding business he’s doing very well for himself so both of us went through the exact same thing and one went into addiction, and one went the opposite way” (# 103).*

However, he also believes his brothers way of dealing with this traumatic event was to turn to work:

*“But then again he’s like (is he a workaholic) yeah, he works ah, everything is work, work, work with him you know what I mean so” ....” yeah, that’s the way he is dealing with it, yeah that’s the way I look at it you know” (# 103).*

*“Me Ma was a chronic alcoholic and so was me Da, and me Ma ended up dying at 29, oh, so I don’t drink at all”...“ just me Da was 27 when me Ma died and he wasn’t able for us, he was bad on the drink and he just wasn’t able” (# 90).*

### **Emotional neglect = Yes**

A number of participants gave yes or no answers to some of the questions and others made short comments or remarks:

*“Yeah, she ah, through alcohol”...“she killed herself” (# 77).*

*“Yeah me Da he wasn’t a nice man he killed himself when I was 17 he abused me sisters raped them and he was the one who done that to me as well” (# 31).*

*“I’d love to say to me ma, ma you don’t have to feel guilty about anything you know. But I can’t say it to her because she doesn’t want to hear it ya know, and then that would make me think well if she doesn’t want to hear it then she’s in denial. Was she in denial when we were younger?”...“Did she have any inkling that something was going on or something happened you know, and if she did fair play to her she took us away to [name anonymised] and then she got back with him, took him back” (# 31).*

*“Well you know they have their issues and like me we all have our issues and um” ...”I run a steady home I don’t like trouble in the house” (# 31).*

### **Sub-theme 3: Sexual abuse.**

Sexual abuse appeared to have a lifelong impact of a number of the participants. Of the 16 participants interviewed ten reported having been sexually abused, however it is important to note that not all of the participants verbalised their experiences and although one participant did not experience direct sexual abuse she witnessed the rape of a family member. In total, there were 23 references from seven people who shared some of their experiences. One participant who had reported nine ACEs explained that she escaped this event. Interestingly, the vast majority of responses came from the ‘unloved’ group.

#### **Emotional neglect = No**

Participant 7 did not see the event or the experience as negative, however he did say the event was not forced upon him:

*“When I was with a girl, when I was 12 (she was 17) but I didn’t realise but I actually enjoyed it”...”No it was nice” (# 7).*

#### **Emotional neglect = Yes**

*“I got out of that one nicely”...”I don’t know how I managed to, ah beat the sexual, you know, the sexual part of it like, so lucky” ....”I was a virgin until I was 18” (# 19).*

Although participant 19 managed to escape the sexual abuse personally, her sister was not so lucky and raped repeatedly not by other family member but by people who regularly visited their home:

*“Me sister got gang raped and all like she used to bring a different fellas back every night of the week”.... “I’d go after me little sister and we’d hide in the bedroom, like, there use to be all sorts in the house”...” I’ve seen rape, I’ve seen everything”...”before the age of \*\*\*\* 15, 14 ” (# 19).*



For participant 82 the experience was somewhat different. She reported nine ACEs and scored 79 out of 80 for current PTSD. Her abuse came at the hands of her father and two brothers and she is still trying to deal with it in the present. She also described the lack of any support for her in the household growing up and the helplessness she felt for her situation:

*“it's all to do with being abused by me brothers and me father” .... “even if I screamed out, nobody would help me in the house, they all knew what was going on, it was called the horror house it was” (# 82).*

Although she did bring legal proceedings against her father in later life, his death prevented her attempts for justice and potentially some form of closure. However, she is still contemplating taking legal action against her brothers:

*“I got me Da charged but he died just before the trial was to start, and all, so then I was starting, me and me psychologist and I'm still thinking whether to get me two brothers charged” (# 82).*

However, her attempt to seek justice against her father came at a very high price given the aggressive reaction of her whole family:

*“Everyone, I got me Da charged like Aw, I was married at the time and the whole family, brothers and sisters banging down and putting my windows through and all, I don't think I would be able for that, again” (# 82).*

Childhood sexual abuse among the cohort was not gender specific, four male participants shared some of their experiences. Participant 31 revealed he was abused by his father when he was 5 and he was not the only family member to experience this:

*“I was abused when I was 5”.... “I remember the feeling of being hurt so I don't know what happened”... “He (father) abused me sisters, raped them and he was the one who done that to me as well”....” there was a 14 year old, then a 12 year old then they were the two that got molested yeah, me sisters yeah” (# 31).*

In response to the question on sexual abuse participant 77 simply responded:

*"Yes, me brother" (# 77).*

Although participant 118 answered yes to sexual abuse as a child, he did not talk about his own experiences, however, he did share that four of his sisters were also sexually abused and talked about the lifelong impact the abuse has had on him and his sisters:

*"I had four sisters that were severely abused OK"..... "me other little sister is '####' up she is a chronic alcoholic and I've seen her activities at the wedding and stuff when nobody wanted to stay in her apartment as obviously she's mental, sleepwalks and she's prone to see the kitchen devil in ya if you frightened her in the night-time" (# 118).*

*"one of my sisters, she tried to commit suicide, she was on a life support machine in Blanchardstown"...."And then when she feels nobody is helping her, she goes on this suicide binge and rings everybody at 3 o'clock in the morning, I'm going, I did love ye, no one loved me and somebody would say race, up to the house and she's '####' asleep on the chair"....."and then the one time I raced up I found her '####' blue, well lucky enough I was careful to ring an ambulance on my way".... "she is in the kitchen slumped in the chair, lucky the ambulance came with me and got the tube into her so could keep her breathing" (# 118).*

The perpetrator was not a family member, he was well known to the family and not living in the area anymore, although he still has family there:

*"He won't drive down into [name anonymised] cause he's afraid it's gonna enlighten everything but he hides up in [name anonymised]"... "well he caused 90% by raping '####' kids so then I'm the youngest and I'm left with all this '####' problems"... "So you have one sister dealing with alcohol and that type of '####' every three or four weeks you know '####' crazy and the other sister goes on like she, can't even explain it, like, just addictive behaviour doesn't know it, you know it's crazy, yeah it's kind of a mixed up family" (# 118).*

When questioned whether the incidents were ever reported to the Garda the participant said that the fear of stigma was the main reason the incidents were never reported to the authorities and are being kept within the family:

*“No, it’s not even a case they are afraid, the ah, the stigma. It’s the stigma that’s holding people back, you know they don’t want to. I have sisters who have kids, that their kids don’t know anything about it and they don’t want their kids to know, their kids are in their 30’s” (# 118).*

**Sub-theme 4. Feeling unloved.**

This theme, although it did not generate the same level of comments as the three themes covered above, does demonstrate participants emotions, therefore providing a link between the person and the home environment they were growing up within.

Participants 90 and 62 answered no to the ACE question, whether they often felt nobody loved them or thought they were important or special. From their responses they appeared to look at this question from differing perspectives.

Participant 90 grew up in an environment of severe neglect, after her mother died and her depressed alcoholic father at 27 was left to care for a young family.

ACE question 5: Did you often or very often feel you didn't have enough to eat?

*“Ah, all the time yeah” (# 90).*

*“Yeah, me Da was always very depressed”....” Me Da was 27 when me Ma died and he wasn't able for us”...”I think we just took one day at a time going back then, to be honest with you, it was just natural when that happened but it wasn't violent or we don't think that he hated us” (# 90).*

Participant 91 provided a more controlled response to the question of feeling unloved:

*“Can’t be answering with that directness, like it’s circumstances, like, so, I’ll say no” (# 65).*

Participant 11 also said no to the ACE question 4:

*“No, we are close” (# 11).*

However he also said that they were subjected to severe physical abuse by their alcoholic father and his mother did not intervene:

*“we were stripped naked and hit with a belt”... “She (mother) always sided with me da,  
I think just for the peace” (# 11).*

**Emotional neglect = Yes**

*“Yeah, I thought I was adopted, I thought I was with the wrong family” (# 77).*

Participant 92 reported 9 ACEs and did not add any additional comments to her ‘yes’ answer to ACE 4, however, her inner feelings towards the mother who had abandoned her and left her to care for her siblings, outlined in sub-theme 2 above, were expressed when asked if her mother was ever subjected to physical abuse at home:

*“Well if she did she deserves it”...” I don’t know, I’d say she did and she deserved it” (#  
92).*

**7.3.2: Theme 2. Trauma response.**

Theme 2 investigates how participants reacted to any traumatic event from their past and participant responses are segmented into four themes. As presented in the quantitative analysis there was a strong significant correlation between the number of ACEs and current PTSD (see Table 6.2.1). However, while the theme is not specifically based on events from childhood, some participants did talk about recent occurrences of traumatic responses which were linked to events that happened during their early life.

**Sub-theme 5: Forgetting.**

A recurring theme from participants was the importance of remembering or forgetting a critical traumatic incident that occurred in their past that was having an impact on their lives at the time of interview. As discussed in Section 5.3.2, 50% of the participants reported having problems with their memory. Sigmund Freud (2001) referred to this phenomenon as repression. Repression is a protective brain response through which the affected person suppresses memories of the traumatic event therefore, repressing the event into their unconscious memory. The unconscious could be described as the activities of the mind, such as obsessions, which are hidden from the subject and therefore, can be unavailable for recall when people go about their daily lives (Georgaca & Avdi, 2009). PTSD has been reported to cause reduced hippocampal volumes in the

brains of those suffering from the condition, which can result in alterations in cognition, mood and deficits in memory (Shin et al., 2004). Additionally, PTSD can be responsible for limited recall of key aspects of a traumatic event with an increase in anxiety and depression and blaming others or oneself for what happened (van der Kolk, 2014).

In the context of this analysis a critical incident is defined as any traumatic event that has resulted in a stressful response by the participant. Responses differed among the participants to forgetting a traumatic event.

### **Emotional neglect = No**

Recalling the suicide of his partner, one participant's response was:

*"I can't forget them people in what they said to me about me wife, I know what went on that night" (# 7).*

*"Yeah, block it out, yeah" (# 75).*

*"Only talking about it a minute ago"... "Yeah extremely" (# 69).*

*"One of the doctors in the Mater said to me, um, I got the essential tremor, that was one I never heard of and I was also told that I have OCD in the mind"... "when I asked what did that mean he told me, basically, it's just thinking about thinking about thinking about thinking and you're going through every little thing and dissecting it and playing 500 different scenarios" (# 81).*

### **Emotional neglect = Yes**

When asked if he has repeated memories of a stressful event participants replied:

*"No not as much now..... a little bit maybe, but things come back really in little bits" (# 77).*

And remembering important parts of a stressful experience:

*"No, I think you have to remember them to deal with them, don't you" (# 77).*

However, when asked if he had repeated or unwanted memories of a stressful experience in the last month the response was:

*"I can't remember to be honest, not at all maybe, I just can't remember" (# 77).*

Some participants seemed to park or partially block the event(s) and respond in the moment when details of the incident re-emerged:

*"It's what level are they being dealt with now, ya know, ok, when something gets exposed for the first time it's gonna be raw for me personally and then but when...it comes up again and I get reminded of it, it's like well what level is it at now I'm managing it at a level where I can overcome it easier" (# 31).*

However he also added:

*"You know it only came, I only remembered it within the last two years, yeah, it just came back like a, ah, it just hit me out of nowhere" (# 31).*

Participants 82 said she blocked part or all of the event(s) out of her memory:

*"Yeah, like me two older brothers that abused me but, there is parts of me that just blocked half of what they done to me out. And to this day I do be figuring out what, why did they abuse me, Ah, I just can't remember. I know it was in the house, the family house but just parts of the abuse I just blocked out and I don't know why I blocked parts of it out, I can't understand it" (# 82).*

When asked if they had trouble remembering important parts of the stressful experience a number of other people said:

*"Yeah, I'd say that would be extremely" (# 92).*

*"Yeah, definitely" (# 19).*

As mentioned above, obsessions are a consequence of repressing traumatic memories and a number of participants talked about their obsessions:

*"I have a mental problem from when I was young, um, I don't think I'm heavy anyway, I think I'm skinny in the way I look at meself in the mirror and, um, that was only brought to my attention through counselling two years ago" (# 31).*

### **Sub-theme 6: Avoidance and Blame**

Avoiding reminders such as memories, thoughts, places, and people is an important part of the forgetting process for many of the participants. However, some events can be so distressing that constant reminders occur through normal life events such as anniversaries or unconsciously through dreaming, therefore, causing severe distress to those affected. Many of the participants also blame themselves for what happened after the traumatic event.

#### **Emotional neglect = No**

For participant 81 the loss of her father has remained a constant struggle throughout her life to the point where she actively avoids reminders of her father:

*“Yeah like I mean, even last week I wouldn't go to the graveyards and you know, it's ridiculous really because it's not as if standing at a stone is making it anymore real. You know what I mean like, but I just, I can't do it, like in 30 years I think I've been at that grave 5 times and that's including the funeral and I think I've got out of the car twice”*

*(# 81).*

A number of other participants also provided some brief comments about avoiding and blocking out painful memories:

*“ Yeah, I try and avoid it a lot, I try to put it at the back of my mind” (# 75).*

*“Well, yeah, I would avoid them totally” (# 19).*

*“I did block off sentimental music of her” ....“music does that to me” (# 7).*

*“My wife's death yeah, I know it's true but I said it to her on my Facebook page, I'm a total bastard” (# 7)*

*“Not so much now, but yeah, back further, years ago, yeah, quite a bit” (# 65).*

#### **Emotional neglect = Yes**

*“Yeah, I would, especially if that if the other person is um, sees it from a different point of view or reacts to it in a different way I avoid it, it's not healthy” (# 31).*

In as much as a person can avoid memories of past events, reminders can bring blocked memories back into consciousness:

*"I more dream about me Da cause, even though he's dead oh 18 years, um, because he was such a, what was he known by what was his nickname...Tarzan, cause his big hands like shovels and all, even though he's dead, I still fear him for some reason, I don't know what it is.... yeah, 18 years and I still fear him" (# 82).*

*"It feels like it's happening until I open my eyes and then it's all just a dream" (# 92).*

*"Yeah, I dream very heavy frightening dreams" (# 118).*

When asked whether they blamed themselves, or someone else, for the stressful experience, or what happened after it, ten participants said either extremely or quite a bit while three people responded with, not at all or a little bit:

*"Ah, don't blame meself"... "I do blame someone else" (# 92).*

*"That would be extremely" (# 19).*

*"I'd be thinking about me own thing, what me Da done, when he gave me a hiding or when he flushed me head down the toilet"... "I blame myself"... "Yeah, for letting it happen" (# 82).*

#### **Sub-theme 7: Substance use.**

This theme charts some of the participants' comments that mention their drug use. Some talked about what caused them to turn to drugs, the consequences drug use has had and how treatment has helped them stabilise their lives.

#### **Emotional neglect = No**

For participant 81, the impact of knowing the truth about her father's death thrust her towards drug use as a way of dealing with a very traumatic event:

*"Then me father died and I started taking Valium and me Da committed suicide when I was 12 and I started to take Valium and that kind of thing and then these were just another tablet that was on the scene, I didn't realise they were a methadone tablet" (# 81).*



She said the death of her dad was the reason she turned to drugs:

*“Da died and the drugs came along that I kept up, that I miss, if you know what I mean”...“got caught up in the drugs heavily” (# 81).*

*“I tried to come off, I was taking a whole mixture tablets like dolly mixture and um I tried to come off the whole lot of them meself and I ended up in um, the psychiatric unit in the Mater hospital”...“I’m not willing to take the chance of going down that road again like you know what led me there in the first place was the death of me father” (# 81).*

The trauma of losing a child seems to push participant 7 towards mental health problems and drug use to soothe his trauma:

*“I have 3 kids buried”...“I turned to drugs when me daughter died”.....” I was in the asylum takin’ ecstasy and this fella says do ya want a shot a H, I says I’ll try it horse”...“I’m talking about heroin and I fell in love with it”.... “Well when I smoked it first, I actually couldn’t remember me daughter that died and I remembered her and seeing her running messing on the quays like that was amazing, that’s why I smoke it, I remember a lot of things” (# 7).*

In response to the use of different substances, the age of 25 years was when alcohol, heroin, and cannabis became a problem for participant 75:

*“When me mother died it (alcohol) became a big problem” (# 75).*

The importance of having access to methadone treatment was mentioned by participant 103 who also lost his mother to suicide when he was 10:

*“If I didn’t have me methadone I’d have to rob to get a bag of gear, two bags of gear a day to be honest” (# 103).*

### **Emotional neglect = Yes**

Participant 79 started taking heroin when she was 15 and it became a big problem for her at 16, when asked was there any particular reason for turning to heroin he replied:

*“Um I was in foster care so I didn’t really get on with me family or anything”.....”and I was just blocking stuff out” (# 79).*

Cocaine and cannabis were among the first drugs used by participant 77, who lost his mother to suicide. Cocaine became a problem from him at 12 before turning to heroin at 19:

*“I chased it regularly, like I was coming down off ecstasy and acid and stuff like that, you know what I mean, and you take one to come down off another, like, you know what I mean” (# 77).*

*“Where a few joints wasn’t helping, the heroin could get there quicker, you know, and I lash it on”....“Yeah, it was, yeah, because I was taking cocaine and speed as well, so I went through the whole lot, you know, so coming out of the 70’s into the 80’s the acid and all that stuff, it was on the street then not hidden behind doors anymore” (# 77).*

The event(s) which appeared to push participant 82 towards drug use was rape by two of her brothers and her father. Alcohol became a problem for her when she was 17 years of age and heroin and other drugs when she was living on the streets:

*“I done it all when I was 18, just when I was homeless, I was just taking it when I was on the streets” (# 82).*

While participant 19 suggested that substance use was a way to soothe her current trauma:

*“Not at all because I know meself with that much tablets and that much methadone I don’t really think of it” (# 19).*

### **Sub-theme 8: Suicide and self-harm**

Nine of the participants had at least one symptom of severe depression and for six people the idea of taking their own lives had at least crossed their minds. This theme explores participants experiences of attempted suicide, suicide ideation and self-harm.

### **Emotional neglect = No**

Self-harm and suicide ideation is something participant 69 has struggled with for a long time and is now attending a psychiatrist after reaching out to the clinical staff in the centre:

*"I started hearing voices and they were telling me to harm meself, and I was also harming meself"...." I just kept it to meself, didn't know who to go to"... so I said it to one of the girls and they ended bringing in the psychiatrist, so that was really good" (# 69).*

She also made a number of suicide attempts:

*"I was trying to kill meself, throwing meself off the bank, like, and that's what made me come out, it was me Ma that found me and I was found dead in me room last year, I was trying to commit suicide so, took a load of tablets and me young one found me in the end I had woke up in the hospital and they put me into a coma" (# 69).*

Participant 7 talked about his reaction to what others were saying about his possible role in his wife's suicide:

*"Yeah I got cut I cut me wrist the other day, I cut me wrist cause someone said two people she said and the fella was saying she, the wife killed herself cause of you" (# 7).*

**When asked about suicide ideation, participant 90 said:**

*"It's horrible" (crossed your mind) "yeah, plenty of times" (# 90).*

**Emotional neglect = Yes**

Participant 82 offered the following narrative of her suicide attempts and ideation:

*"I was trying to take my own life; I don't know how many times I've done that but now I'm seeing some psychologist now so she's good yeah".... "Last year me [name anonymized] came in, he was coming in from work or something and I was in the house I was after hanging meself from the ceiling and he walked in and just pulled me down, so I ended up in James's hospital" (# 82).*

Although she is working with a psychologist she is still struggling with suicide ideation:

*“Sometimes I just feel like walking in front of a car or a bus or just to end me life and sometimes I’d get afraid of it I’d be terrified to do it” (# 82).*

She answered yes to the question on the current PTSD questionnaire of being unable to experience loving feelings and said:

*“Yeah, I think that’s part of why me and me X broke up, think like even though we’re still best friends to this day it’s just, I think he felt he couldn’t do any more, like he helped me so much, think he just got tired, tired of me” (# 82).*

When asked if you wished you were dead and away from it all and if the idea of taking your own life kept coming into your own head participant 92 said:

*“Yeah, much more than ever I’d say”... “Yeah, but I’d never do it thought, now coming into me head like, (definitely not) yeah” (# 92).*

A number of other participants also made comments in response to the questions on suicide:

*“No, I never think of that, once or twice in the years but I’ve never been if I was ever going to kill meself I’d OD, I wouldn’t know how to tie a knot” (# 19).*

*“I would a done it and I decided not to do it and I never will it’s not for me it’s not something that I agree with, not only as a Christian” (# 31).*

#### **7.4: Chapter Conclusions.**

Two main themes and eight sub-themes emerged from the analysis. Substance use was the sub-theme with the most references (41 from 11 participants), followed by loss of a parent (19 references from 10 participants) and parental substance use (19 references from 10 participants). Sub-theme 4, feeling loved/unloved as a child was mentioned by 7 participants with only two of the participant who had answered ‘yes’ to ‘feeling unloved’ providing a comment. Two people who said ‘no’ gave somewhat ambiguous responses, participant 65 gave a non-descript response while participant 90 said she did not believe her alcoholic father ‘hated’ her. The majority of the narratives on the question about sexual abuse as a child were given by the ‘unloved group’, with participant 82 providing a harrowing account of her experiences. Moreover, a majority

of the 'unloved group' said that both their parents had substance use issues, while the responses from the 'loved group' mentioned one parent. Responding to a critical event, avoidance and blame were mentioned by 10 people, with respondents from both groups saying they would avoid places and people most of the time and block things out. Furthermore, self-blame or blaming someone else for allowing a traumatic to happen was mentioned by two participants. A number of participants from both groups said that losing a parent or close family member was the catalyst for their subsequent substance use. Forgetting the details of a critical event was mentioned by the 'unloved group' more often than the 'loved group'. A majority of participants said they block out an event to forget it; participant 77 said maybe 'not at all' to forgetting critical parts of a stressful event and then he added that he just can't remember.

The findings show that while all sixteen participants had elevated PTSD scores there did not appear to be a causal relationship between PTSD and any specific ACE category. For example a majority of the participants who reported emotional neglect also talked about being sexually abused in childhood. Moreover, a majority of these participants also reported growing up in a household with both parents having problems with drugs or alcohol. In addition, all the participants who reported emotional neglect had ACE scores of nine out of ten (see Table 7.2). This suggests that emotional neglect does not occur in isolation and may be a result of overall household dysfunction related to parental substance use rather than deficiencies in parenting styles. However, the findings also suggest that emotional neglect may have a more lasting long-term effect on the individual than some other forms of ACE such as physical abuse and may also be responsible for prolonging PTSD symptomology.

## **Chapter 8: Personal reflections during data collection**

### **8.1 Introduction**

The reflections contained in this section are selected from recollections recorded in the researcher's data collection diary and from personal audio recordings from April to November 2019. The information is generally presented in a chronological order with some of the main reflective themes summarised at the end of the chapter. This study involved following up the 131 service users who participated in the previous baseline phase of this study in 2017.

Maximising the numbers of follow-up interviews was very important to the power needed for a credible quantitative study. The survey instrument collected data on six treatment outcomes, therefore, a minimum sample size of 98 was required to analyse six factors using multivariate regression analysis. Additionally, the ethical approval given for the baseline phase of the study required that the follow-up interviews had to be conducted within two years; between April and November of 2019. The first task was to identify the service users who were still attending the six treatment centres (TC) and the times and days they would usually attend. During phase one, information leaflets and posters were distributed to the TC's and users of the service simply volunteered to participate on the day, and during the interviews they were asked to provide their consent to be followed up for subsequent studies. However, the follow-up study presented a very different challenge requiring a more targeted and focussed approach. Working closely with the clinical staff in each of the centres and familiar with the service users' attendance in the TC a list of eligible participants was prepared for each of the treatment centres and importantly identifying the possible whereabouts of eligible service users who had left that particular treatment centre. Again, during phase one the TC's were visited in a particular order, therefore the contact database evolved for each clinic as the data collection progressed.

As mentioned in Chapter 4, the clinics provide two main types of services, dispensing methadone directly to the service user (DC), or issuing a written prescription (SC), so the person can get their methadone in their local pharmacy. Attendance, therefore, is very specific to the particular type of service. In the DC's it was the general assistants (GA)

who were the key contact points while in the exclusively prescription clinics it was a blend of the GAs, the nurse, and the doctors.

Through these contacts it was understood that approximately 70% of the service users were still in treatment, however, some people had moved to a different treatment centre while others had switched to a community GP service. Of the 30% no longer in the treatment centres, six people had sadly passed away or were seriously ill, one was in prison and twenty were no longer attending treatment. While, reflecting on what was known and not known about the participants current whereabouts, the scale of the task really began hit home. Ten years selling consumer electronics products throughout southern Ireland, had been an education on how to achieve a target piece by piece, understanding what was needed to attain objectives in terms of time, effort, and planning. Particularly, this background was an introduction to being able to deal with bumps in the road and recover from setbacks; however, this was a challenge unlike anything ever faced before.

#### **April 2019**

The first three interviews were conducted on Tuesday 23<sup>rd</sup> of April in TC 02, a prescription only clinic in the North Inner City. The centre is a modern facility annexed onto a newly built primary care centre. Service users usually attend on a two-week appointment cycle and tend to come at the same time and day every fortnight. The first interviews were kindly organised by the nurse and all three service users came at the pre-arranged time. This was one of the few times that prior planning worked out this way. The expectation, based on phase one experiences, was the interviews would last upwards of one hour. The reality, however, was very different. All three service users had been sexually abused, participants 42 and 48 had both been raped as adults and participant 67 was sexually abused as a child.

Participant 67 had been in methadone treatment for over 21 years and shared some of his early life experiences growing up in the inner city with alcoholic parents:

*“I knew I had dyslexia when I was young, me father uses’ always had a dictionary and the small words for me was the big thing, you know,....going in to do my homework*

*was like pouring petrol over me and setting me on fire, and it was like, '####' hell and he (father) was going at me like, answer the '####' question and the fear he put into me was just unreal, like, I was afraid of that man all me life, till I got the strength to fight him one day, and that was the end of that, he never spoke to me again"*

Every day he hung out on the streets with his friends and started taking heroin which became a problem for him at 14 years of age:

*" I chose to take drugs, like, that was my choice, but you know at the time I wasn't educated, like about, there wasn't education for it, like there is no cannabis there, you're trying to be with the lads, and there is this heroin and you know, you're watching other fellow's do it. See if you grew up with that, you know what I mean, because there's nobody at home, you know, to get fed there's a stew, and then there's a stew and then on Sunday you'd be lucky to get a roast if there was a roast, you know what I mean. But I have to say, me ma did work hard, like 40 years as a cleaner and they did feed us, that way, you know what I mean."*

He said he lost family and most of his friends to alcohol and drugs:

*"I don't drink alcohol, that's probably one of the reasons me liver isn't as bad, all the people that has passed by, dead, like, I've no more friends, there all dead, yeah so"... "Like drink killed me mother, drink killed me father, you know".*

The interview with participant 67 lasted over two hours and was the second longest conducted among the 104 participants. It took some time to reflect on these difficult interviews. Based on what participants shared in phase one, some challenging life stories were expected, however, something felt very different the second time around. The one key difference between phase one and this follow-up phase was the addition of the ACE and PTSD questionnaires. These two instruments had been included in this follow-up study based on the unsolicited comments from the participants during phase one.



## May 2019

Tuesday 14<sup>th</sup> of May was the first day in TC 01, a dispensing clinic, and it had turned out to be a very successful day with three completed interviews, none of which were prearranged. The dispensing clinics appear chaotic, particularly at opening times, as scores of people gather to get their daily methadone medication. In the morning melee, the GAs are the people to identify the service users who consented to the follow-up and encourage them to meet the researcher. Arriving 15 minutes before opening time at 9am, the list of eligible participants was discussed with the senior GAs, something that became a normal task each day in the dispensing clinics.

If a reminder was needed of the terrible toll long-term drug use has on a person's life, then participant 85 provided a stark reminder. While very young, her father, an alcoholic, was sent to prison and died there, she never got to know him. The family were reared by their mother in severe poverty. She said her mother tried her best to provide for her family and sought support from a male friend. However, this friend sexually abused both the participant and her sister. She admitted to being 'a bit wild' in her teenage years and turned to heroin when she was 21 years of age which became a problem for her at the age of 23 years. She reported 8 ACEs scored very high on the General Health Questionnaire and PTSD instrument. When asked if she ever attended the counsellor, suggesting it might help to link in with the service. She replied that she didn't see the point:

*"What good would it do, anyway, talking to a stranger".*

During our conversation she shared her desire to have children although with tears in her eyes she said she never expected it to happen as her libido and menstruation were seriously disrupted by drugs. The interview lasted 55 minutes, as she stood to leave she turned and said:

*"Maybe this is what counselling is all about".*

Early observations indicated the influence and control the doctor had in the delivery of the service to the service users. The two participants interviewed today, Tuesday 22<sup>nd</sup> May were both very outspoken of their experiences attending the clinics. Participant 87

had spent 12 years in OAT and referred to methadone as 'liquid handcuffs' suggesting he was trapped in a maintenance service. He had been involved in an altercation outside the gates of the TC 01 and had been sanctioned to another clinic by the doctor which he said had cost him €50 a week in travel. Sanctions are a form of punishment imposed by the doctor if a service user infringes any of the TC rules. The period of a sanction depends on the severity of the infringement and can even be permanent expulsion from treatment. The participant said he was under a death threat from people in 'that' area and appealed to the doctor to allow him to return to TC 01. His appeal was successful; however, he was warned that if he ever stepped out of line again he would never be allowed to access methadone in any clinic in Dublin again, which would force him to go back taking heroin on the street. The interview took 2 hours and 18 minutes during which he spoke about of his challenging upbringing. His mother was violently abused by his alcoholic father and when aged 14 years, to protect his mother, he 'battered' his father putting him in hospital for 4 days. He added his mother was never beaten again. He reported 6 Adverse Childhood Experiences, however, when asked if he had ever been sexually abused as a child, he replied:

*"I refuse to answer that question".*

The second client, participant 88, spent the first 15 to 20 minutes bitterly complaining that the doctor refused to give him 'takeaways'. He said he has been giving clean urine samples for four years, however, he admitted to having a problem with "weed", but the doctor still required him to attend the clinic daily. His sister lives 'down the country' and he can't visit her or go on any type of holiday. He felt trapped. He said he had been offered a full-time painting job if he did not have to attend the clinic daily but he said he was told by the doctor that he was not fit to work and anyway, 'he only had another 20 years left'.

On Tuesday 28<sup>th</sup> of May arrival in TC 01 was accompanied by an air of optimism. Two potential service users did arrive but both said they can't participate that day; one was attending a funeral and the other had a hospital appointment. The day was not looking good after a GA said that another potential client had already informed her the previous day that they were not willing to participate. However, when this client came into the

TC that morning, he had a change of heart and said he was prepared to give it 30 minutes, which was time enough to complete the survey under normal conditions. After going through the informed consent process, he almost immediately opened up about life growing up in the flats. His mother died from breast cancer when he was 22 prompting his descent into drug use and addiction. He said if his mum did not get breast cancer, he would probably have gone on to run his own business and have a normal life, just like normal people (pointing at the researcher). He called himself the black sheep of the family; he has two sisters with no drugs or alcohol problems. His father was an army man and an alcoholic but gave up drinking alcohol 25 years previously. He said he has ghosts that he is trying to bury. The interview lasted one hour and eighteen minutes.

The dispensary in the clinic (TC 01) had been undergoing refurbishment work for several weeks, today the builders left during lunch break, however, they neglected to leave the key to the temporary dispensary room. At 2pm, several people had gathered outside with some rumblings as the gate was closed. Panic began to set in among the GAs as they tried several different keys to unlock the door but to no avail. Other staff members including the pharmacist tried to help, the noise outside grew and the banging on the gate got louder and louder. Two of the GAs tried some gentle persuasion with shoulders and feet, but the door remained steadfast. A staff member appeared from upstairs and advised the GAs against breaking down the door as the clinic is a listed building. The GAs were very worried a melee could start outside, and one of the GAs made a call to a superior who advised him to break down the door. The GAs made a very forceful attempt and the door finally succumbed. Watching this scenario unfold was, in some ways, quite humorous but in other ways very scary, when one considers there were 15 to 20 agitated patients dependent on an essential medication to avert severe withdrawal symptoms queueing outside a locked door. This only reinforced the important role the GA performs in the TC's; they are the people in the firing line whatever the circumstances and must take appropriate action in the interest of staff safety, and the welfare of the service users.

## June 2019

The 20<sup>th</sup> of June was eventful for varied reasons. Although three interviews were successfully completed, it could have been four. Participant 39 wanted to talk and pondered every question asked before answering. This was the first time it had really struck home that many service users just wanted someone to listen to them in a non-judgmental way. Starting out on data collection and using a structured interview approach, it had been decided to give participants the space to talk if they wanted to and to remain self-aware that the interviewing style facilitated this. There was nothing unusual about the participant's contribution, the scores on some key variables like the PTSD and ACEs were below the main cut off points. The session lasted 1 hour and 20 minutes and most of this time belonged to the participant as he talked about his struggles with addiction and relapses, his 15 years in treatment and his life experiences.

Given the challenges of people in the addiction services the previous interview appeared ordinary when compared to next client, participant 82. She talked about being raped by her father and brothers and was clinically diagnosed with PTSD. She had tried to have her father prosecuted but he died before it went to court, leaving her in a very bad place. Her attempts at prosecution caused a huge rift in the family, everyone turned against her and her house was attacked with the windows broken by other family members. Her scores on the PTSD and ACE were close to maximum. She said she was suicidal and was attending counselling services. This was a very difficult interview, emotionally for the participant and the interviewer, hearing these stories would melt even that hardest of hearts. She broke down crying several times. I asked her if she wanted to stop the interview but she said 'no'. Reflecting on this interview that evening and with both supervisors during our next meeting, the importance of this particular work, particularly the challenging lives of people with substance addiction problems became clearer, providing added motivation to complete this work in order to help improve the experiences and recovery journeys of the people who attend the addiction services.

The 27<sup>th</sup> of June emphasised the fact that the best laid plans can just go belly up. Two interviews were prearranged for that day in TC's 01 and 02 and the opportunity for an

unplanned interview was always a possibility. While waiting in TC 02 for the 11 o'clock appointment, a text message was received from participant 70 to say she was not feeling well and would ring back the following day. Therefore, with no other potential service users available in TC 02, the day had begun with a wasted trip into the city. The journey to TC 01 began shortly after lunch, allowing 40 minutes travelling time for what is normally a 25 minute journey. A truck on the M50 had spilled its load on the road between junctions 5 and 6 Northbound causing major tailbacks on all the approach roads. Arriving 15 minutes late for the 2pm interview, a potential participant had already left and the participant who had arranged the meeting did not turn up. However, just as the day seemed to be in vain, participant 83 arrived at the TC and was successfully interviewed. While the day was not all lost, the journey home was tempered with much frustration at how a relatively well-planned day actually turned out, given the amount of effort, and travelling time that had been invested.

### **July 2019**

Participant 70 from the 27<sup>th</sup> of June in TC 02 did not phone back. However, contact was eventually made and another interviewer was arranged for the 4<sup>th</sup> of July resulting in another no show and another wasted journey into the city, even though the participant had confirmed the meeting by text on the 3<sup>rd</sup> of July. The frustration of conducting field research work was beginning to bubble and the thought of abandoning this particular interview was a real possibility. However, the participant had consented to the interview and completing it although a real challenge, prompted a stubborn motivation to persevere until it could be marked off as finished on the contact database. Discussions with the nurse in TC 02 established the person was attending the counsellor in the Primary Care centre, a call to counsellor confirmed that the participant's next appointment was on the 7<sup>th</sup> of July. A text message was sent requesting a meeting following the appointment with the counsellor, she agreed by text and the interview with participant 70 was finally concluded.

Experiential learning was teaching that completing over one hundred interviews was going to be much more challenging than had originally been envisioned. In the end it would involve significantly more time and many fruitless journeys; an estimate of up to

6 hours for every completed interview. This was further confirmed while attempting to interview participant 44. During a chance meeting on the 17<sup>th</sup> of June in TC 02, she agreed to be interviewed during her next visit on the 1<sup>st</sup> of July. The participant arrived on the Monday 1<sup>st</sup> July and again excused herself due to time restraints and re-arranged the meeting for Monday 8<sup>th</sup> July. Although the nurse has advised that the participants next scheduled appointment was not on that day, the journey to the TC was made anyway more in hope than in expectation. The phone number provided by participant 44 was not in service so the nurse agreed to remind the participant when she contacted the TC. The interview was eventually completed on Monday 27<sup>th</sup> July.

At this stage in the data collection process, there appeared to be no discernible difference in the number of interviews completed by arranging appointments or simply turning up in the TC and approaching eligible people who attended on that particular day. The latter approach worked well for the dispensing clinics where service users came in daily and when the number of eligible participants was relatively large. However, this particular approach would be challenged as the number of interviews increased and the number of potential participants decreased, or where the numbers of eligible participants in a particular clinic were small, as in the case of TC's 4, 5 and 6. A number of the TC's provide an evening clinic once per week for service users working full time to see the nurse and collect their prescriptions. TC 02 provides this service on Thursday evenings between 6pm and 8pm, people can attend anytime within these hours and two of the eligible people left to follow-up in TC 02 both attended on the same fortnightly cycle and usually at the same time in the evening after work. A visit to TC 02 on Thursday 4<sup>th</sup> July resulted in neither client being available to participate citing different personal reasons, however, both agreed to meet on their next attendance two weeks later. A text message was sent to both people on Wednesday 3<sup>rd</sup> reminding them of the appointment. Participant 72 arrived at 6.20pm with the interview completed at 6.50pm well below the average interview time taken over the course of the study. The participant was on his way home from work and answered the questions without volunteering any additional information.

Participant 41 arrived at 7.35pm and asked, 'Will it take long', and 25 minutes was just about enough time to complete the interview, if it progressed as quickly as the former.

However, as the interview advanced it became apparent that he wanted to talk about his life experiences. At 7.55pm the nurse knocked on the door and said the clinic would close at 8pm. Attempts to speed up the interview by asking the questions quicker, failed, the client simply wanted to tell his stories. Presently, a knock on the door was preceded by the doctor abruptly entering the room saying, 'now, the clinic had to close at 8pm'. The client agreed to reconvene the interview outside of the clinic. The interview continued in the researcher's car and the disruption did not seem to faze the participant as he continued to talk about his experiences. During the time in the car, his partner rang to check on his whereabouts, the second time she had rung during the interview. He told me she hates drugs and keeps a check on his whereabouts. He has 6 children and came across as a good father and provider. I felt comfortable that he had the information sheet, the thank you card, and phone credit voucher to show his wife where he had been. This interview lasted until 8.40pm. The time taken to achieve these two interviews was four hours and 40 minutes (excluding travel time) over two separate evening sessions.

This was not the first time that a 'loved one' had rang a participant during an interview, it happened many times. On several occasions I was asked to speak to the caller to support the participant's story. Participants often said that their daily routines were regimented, they would leave home to go to the TC around the same time every day and return home directly afterwards. Delays in returning home often resulted in a phone call as to the person's whereabouts and this often came from a concerned parent. The callers appeared reassured that their loved one was safe and the information sheet provided to all the participants with the additional physical evidence of a phone credit voucher would help to reassure their loved ones of their whereabouts.

### **August 2019**

On the 1<sup>st</sup> of August interviews began in TC 03. The TC was built some years earlier and part of a Primary Care Health in close proximity to a local national school, therefore presenting an additional challenge. Due to its location, opening times for daily dispensing are restricted to mornings from 9am to 12pm and evenings from 5pm to 6.30pm. Afternoons from 2pm to 4pm are reserved for prescription service users only.

On the first morning of interviewing in the clinic a client agreed to participate. While going through the informed consent he pointed to the audio recorder, which was switched off (while awaiting his consent) and he said he does not consent to recording the interview. He told a story about being interviewed by the Garda who unbeknownst to him audio recorded his interview. During his trial, his solicitor raised this issue in court and the Judge dismissed the charges. He demanded to know who would see his responses to the questionnaire. Reassurance was provided in the informed consent document that nobody in the clinic or health services would have any access to his data. The data was for research purposes only and at any time he could end the interview and he could ask to have his data withdrawn from the project. At this point the client became quite animated, pointing towards the doctor's office, he asked 'will he see it ... well if he does I'm coming after you', pointing at the researcher and added 'I'm not going to answer any personal questions'. Feeling somewhat intimidated, attempts were made to calmly reassure the participant that the interview was strictly confidential and as researchers, we are bound by a strict code of ethics to protect the anonymity of all participants. Adding that, if anything is said back to him we are more than happy to meet and answer any questions he may have, pointing out that the researchers contact details are on the information sheet.

This appeared to give the participant the reassurance he needed and he began to talk about his experiences attending the clinic. In particular, sharing his problematic relationship with the senior clinical staff, he felt his takeaways were stopped some time ago because he was not liked. He said he was told this in front of other service users and the GA staff. He added that he would be on methadone for the rest of his life and could never see a time when he was off the clinic. Although he started out saying he would give any personal information, as the interview progressed he began to share some very difficult stories and personal histories of physical, psychological, and sexual abuse as a child, citing these as the reason he turned to heroin. He talked about being raped by a relative in his own bedroom and he described a ritual in graphic detail adding that he was too scared to tell his mother. Consequently he had received severe beatings from his mother for bed wetting. It was years afterwards before he talked about the sexual abuse and the effect the abuse had on his life.



The interview lasted for one hour and fifty minutes, and as mentioned earlier, the interview was not audio recorded. The original plan for the rest of that particular day was to travel to TC 01, however, the difficulty in compartmentalising the information from this interview resulted in a change of plan. It was a beautiful sunny day, with blue skies and a warm sun. Doing some gardening chores around home didn't help to refocus the mind and by evening the events of the day came flooding back and was accompanied by a very restless night. Morning eventually came and around 6:30am with a cup of tea and an audio recorder in hand, a personal account of the participants interview, which had lasted about 40 minutes, was recorded. The impact of recording this personal account was quite profound and somewhat unburdening, by sharing this story, albeit, with an audio recorder. One could say it was a cathartic experience. In primary research interviewing people who have led challenging lives and learning strategies to effectively deal with these difficult and often tragic stories is part of the research process. The role of the researcher is to accurately collect and analyse data in a scientific way and to provide knowledge on the subject at hand. Empathising with people is a normal human reaction, however, this personal reflection provided some additional direction towards the purpose of this research, namely that the participants' needs are better served by maintaining a boundary between personal subjective emotions and the research objectives.

This interview also highlighted the importance of informed consent as a positive tool to improve the accuracy of the data collected. The enforcement of the general data protection regulation (GDPR) act was implemented during the collection of data for this project. Asking participants to sign the explicit consent form was an important part of the research process. While this appeared as a burden and possible barrier at first, given the literacy of many participants, experience has shown that participants were provided with the assurance they needed to provide an honest response to personal questions. The addiction services have a contingency management scheme to incentivise service users to abstain from taking opiates and cocaine. A researcher may meet a service user only once and a bond of trust must be established immediately for the person to trust a researcher with information which could compromise their position in the TC. The importance of going through informed consent as a way of reassuring people of the

researcher's bona fides while also providing the opportunity to present oneself as someone working to improve the service, and not clandestinely attempting to acquire information that may affect the person in a negative way, was extremely important to the researcher client relationship.

One of the few participants the researchers managed to contact by phone was participant 111. She said she had left TC 03 and agreed to participate and asked to be interviewed in her family home which was located a short distance from the TC. She said she left the service because a senior clinician would not help her to reduce her methadone dosage and admitted to self-medicating on heroin once a day and wanted to go into detox, however, she needed information and advice on how to go about it. Cuan Dara (a specialised detoxification centre in Dublin) was mentioned and a suggestion was also made to reach out to the nurse or the GA in TC 03 for information and advice she needed, and she agreed to this approach. This was the second person (participant 64) interviewed who had left a TC and was self-medicating on heroin because, as they claimed, a senior clinician would not work with them to detox off methadone.

### **September 2019**

Among the sadder stories told over the course of data collection was recounted by participant 52. He was a bare knuckle boxer and had never consumed alcohol, smoked cigarettes, or took any form of illicit drugs in his life. He described that in his culture, drugs were simply not acceptable. When he was 28 years old he developed a narrowing of the veins in his upper arm and shoulder which, he said, was a hereditary problem in his family. He had to give up boxing, his passion, and was prescribed 50mg Tramadol tablets, two to be taken 4 times a day. Oblivious to the danger of opiates, he started to take more than prescribed to stop the excruciating pain he said he was living with. As the months went by he started to take more and more going so far as to steal a doctor's prescription book and forge the doctor's signature. He eventually had to own up to his addiction and sought help. However, his best friend turned away from him and he was ostracised by many people in his community and his extended family. He felt his life was ruined by Tramadol and today he lives a relatively solitary life with his wife and children,

who stuck by him. This participant was one of only two people interviewed who were prescribed suboxone.

### **October 2019**

Data collection was coming to close with just two people left to interview in TC 04 and four in TC 06. The plan for Wednesday 2<sup>nd</sup> October was to interview the two people, who are partners with the hope of completing at least one interview in the morning. The GAs had advised that they usually attend between 11 and 12 o'clock and both don't come in at the same time. The evening's plan was to visit TC 06 on the east coast of county Dublin where there are two more possible participants as this clinic only opens between 5pm and 6.30pm. The probability of completing both interviews seemed remote. Participant 56 arrived in TC 04 at 11.35am and said she could not stay. Her partner could not attend either as he had slipped on the stairs that morning. This was the third time I'd attempted to interview this client, who worked part-time, a different strategy was called for to achieve a successful outcome. When asked if she could do a phone interview in the afternoon, she agreed and gave her mobile number with the instruction to ring her at 2pm. She also said her partner would be prepared to do a phone interview; however, he was not available that afternoon. This interview took 33 minutes and was the one of three interviews conducted by phone. Several more attempts were made to contact her partner but the phone was never answered.

Two other participants who had left the addiction services and lived beyond a 50 mile radius of the researcher's base also agreed to a phone interview. Telephone interviews are very different to meeting face to face. You don't experience the interpersonal contact with the client, the eye contact or the body language and the interview environment differs for the participant and researcher. While the three interviews were completed without any technical problems and the questionnaire were completed efficiently, the researcher-to-client experience seemed to lack some of the interpersonal dynamics of a face-to-face interview. However, the mean interview time for the three participants was 61 minutes, similar to the mean time for the face to face interview and the process did not appear to lack any engagement from the participant. Furthermore, telephone interviews are a convenient way of reaching people who are

reluctant to meet face-to-face, who may have concerns about anonymity, who are time poor, or live a long distance from the researchers base. That being said, a major challenge experienced during data collection for this study was the number of people who had changed phone numbers since phase one in 2017 and were, therefore, uncontactable. While many others simply did not answer their phones.

## **8.2 Reflections on behavioural aspects and participant follow-up**

The literature suggests the attrition rate in follow-up studies on service users in addiction services is relatively high. As a result of this it was decided to seek ethical approval, to incentivise participants with a €20 mobile phone credit voucher. This ethical approval was subsequently granted. As presented in Chapter 5, employment rates among this cohort were very low with almost 50% of participants on disability benefit, therefore, reliant on state support. Although €20 may appear a small amount of money to people in secure employment, to a person on state support according to the Irish Department of Social Protection it represents almost 10% of the individuals job seekers allowance weekly payment of €208 (Citizens Information Board, 2022).

As there are many different mobile phone network providers in the Irish market the original plan was to ask participants what network they were using first, then purchase the voucher and leave it with the GAs for collection by the participants. A number of the first participants to be interviewed were disappointed they had to wait for the voucher and some service users excused themselves when they heard they had to wait. Secondly some of the treatment centres are very busy and asking the GAs to give the vouchers to the participants could compromise the GAs position, if some of the vouchers went missing. Learning quickly that in applied contingency management, delayed reward is less effective than immediate reward, it was apparent that the vouchers had to be available in most cases on completion of the interview and not involve the GAs, unless it was absolutely necessary. It also became clear during the first week of interviewing that the EIR network was the most popular network among the participants. In fact, of the 104 vouchers distributed, 95 were for the EIR network. Moreover, having a physical voucher available on demand was also effective with people who did not have a mobile phone as they were happy to give it to a relative as a gift, or I suspect, sell it to raise money, although this was not mentioned by any of the participants. Furthermore,

several participants who were reluctant to engage at first agreed to participate when they learned they would get the voucher after the interview. This was real life evidence that immediate reward is more powerful than delayed reward when working among this cohort.

A very interesting interview was conducted with participant 05 in TC 01 about something he had grappled with. He had struggled with crack cocaine use for a long time and had been abstinent for over three months at the time of the interview, however, he was still experiencing what he referred to as withdrawal symptoms. He said he never has problems except on the mornings he collects his job seekers allowance. He said on a Wednesday morning 'I wake up and I start to shake, it feels like I'm in withdrawal'; 'Then when I collect my money and manage to get back home the withdrawal symptoms go away', 'why is that?' he asked. The explanation given was that he probably became conditioned to reward himself with crack cocaine every Wednesday, over a long time period of time, after getting his job seekers allowance. The money had become a psychological trigger for the consumption of crack, adding that the withdrawal symptoms would pass in time. Additionally, it may help if he could try and change his behaviour by doing something different on a Wednesday such as giving himself a non-drug related reward after collecting his job seekers allowance. Several other participants shared similar experiences of spending all their money on drugs only on the days they get their job seekers or disability benefits.

### **8.2.1 Participant follow-up**

As discussed throughout this chapter, following up the eligible participants presented many challenges. Twenty-nine service users no longer attended the original treatment centre for various reasons and regrettably four people had passed away. Tracing these 29 service users required very fluid tactics. The most important sources of information during recruitment were the clinical staff, in particular the GAs and the nurses, however, the doctors and the addiction counsellors also supported the follow-up in at least five cases. It had been anticipated that the mobile phone numbers collected during phase one would greatly help with follow-up recruitment, unfortunately, this did not materialise in practice. The majority of the numbers were no longer in service. Just eight people were successfully contacted by mobile phone and interviewed, A further three

participants responded to letters sent to their homes, with two of them interviewed. Despite many attempts to meet participant 74, he was not interviewed. A third meeting had been agreed with him in the School of Nursing TCD for the 4<sup>th</sup> of November 2019, however, the participant did not attend and did not respond to any further text message or answer his phone, therefore, the data collection process was finally concluded.

One interview stood out from all those completed to date for very different reasons. Discussions with the nurse in TC 02 revealed that participant 78 was in prison in North Dublin City. A telephone call to the prison service help desk in Longford confirmed that a professional visit was required in order to interview the participant and this could be booked online. While the process disclosed that the person was in prison, it was a completely different prison to the one discussed with the nurse. An information leaflet was delivered for the attention of the participant in the prison and approval for the visit was received from the prison service by email for Friday 16<sup>th</sup> August at 2.30pm. Having never been to a functioning prison before and feeling quite apprehensive entering the reception area, the scene that greeted your arrival was completely unexpected. The reception area was a hive of activity, children were playing games in play areas, and people, mainly women, chatted among themselves over a cup of tea provided by the prison service. There was also a small group of men in suits carrying files of paperwork and chatting among themselves, who appeared to be solicitors waiting to visit their clients. An individual number was issued by the receptionist and all visitors were told to wait until their number was called. After about 20 minutes a prison officer appeared, called out some numbers and the number holders were asked to follow him. We were escorted to a security screening area similar to what one would find in an airport. Some of the children were jumping around with excitement at the idea of seeing “daddy”, everything seemed strangely normal.

As our belongings were moving through the security scanning belt, a raised voice declared ‘hey, you can’t take a mobile phone into a prison’. Feeling really embarrassed, a rather puzzled prison officer explained the prison rules and informed the researcher where to store personal belongings in the reception area of the prison. The officer brought us to another reception area where we received further instructions and were

guided to our individual meeting rooms. The room was quite large which was partitioned down the centre by a large sliding window. The participant was escorted into the meeting and the officer opened the sliding window for the visit. The interview lasted 45 minutes and the participant appeared candid in all his responses throughout the meeting. He said he was sentenced to one year and did not know whether the relationship with his partner would survive as his partner had not contacted him for over three months. Walking to the carpark, the researcher was accompanied by a huge sense of relief and also a warm sense of achievement to have successfully completed this follow-up interview.

### **8.3 Methadone Friend or Foe?**

The words of participant 85 referring to methadone as “liquid handcuffs” was a term mirrored by many of the participants: some felt that their desire to get off methadone and ‘come off’ the clinic was not reflected in the clinical treatment they received. From the outside perspective, it was somewhat difficult to comprehend why people would leave the service and self-medicate on heroin. Participants spoke about the time they entered the service, how they had expected to be on methadone for a few months and with the help of the doctors they expected to be free of opiates. Others spoke about their personal stigma of attending the clinic and taking what participant 127 described as ‘this muck’ for so many years. There are also suggestions made that some of the doctors are not working with the service users to help them reduce their use and come off methadone. This comment has some support from the data. During the baseline phase the average methadone dosage across all participants was reported at 68.9 mls while for the current study the average dosage of methadone reported by participants was 66.6 mls, this represents a reduction of 2.3 mls or 3.7% over two years.

Personal stories told by two participants added some weight to this argument. Participant 50 said she had tried to make an appointment with her doctor for several weeks as she wanted to reduce and eventually come off methadone. As a meeting was not forthcoming, she talked to the dispensing pharmacist and over several weeks she had reduced her dosage from 35mls a day to 10 ml’s. When she eventually got an appointment, she said the doctor appeared to be annoyed that she had reduced her dosage so much and had admonished the pharmacist therefore, preventing the

pharmacist from allowing her to come down any further. Participant 125 who had completed treatment and was not taking any opiate agonist was interviewed in her home, at her request on the 14<sup>th</sup> of August. She said she managed to 'get off the clinic' and described in some detail her attempts to get the doctors support to help her get off the 'phy' (short for physeptone and a street name for methadone). She said the doctor was not supportive and had taken her off weekly prescriptions and put her back on the daily clinic, even though she had been consistently giving drug free urine samples over a prolonged period of time. She said she was partially immobilised from a car accident at that time and struggled to walk, however, she still persevered and attended the clinic each day while crediting the pharmacist as the person who helped her detox and get off methadone. While answering the ACE questions she opened up about being raped in her own home by an ex-boyfriend. Her scores on the PTSD instrument were high and when asked if she had been to see a counsellor, she said she was not comfortable talking to a stranger. At the end of the interview, a debrief sheet was provided with a suggestion that she should contact the rape crisis centre; she said our meeting felt like a counselling session and would follow-up on some of the suggestions provided in the debrief sheet.

#### **8.4 Final reflections**

The overarching feeling after the completion of data collection was that it was mutually beneficial for both the participants and the researchers. The participants had the opportunity to express their feelings and talk, out loud, about their life experiences in a non-judgmental and confidential environment. While the researchers were given first-hand accounts of people's life stories therefore, providing context and a deeper understanding of the real issues faced by people in addiction treatment.

Although, it was mentioned earlier the importance of the €20 incentive to participate, many other people said the €20 was not their primary reason for taking part, they genuinely wanted to help improve the addiction services for all the users of the service. One participant went as far as refusing to accept the phone credit voucher saying they got enough out of the interview and reluctantly accepted it after some gentle persuasion by the researcher. Most of the participants said they worked well with the clinical staff, particularly the nurses, while others said they only attended treatment to get access to methadone. A number of the participants admitted they would be



reluctant to share deeply personal information with the staff as they could be ‘taking behind your back’. These comments may have merit, given some of the staff actually lived in the vicinity of the clinics and were known locally by the participants. The expected time to complete the study questionnaire is approximately 45 minutes, however, the average interview time was 53 minutes with 33 interviews lasting over 80 minutes and 20 lasting over 90 minutes. People shared some difficult life stories, growing up as children and as adults: friends that had died from drug overdoses or suicide, sexual abuse as children and as adults, growing up in homes with physical and psychological abuse.

Much of the researchers’ time was spent listening and empathising, through comforting words or simply allowing some silent moments to pass. Sensing the pain some people were going through was, at times, heart-wrenching. There were many times when emotions became so tear-jerking that people were asked if they wanted to stop, nobody did. There were also times when one’s own eyes would well up so much that the tears would trickle down the cheeks. Nonetheless, some stories demonstrated the hope and resilience of multiple people. Participant 113’s story was one of those; She had a particularly difficult life both as a child and adult, she reported 9 ACEs and had lost two children, one to cot death and one in a car accident. Her partner had committed suicide by stabbing himself several times while high on crack. Although she suffers with severe anxiety, she managed to give up alcohol 13 years ago and is ‘optimistic for the future’. This interview demonstrates the importance of personal resilience in overcoming apparently insurmountable challenges.

Over the seven months of interviewing many hugs were exchanged between the researcher and the participants after the interviews. Sigmund Freud argued through his work, that giving people the space to talk freely about their lives has a cleansing effect on the mind. What he termed “catharsis” allowing people to speak and understand their own trauma therefore, bringing them some relief. The reactions from a majority of participants during this process left a strong feeling that people gained some real benefit from meeting the researcher.

## **Chapter 9 Discussion and conclusion**

This chapter provides a critical discussion of the findings of the study within the context of the current literature. This section is followed by proposals for future research among people in OAT and a discussion on the strengths and limitations of the study. The chapter is concluded with a summary of the key findings and the recommendations for addiction treatment services based on the findings of the study.

### **9.1 Key findings and how they relate to the literature**

The aim of this study was to investigate the relationship between adverse childhood experiences, PTSD and treatment outcomes among adults attending OAT. The research was conducted within an Irish context. A systemised narrative literature review was conducted to explore the relationships between PTSD, ACEs, and outcomes of treatment among people in treatment for an opiate addiction. While there exists a large body of research among people in opiate addiction treatment, there is limited research investigating the relationship between ACEs, PTSD, and a range of treatment outcomes, with even fewer studies examining treatment outcomes within an Irish context. The relationship between the key variables was investigated through six research predictions. A qualitative chapter presented the findings from a proportion of the participants' additional responses to the quantitative questions asked. These responses provided an explanatory context for the participant's replies. Findings on the treatment outcomes in general will be initially discussed, this will be followed by a discussion on the relationship between PTSD and ACEs and an analysis of the relationships between treatment outcomes, PTSD and ACEs. The findings from the exploratory qualitative analysis are also discussed. The chapter concludes with recommendations for future research, the strengths and limitations of the current study and some overall recommendations following the study.

#### **9.1.1 Treatment Outcomes**

The average age of the sample was almost 43 years and the vast majority were Irish born. The mean number of years in current treatment was 11 years with 59% reporting that this was not their first treatment episode. A primary aim of OAT is to retain people in treatment in order to support their long-term recovery and reduce illicit opioid drug

use (Simpson et al., 1997; Ward et al., 1996). These findings support empirical research that OAT is effective in retaining people in treatment (Bao et al., 2009; Mayock et al., 2018) while also demonstrating the aging demographic of this cohort of people in treatment for OUD (A. M Carew & C. Comiskey, 2018).

The results showed that over two thirds of the participants, 70%, had not used heroin in the previous 28 days. Of those that did use heroin only six, all males, reported having injected heroin in the previous month, furthermore, the sharing of injecting equipment was not reported by any of these male participants. The polydrug with the highest daily use was tranquilisers, used by 68% of the sample, while cannabis was used by 58% of people within the previous 28 days. Furthermore, a significant difference was shown between males and females for cannabis use with more males consuming the drug daily. These findings are consistent with national studies by Comiskey et al. (2009) in Ireland, Darke et al. (2007), in Australia and Gossop et al. (2003) in the UK, which demonstrate that retention in OAT reduces heroin use and also the harms caused by long-term illicit opiate use. However, Gossop et al. (2003) reported that a 4 - 5 year follow-up study showed, crack cocaine and heavy alcohol consumption were not significantly different than when participants first entered into treatment. Moreover, while research suggests that heroin use significantly declines over time among people in OAT, polydrug use can remain relatively stable (Taylor, 2015).

Although half of the participants had spent time in prison, very low levels of crime were shown among the subjects of the current study, providing evidence that retention in OAT reduces criminality (Bell et al., 1997; Hall, 1996). Just 8% of participants reported involvement in some form of criminality, offences against property were reported by six people, with three people admitting to selling drugs and two people involved in violent crime (see Table 5.4.6). Querengässer et al. (2018) reported that those who completed drug treatment were less likely to reoffend than those who did not complete treatment, while regular employment was posited as a protective factor against recidivism (O'Donnell, 2020; Querengässer et al., 2018). However, the numbers reported in this study were too low to draw similar conclusions to.

The findings for HIV risk taking behaviour support OAT in reducing drug injecting behaviour and the sharing of injecting equipment, therefore, participants in this study were generally at a low risk of contracting or transmitting the HIV and other BBVs (Blackard & Sherman, 2021; Torrens et al., 2013; Zaric et al., 2000). Furthermore, it was shown that almost 40% of females and 26% of males reported a loss of sex urge with 63% of women and 39% of males not having any sexual relations within the month prior to being interviewed. Additionally, of those who did have sexual relations, the vast majority of the intimate relationships were monogamous, with just seven males reporting more than one partner.

Psychological dysfunction was shown to be higher among the study cohort than would be found in the general population (Goldberg et al., 1997), therefore, supporting the finding of previous research that there is high levels of psychopathology among people in drug treatment services (Corty et al., 1988; Rosic et al., 2017; Teesson et al., 2005). Although females were shown to have higher average levels of psychological dysfunction than males, the difference was not statistically significant. Interesting, there was a significant gender difference for depression with females having higher levels of severe depression than males, again this finding is consistent with research studies among people in OAT (Chatham et al., 1999; Joe et al., 2019). The idea of 'taking their own lives' was reported by 9.1% of males and 13.2% of females; 'had crossed their minds' was reported by 10.6% of males and 15.8% of females. Although, Darke et al. (2015) reported very low levels of attempted suicide, the Australian Treatment Outcome Study (ATOS) results correlate with the finding of the current study showing relatively high levels of suicide ideation, therefore, suicide ideation may be an important issue for OAT services in Ireland. Additionally, the average number of anxiety symptoms among the current cohort was 2.4, research evidence suggests that anxiety disorders combined with harmful substance use may lead to long-term psychiatric comorbidity and may also be a root cause of major depression (Buckner et al., 2013; Tull et al., 2007).

The Cardio/Respiratory system was shown to have the highest average number of general health problems, wheezing, shortness of breath and coughing up phlegm were the symptoms with the highest proportion of responses. The prevalence of smoking related substance use was high among the sample, particularly for tobacco and

cannabis, however, the smoking of heroin and crack cocaine was also evidenced in the findings (see Chapter 5). It is universally accepted that smoking related disorders are among the leading causes of premature death across the world with up to 50% mortality among long-term smokers (WHO, 2022b). Therefore, reducing the prevalence of smoking related activities may help improve overall general health and offset the development of Cardiovascular Disease (CVD) among this sample (Irish Heart Foundation, 2022).

Memory loss was reported by 50% of participants. Hyman (2005) suggests that chronic drug use can lead to resetting how the human brain works with regard to thinking and learning, as a result, there may be learning and cognitive deficits within this cohort (Berke, 2003; Cumberland Heights Foundation, 2020; Hyman, 2005). Furthermore, research shows that PTSD can also disturb memory and impair memory recall (Jelinek et al., 2006). Meta analysis by Johnsen and Asbjørnsen (2008), found significant differences in verbal memory measures between individuals with PTSD and control groups. Therefore, PTSD may also be a reason for the high level of memory loss among this study sample.

Trouble sleeping was reported by 65% of participants, 61% of males and 74% of women, confirming similar results found by Mayock et al. (2018) among people in OAT in Ireland. Sleep disturbances have been strongly associated with withdrawal symptoms from prolonged drug use (Conroy & Arnedt, 2014; Roehrs & Roth, 2015). Moreover, sleep disorders are also a common feature of PTSD affecting as many 70% to 91% of people with the disorder (Colvonen et al., 2018). Sleep disturbances may also help to explain the high use of tranquillisers among this cohort (see Chapter 5).

Menstruation problems, in particular irregular cycles, were reported by almost 53% of the women surveyed. Schmittner et al. (2005) reported that among a sample of 113 women receiving methadone maintenance treatment, 47% had irregular menstrual cycles. Furthermore, with the aging population of women in OAT, Tuchman (2003) suggests that a significant proportion of these women may experience more menopausal related mental and physical health complications as they age (Tuchman, 2010).

The average social functioning score of 14 would suggest poor overall social functioning among subjects (Darke et al., 1992; Fortier et al., 2015), however, the low level of employment may also have a strong influence on overall participant scores. The majority of people indicated their general satisfaction with the level of social support they receive from family and friends. Conflict with their family or friends occurred only sometimes, rarely, or never for a majority of people. However, 59% indicated that they have two or less close friends, with 13% saying they have no partner or any close friends. Additionally, most people said they no longer associate with people who use heroin, suggesting an intentional separation away from their earlier life social groups. Dingle et al. (2015) suggest that while maintaining healthy social identities is important for one's overall well-being, breaking social ties with a substance using social group may be healthy for long-term recovery from addiction (Shinebourne & Smith, 2009). Therefore, given the relationship between social identification and both life satisfaction and social support (Haslam et al., 2005) recovery from addiction may also involve the transitioning of one's own social identities (Dingle et al., 2015).

To summarise, in terms of treatment outcomes, it was found in general that while illicit heroin use was low among this cohort, polydrug use remained relatively high. HIV risk taking behaviours and criminal behaviours were also shown to be low indicating support for the harm reductionist approach of OAT. However, physical, and mental health problems were relatively high with low social functioning reported among participants.

### **9.1.2 Relationships between PTSD and ACEs**

There is a broad body of research on the prevalence and symptomology of PTSD among people in treatment for a substance use disorder (Larance et al., 2018; Robinson & Deane, 2022; Saladin et al., 1995). The prevalence of PTSD among the current sample was 40%, which is in the higher range than that reported by other researchers, particularly among OAT patients who have been in long-term opiate agonist treatment (Guliyev et al., 2021; Teesson et al., 2006; Villagómez et al., 1995). Reporting on the ATOS, Mills et al. (2018) found that 29.3% of the 615 participants that were followed up after two years in OAT met the criteria for current PTSD, however this rate had dropped to 27.5% among the 71% (n= 431) of participants who were re-interviewed at 11-year post study entry, notably lower than the current study.

Childhood abuse and maltreatment have been associated with a range of health related issues, including harmful substance use (Edalati & Krank, 2016; Felitti et al., 1998; Klanecky et al., 2012) and PTSD in adults (Lang et al., 2008; Woon & Hedges, 2008). The number of adverse childhood incidents the child has been exposed to significantly increases health related risks in adulthood (Boullier & Blair, 2018). At least one form of adverse childhood experience was reported by 85% of this sample. The most common event was growing in a household with someone who was a problem drinker or who used street drugs (see Figure 5.5). Berends et al. (2012) propose that children are exposed to considerable harm as a result of their parents drinking with young adolescents at greater risk of harmful substance use (Hoffmann & Cerbone, 2002). The average number of ACEs among participants was 4.1, with a mean number of 4.5 ACEs for females. As discussed in Chapter 5, four or more ACEs are associated with an increased risk of SUD (Dube et al., 2003; Stein et al., 2017).

It was predicted that there would be a significant relationship between PTSD and ACEs. The findings from the correlational analysis (see Table 6.2.1) showed there was a strong positive significant correlation between the summative ACE score and the PTSD score ( $r = .708$ ). However, important as this finding is, these results do not reveal which ACE factors were exerting the greatest effect on the individual. The findings, from the narrative review discussed earlier in Chapter 3, showed that childhood sexual abuse (Engstrom et al., 2012; Schiff et al., 2002), emotional abuse (Vogel et al., 2011) and physical abuse (Hien et al., 2000) were associated with PTSD and harmful substance use. However, as presented in the narrative review, there appears to be limited research into the relationships between a number of the ACE factors within the ACE questionnaire and PTSD, specifically emotional and physical neglect. Furthermore, females were shown to have a higher average number of ACEs than males in this study. Categorical analysis on the individual factors between males and female presented in Table 5.5.1, showed a significant statistical difference for ACE 4, 'felt that nobody loved you or thought you were important or special' ( $p = .004$ ) therefore, confirming the findings of Brockie et al. (2015); Stein et al. (2017).

The results showed that four ACE factors significantly predicted PTSD, with 'nobody loved you or thought you were important or special' (emotional neglect), emerging as

the strongest predictor (see Figure 6.8.1). Given the mean age of 42.7 years for the cohort, this result suggests that these adverse events occurring in a person's childhood are still influencing their mental well-being in the present. Kyte et al. (2019) suggest that when a person had unmet emotional attachment needs this may result in the individual seeking compensatory endorphin release through opiate drug use, which may partially explain the current finding. However, a further explanation suggests that children who grow up with a problem drinking parent(s) are less likely to form secure parental attachments, therefore, are more likely to be fearful or avoid close relationships (Brennan et al., 1991). Adults and adolescents with a fearful or avoidance attachment style are at risk of harmful substance use (Schindler et al., 2005) as they seek to soothe their psychological trauma (Khantzian, 1997).

In summary, we can conclude that there is a relationship between ACEs and PTSD. In particular children who grow in households with parents who are dependent on alcohol or drugs are at a greater risk of emotional neglect that disrupts the formation of secure attachment relationships to parents and with potentially lifelong implications on their mental health.

### **9.1.3 Relationships between treatment outcomes, PTSD and ACEs.**

Regarding the exploration of the relationships between ACEs, PTSD, and treatment outcomes, correlational analysis showed there were significant relationships between PTSD, ACEs, polydrug use, general health, psychological well-being, and social functioning. With the strongest relationships shown between PTSD and polydrug use, general health, psychological well-being, and ACEs. It was predicted that 'there is a significant relationship between the level PTSD and the summative number of ACEs'. The findings show a strong positive significant relationship between the level of PTSD and the number of ACEs (see Table, 6.2.1), therefore, research prediction RP3 is supported by these results. Whether this relationship is explained by childhood socioeconomic status (SES) or risk behaviours that are associated with ACEs is not clear. However, given the relatively low level of economic deprivation reported by the participants in this study (26%), (see Figure 5.2) support for Su et al. (2015) assumptions of the graded association between ACEs and childhood socioeconomic status were not found.



It was further predicted that there would be a significant relationship between ACEs, PTSD and one or more of the treatment outcomes. These findings show a medium to strong significant relationships between ACEs, PTSD, psychological well-being, and general health, therefore, supporting research prediction RP4. However, correlational analysis only identifies evidence of a relationship and does not imply causation. It was further predicted that PTSD or summative ACEs would predict one or more the treatment outcomes. Multivariate analysis showed that both PTSD and psychological well-being predicted 50% of the variance in general health with psychological well-being shown as the strongest predictor (see Table 6.4.1). Furthermore, PTSD, ACEs, and general health explained 54% of the variance in psychological well-being, with PTSD shown to be the strongest predictor, thus providing additional support for research prediction RP5 and also answering research question three that PTSD is a predictor of one or more of the outcomes of opiate agonist treatment; current drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, or social functioning'.

Additionally, PTSD was also found to be the strongest predictor of social functioning, however, PTSD was not found to significantly predict polydrug use (see Table 6.5.1). The multivariate model which explained the strongest goodness of fit was for psychological well-being, (regression model 4) where three predictor variables PTSD, ACEs, and general health explained 54% of the variance in psychological well-being, with PTSD, again, emerging as the strongest predictor (see Section 6.6). Interestingly ACEs were shown to be a negative predictor of psychological well-being (see Table 6.7.1). No significant predictor variables were shown for HIV risk taking behaviour (see Table 6.8.1). These findings suggest that there may be an interrelationship between physical health and mental health and potentially the childhood social environments of the participants in the study.

Villagómez et al. (1995) posits that the life prevalence of PTSD is higher among women than it is for men in OAT. Furthermore, the 11 year follow-up ATOS study found females made significantly more suicide attempts during their lifetime, than males (Darke et al., 2015). It was predicted that there would be a significant gender difference on the level of PTSD. The findings show that females had significantly higher levels of PTSD than

males, therefore, research prediction RP2, is supported by these results. Moreover, women were also shown to have significantly higher levels of depression than males, supporting empirical research that women in treatment for OUD, may have greater mental health needs than males. It was also predicted that there would be a significant gender difference on the number of ACEs, however support was not shown for research prediction RP1.

Multivariate modelling of PTSD from among the ACE factors showed household dysfunction; 'living with a problem drinker or someone who used street drugs' and emotional neglect; 'feeling unloved' as a child emerged as the strongest predictors of PTSD. Although, a large corpus of research indicates the link between childhood sexual abuse (Walsh et al., 2003) and physical abuse (Lo & Cheng, 2007) and PTSD, these variable were not sufficiently supported within the analysis of this study. Moreover, ACE 3, 'sexual abuse' was not selected among the six predictor variables due to its lower Pearson's Chi statistic value (see Table 6.8.1) and physical abuse did not emerge as a significant predictor within the statistical modelling (see Table 6.8.3). There was, however, a significant gender difference for ACE 4, 'feeling unloved as a child' with females reporting a higher incident rate than males, thus supporting the findings of Santo et al. (2021); Stein et al. (2017) of a higher prevalence of emotional neglect among females than for males in OAT.

To conclude, the findings point to a significant relationship between PTSD and ACEs. There is also a significant relationship between PTSD, ACEs, and psychological well-being. Furthermore, the findings suggest there is an interrelationship between PTSD, physical health, and psychological well-being among people in OAT. Finally, females were found to have higher levels of depression and PTSD than males.

#### **9.1.4 Findings from the qualitative analysis**

By way of explanation of the quantitative findings for the study, two global themes were identified during the qualitative analysis, critical events that occurred in a person's life before they reached the age of 18 years and their response to traumatic events that occurred throughout their early lives. A critical event mentioned by a majority of participants which correlated with the quantitative findings for PTSD was parental

substance use. Those who 'felt unloved' as children mentioned that both of their parents were dependent on alcohol or drugs, whereas those who 'felt loved' mentioned just one parent who had substance use issues. This finding may also help to explain the difference in the number of ACEs between these two groups, all eight participants in the 'unloved group' reporting nine ACEs (see Table 7.2). Walsh et al. (2003) reported that parental substance use was associated with higher rates of childhood abuse and the risk of abuse was significantly increased when both parents had a substance use problem when compared to just one parent. Furthermore, Raitasalo and Holmila (2017) found an elevated risk of psychiatric disorders among children if both parents were harmful substance users when compared to one substance using parent. Additionally, the risk to the child was greater if their mother suffered with the substance use problem rather than the father (Raitasalo & Holmila, 2017).

The trauma responses from participants included self-blame, suicide attempts and substance use initiation. The suicide of a beloved parent was the reason given by one participant for turning to drugs at the age of 16 years. A clinical study by Cain and Fast (1966) found that parental suicide can have a profound psychological impact on the child, which can lead to early initiation of substance use (Raghavan & Kingston, 2006). Moreover, the impact of dealing with the shock, guilt and withdrawal of the surviving parent also places a further burden on the child (Cain & Fast, 1966; Pfeffer, 1981) with potential attachment issues for the child (Brennan et al., 1998). A number of participants talked about their own attempts at suicide and self-harm. One participant who grew up in a dysfunctional home talked about the blame she felt for allowing her father and brothers to sexually abuse her and talked about how she felt driven to take her own life on a number of occasions. Another female participant, not sexually abused and who also 'felt loved' growing up, talked about harming herself and a time she took 'a load of tablets' to end her life. Geulayov et al. (2014) found that maternal substance misuse increased their children's risk of self-harm and suicidal ideation. Moreover, a systematic review by Cavanagh et al. (2003) found that comorbid mental disorders and harmful substance use precede suicide in 38% of cases.

To conclude, the qualitative analysis provided an explanatory context to the quantitative findings. People who grew up in dysfunctional households where both

parents were dependent on substances, were more likely to experience emotional neglect in childhood. Additionally, the loss of a parent to suicide and childhood sexual abuse by a family member may be risk factors for the development of a substance disorders and psychopathology in later life.

#### **9.1.4 Summary of overall findings within an empirical context**

The overarching aim of the present study is to investigate whether there is a relationship between ACEs, PTSD and the six treatment outcomes measured within Opiate Treatment Index; current heroin use, current polydrug use, general health, psychological well-being, social functioning, and criminality. The specific aims of the study were to investigate the relationships between the six treatment outcomes, PTSD and ACEs through statistical analysis using six research predictions (see Section 4.2). The results from the study present clear evidence of the relationship between ACEs, PTSD, and general health, psychological well-being, and social functioning. What is also of interest is that although PTSD was not found to directly predict polydrug use, the two variables which did predict polydrug use, psychological well-being, and social functioning, were themselves predicted by PTSD. This may indicate an interaction effect between these variables. There is a considerable body of empirical research which confirms the role of PTSD among people with substance addictions, in particular, OUD. According to Dworkin et al. (2018) the comorbidity of PTSD and substance use disorder is considered a common condition estimated to affect somewhere between 14-61% of people (Clark et al., 2001; Howard et al., 2017; Lee et al., 2019; Mills et al., 2005), yet despite the epidemiological evidence there is a distinct lack of research into the risk of PTSD among people who use heroin (Mills et al., 2005). It has been described that up to 72% of people in OAT have been exposed to some form of violent trauma (Clark et al., 2001) and people with PTSD, who have had an OUD in their lives were more likely to experience depression and attempt suicide (Villagómez et al., 1995). What the findings of this study suggest is an interrelationship between PTSD, psychological well-being and general health among people who have been in long-term treatment for an opiate use disorder, and the evidence suggests that their mental health needs are not being fully addressed within the current model of health care.

Moreover, the findings show that four ACE factors predicted current PTSD. Emotional neglect was shown to be the strongest predictor of PTSD. Evidence to support a significant difference between males and females on the number of ACEs was not found. However, a significant gender difference was shown for emotional neglect with significantly more females reporting 'not feeling loved, important, or special' as children than males. Müller et al. (2019) suggest that emotional neglect in childhood shape the social functioning of the individual resulting from disruptions of the brain hormone oxytocin, an important hormone in the development of the parent-child relationship, (Shamay-Tsoory & Young, 2016) which in turn impact the development of secure attachment systems. Research has shown the importance of secure attachment to a caregiver for the healthy development of the child, (Bloom, 2000; Bowlby, 1988). Therefore, 'feeling unloved' in childhood, resulting in failure of the secure attachment mechanism may have lifelong consequences for the individual (Everett et al., 2000). Furthermore, a disruption of these mechanisms may present as a risk factor for the development of psychopathology in adulthood (Johnson et al., 2017; Kalmakis & Chandler, 2014; Slade & Holmes, 2019).

Attachment theory posits that failure to securely attach to a primary caregiver in early childhood can have significant consequences for the person in adulthood (Bowlby, 1988; Everett et al., 2000; Murphy et al., 2014; Ward & Limb, 2019). The quantitative findings presented in Chapter 6 show growing up 'feeling unloved or not important or special' and 'living with a parent who misused alcohol or street drugs' were the strongest predictors of current PTSD among participants with an average of 42.7 years. These findings suggest that a significant number of participants failed to attach to a primary caregiver as children, and this lack of secure attachment may still be having a negative effect on their mental health, many years later. Furthermore, the explanatory qualitative analysis (see Chapter 7) showed that a majority of participants who reported 'emotional neglect' as children said they grew up in a household where both parents were addicted to either alcohol or drugs. Maté (2012) suggests that early trauma resulting from ACEs can activate the child's stress response systems and prolonged activation can alter the architecture of the developing brain consequently, increasing the risk of lifelong physical and mental disorders (Nelson et al., 2020). Therefore, ACEs,

particularly those occurring in early childhood, may be more important than others in predicting the long-term impact on a person's life (Anda et al., 2002; Brennan et al., 1991; Minnis et al., 2006). Bowlby (1988) found that children who have been neglected by caregivers, particularly mothers are more likely to be unhappy, anxious, difficult, or detached. This may result in the deregulation of dopamine production in the developing brain. Dopamine is an essential neurotransmitter, affecting motivational and emotional control (Bromberg-Martin et al., 2010). The levels of dopamine in a baby's brain fluctuates with the appearance and disappearance of its mother during early life, a mechanism that develops in infancy (Maté, 2012). The importance of dopamine in attachment and bonding between infants and mothers is well represented in the literature (Douglas, 2010). Drugs relieve psychological distress by increasing the level of dopamine in the brain, consequently enabling the individual to feel better about themselves (Khantzian, 1997; Khantzian, 2003). Therefore, opiate drug use may be a compensatory mechanism in the absence of developed social attachments (Kyte et al., 2019). There is a body of research supporting addiction as an attachment disorder (Fletcher et al., 2015; Flores, 2001; Parent & Shapka, 2020; Unterrainer et al., 2018). Fletcher et al. (2015) suggest that for some people drugs may represent the only attachment object in their lives, therefore, an attachment focused therapy may open a path to recovery and abstinence if that is a desired goal.

These findings provide support for the bio-psycho-social model of health care practice in addiction recovery as a way of bridging different practices and models of mental and physical health and social relationships with service users (Vetere, 2007).

## **9.2 Future research proposed.**

The findings from this study, suggest that summative ACEs and specific ACEs are predictors of PTSD and that PTSD is also a predictor of mental and physical health and social functioning. Among a sample of over 13,000 people in the normal population in the USA, Felitti et al. (1998) found a graded relationship between the number of ACEs and physical health problems, mental health problems, substance use and social dysfunction. These results may also be generalisable to treatment-seeking populations in Ireland. A future research project on ACEs among the general Irish population would help to provide an understanding of the prevalence of ACEs within the Irish population

and whether there are health care risks for the wider population. Furthermore, research should also investigate whether there is an interaction effect between PTSD, polydrug use, psychological well-being, and social functioning among people in OAT.

Future research is also needed into the concept of emotional neglect in childhood as a form of 'chronic ACE', an adverse experience that can potentially have lifelong consequences for the person. Furthermore, the long-term impact of parental substance misuse on children, in particular growing up in a household with both parents addicted to drugs or alcohol may also require further research both internationally and within an Irish context.

Social learning theory proposes that children learn through observation and modelling of other people's behaviours (Bandura & Walters, 1977; Lavoie et al., 2002; Pratt et al., 2010). Secure attachment to a parent and the observation and modelling of normal parental behaviour are important psychological mechanisms for healthy childhood development (Berger, 2011; Bowlby, 1988; Dadds & Barrett, 1996). A child who feels that they are not important to parents who prioritise substance use over their children's needs could represent a disruption of the developmental mechanisms that could leave the person at risk of repeating the same behaviours of their parents. More research is needed on understanding the impact of the psychological mechanisms of childhood attachment and social learning on the psychological needs of service users in OAT.

A recommendation would be to include the Adult Attachment Interview (AAI) among future study instruments of people in OAT (Ravitz et al., 2010). The AAI is designed to draw out the current psychological expression of unresolved childhood trauma for an adult (Murphy et al., 2014). Understanding the current psychological response to childhood events of people in OAT may provide researchers and service providers with insights which could support the long-term recovery of people who grew up in dysfunctional family environments.

The ACE questionnaire is a general instrument which explores whether a person has experienced a particular event. For example, the ACE does not ask which household member is addicted to a particular substance(s), nor does it ask which parent was 'lost through divorce, abandonment, or any other reason' or how the 'parent was lost'. These

questions are important to understanding the specific childhood attachment relationships of the person and how these relationships may have been disrupted (Miller-Graff et al., 2018; von der Lippe et al., 2010). The child and primary caregiver relationship is usually between the child and their mother (Colmer et al., 2011). Future research on people in OAT should enquire into the primary attachments/relationships of an individual in childhood to better understand the roles of fathers, grandparents, extended family members and non-related carers. Attachment based research may also provide insights into whether a person with attachment issues may benefit from an attachment based approach to substance use treatment.

One explanation for the lack of support for sexual abuse in the study is that this sample of people have been in treatment for a very long time and many people may have recovered from this traumatic childhood event. An alternative explanation may lay in understanding whether the perpetrator was a family member or not. The ACE questionnaire does not enquire who the perpetrator of the sexual abuse was. Research suggests that sexual abuse by a relative, and with force, may have a longer lasting impact on the individual that sexual abuse not involving force and perpetrated by an individual from outside of the family (Bulik et al., 2001; Fuller-Thomson & Agbeyaka, 2020). Future research on the relationship between ACEs, PTSD, and psychological well-being using the ACE questionnaire should also enquire on the specific relationship between the participant, their individual family members, and the external roles of others.

Finally, research should also focus on intergenerational use of substances within families, with specific emphasis on the need for targeted interventions and prevention strategies for children of people who use substances.

### **9.3 Strengths and limitations of the study**

There are a number of strengths and limitations to the current study. Section 9.3.1 discusses the strengths of the study, while Section 9.3.2 identifies and discusses the limitations of the current study.



### **9.3.1 Strengths of the study**

Among the main strengths of the study is its ecological validity. The vast majority of the data was collected from people during their normal routine visit to a treatment centre. The sample population mostly came from socially disadvantaged areas across North Dublin City and most of the participants had been in OAT for a long time, therefore, providing a stable sample of people in long-term treatment. Additionally, the gender balance of the sample was generally representative of people in treatment for a substance use disorder from among the Irish population.

A further strength of study was participant's engagement with the researchers and the researcher's engagement with the participants. The recruitment follow-up rate at 84% was higher than that reported for similar studies. Furthermore, through the semi-structured method of the interviews within a safe and familiar environment, participants opened up about personal aspects of their lives with many people sharing their experiences beyond simply answering the quantitative questions.

An additional strength of the study was the use of the Opiate Treat Index. The OTI was specifically designed for the study of people in treatment for an opiate use disorder. Therefore, the results of this study can be compared with similar studies among populations in treatment in other geographical locations and among different ethnicities.

The quantitative findings provide confirmatory evidence of the importance of OAT in the lives of its service users from a harm reductionist perspective. However, the findings also support empirical research of high PTSD and mental health problems among OAT populations, and the aging nature of this cohort internationally.

The study provides new evidence for the relationships between ACEs and PTSD. It also provides evidence of the interrelationship between ACEs, PTSD, and psychological well-being among aging adults in long-term OAT.

A narrative review revealed some studies investigated childhood sexual abuse, PTSD, and specific treatment outcomes such as current heroin and polydrug use. However, there was a paucity of studies which has quantitatively investigated a broad range of treatment outcomes among an Irish OAT population. Furthermore, no studies were

found that examined the relationships between ACEs, PTSD, and the six treatment outcomes variables in this study, therefore, the current study provided new findings to current research.

### **9.3.2 Limitations**

There are, however, a number of limitations of the study. The data are observational and cross-sectional. Cross-sectional studies provide a snapshot at a given point in time of a particular condition or relationship. In cross-sectional studies the outcome data is collected simultaneously with the exposure data, therefore, causal inferences are difficult to determine.

The study population all came from a similar region in Dublin City and may not be representative of other regions in Ireland. The current study had a sample size of 104 adults which restricted the multivariate statistical analysis to six factors. A larger sample size would have allowed for broader multivariate analysis of the data.

Thirdly, the surveys administered were self-report. Participants answered questions in-person which may have led to the underreporting of ACE history and substance use behaviours. Although research has shown that self-report surveys are effective in measuring treatment outcomes among people in addiction treatment services, the data is subject to recall bias. Felitti et al. (1998) suggested that when people are asked retrospectively about adverse experiences in their childhood, the tendency is to under report than over report, therefore, the level of ACEs may be higher than what is actually reported.

A fourth limitation of this study includes the fallibility of participants' retrospective recall of adverse childhood events which occurred a long time in their past and the age of first drug use.

Finally the ACE measure represents a particular set of ten childhood experiences and does not capture all the challenges participant may have experienced in childhood. The questions around household dysfunction are broadly based, providing limited specific detail on an experience more personal to the participant, therefore, critical to the understanding of a person's response.

## **9.4 Conclusions**

The findings of this study support OAT as an effective harm reduction addiction treatment in reducing heroin use, HIV risk taking behaviour and criminality among people in OAT. However, evidence was not shown to support OAT in improving mental health, physical health, and social functioning outcomes among users of the service.

The main objective of the study was to investigate the relationships between ACEs, PTSD, and drug use, HIV risk taking behaviour, physical health, psychological well-being, criminality, and social functioning, among people in OAT. The relationships between ACEs, PTSD and the treatment outcome variables was quantitatively examined through six research predictions and a qualitative explanatory perspective was employed to explore selected participants broader responses to the quantitative questions asked during the interviews. Support was found for five of the six research predictions examined within the study, which indicated that there are significant relationships between ACEs and PTSD; and between PTSD, psychological well-being, physical health, and social functioning among this sample. However, support for gender differences on the summative number of ACEs was not shown. Additionally, emotional neglect during childhood and living with someone who was a problem drinker or who used street drugs were the most significant predictors of current PTSD from among the individual ACE factors.

A qualitative explanatory chapter analysed the responses from sixteen selected participants and the findings showed that a majority of the eight people who reported emotional neglect in childhood also said that both of their parents had substance use problems.

### **9.4. Recommendations following the study.**

The findings of this study provide evidence of mental health, general health and social functioning deficiencies among users of the OAT service in Ireland. Dole and Nyswander (1965) vision for methadone treatment was to enable people to recover from harmful heroin use and return to living a normal fulfilling life, however, the authors conceived methadone treatment not as an end in itself, but as a first step in a recovery journey that would also include psychological and social supports. The research evidence

collected as part of this study suggests that this vision for recovery from opiate addiction has become diluted or stuck in a harm-reductionist maintenance model without a clear pathway to client defined recovery for patients in treatment. The biomedical model with a focus on the reduction of risk has been shown to be appropriate in retaining people in long-term OAT and effective in reducing some of the harms caused by illicit opiate use. However, the length of time people remain in the treatment suggests that the current philosophical position of treatment may not be meeting the current needs of the service users. Moreover, the comments from participants documented during data collection for the study and presented in Section 8.2, suggests that recovery for many people may be stuck or on hold.

The recommendations from this study are;

- I. Given that harm reduction is obtained within a treatment system or cohort, evolutionary development in the harm reduction paradigm to a client defined recovery paradigm is needed.
- II. Screening for past ACEs and current PTSD among people in treatment for OUD is necessary to address longer term PTSD and additional physical and mental health challenges. It is recommended that ACEs and PTSD are measured at initial assessments and that ongoing PTSD is measured at appropriate intervals.
- III. Concurrent treatment for harmful substance use, and mental health problems is essential if the vision of recovery as articulated by Dole and Nyswander is to be obtained.
- IV. A review of the current Methadone Treatment Protocol is required to identify the areas where the protocol is not meeting the aspirations of the Irish Governments drug strategy 2017-2025, particularly around supporting the recovery of people in OAT.
- V. Trauma informed care training and approaches are required within all health care settings offering OAT services.

Research evidence supports the harm reduction philosophical position as a practical framework for reducing the tangible risks associated with harmful substance use. However, once a person has stabilised and modified their risk taking behaviour, as in

the case of people in long-term OAT, the road to recovery from the perspective of the service user appears to flounder. Heller et al. (2004) suggests that philosophical differences between the biomedical model and the harm reduction model acts as a barrier for the integration of medical based services. The proponents of the biomedical model suggest that the harm reduction approach avoids the moral arguments for abstinence in favour of cost savings (Hathaway, 2001). A question posited by the findings from this study asks, 'is there a place between the harm reduction and abstinence philosophical approaches that can support people on their recovery journey'? Where the definition of recovery is defined within the expectations of the individual in recovery. Harm reduction is grounded in the respect for humanitarian values (Hathaway & Erickson, 2003) and according to WHO (2017) the highest level of healthcare is a fundamental human right for all people, including the right to mental health care. Therefore, by definition, treatment for mental health disorders among people attending addiction services should also form part of the harm reduction treatment model concurrent with other harm reduction outcomes.

As discussed in Chapter 1, the current OAT model follows the biomedical approach which treats medical problems as separate entities from psychological problems. Therefore, a paradigm shift from the current biomedical model to a bio-psycho-social treatment model may be required if drug treatment services were to incorporate the psychological harms caused by substance addiction within the harm reduction treatment outcome model for people in OAT in Ireland. Despite the body of evidence that exists to show that OAT when combined with psychosocial support improves treatment outcomes for people with the comorbidity of substance use and mental health disorders, (Rieckmann et al., 2010), a coordinated approach by primary care services to treat people with DD is not very evident in health care systems in many developed countries, including the US (Nelson et al., 2017).

In recent years the United States has experienced a serious opiate crisis at a huge economic and human cost, with over 500,000 related deaths (Centre for Disease Control, 2022). In 2016 the office of Surgeon General (SG) issued a report that highlighted the historical separation of public health services which recognised substance use as a social issue that has stigmatised people with substance use problems.

Furthermore, the current drugs epidemic in the US may require a different approach rather than a reliance on the criminal justice system (U.S. Department of Health & Human Services, 2016). The SG report calls for a complete health care approach to treating substance use and related disorders that promote the integration of relevant services into general health care (Levy et al., 2017). The report also provides a number of recommendations and interventions for services, which are also relevant in other countries, including Ireland;

- Training: Many health care professions lack the skills for treating people with substance addictions and mental health disorders, training primary health care providers is an essential part of an integrated health care approach. According to Nelson et al. (2017) the first step *“must begin in medical and professional schools and continue into postgraduate education and training”* (p. 451).
- Screening and brief interventions: Screening for substance use in a general health care setting for all individuals and early intervention is an evidence based approach which can identify people at risk before their substance use becomes problematic. Screening can also empower the health care professional to engage in brief motivational interventions to promote self-awareness in order to change substance use behaviour.
- Referral Pathway: In cases where an individual’s substance use meets the criteria for SUD a referral pathway to a specialised treatment service should be made available to the individual for a full clinical assessment in order to develop a tailored treatment plan with that individual.
- Harm Reduction: In recognising that not all individuals are ready to stop using drugs, harm reduction strategies that reduce the harms of drug use while also engaging people in treatment are also an essential part of an effective health care plan. Keeping people engaged in treatment enables the health care professional to develop a care plan with that individual and provide the necessary supports as the person moves through the various stages of their recovery journey.

The historical separation of mental health and general health services in Ireland is a barrier for the treatment of people with DD (MacGabhann et al., 2010). Among the main

issues reported by MacGabhann et al. (2010) are, training, the lack of cooperation between different service providers and the availability of information. An integrative literature review by Priester et al. (2016) identified two broad categories of barriers for the treatment of people with DD; personal characteristics, including an individual's vulnerabilities, attitudes, motivation and education; and structural barriers to treatment services related to the availability, provision, location, and organisational structure of service providers. (Priester et al., 2016). McDaid (2013), identified a number of the key issues in the provision of mental services in Ireland as, a lack of GP knowledge of mental health particularly around the risks of medication; the dominance of medication as the only option offered; the cost of a GP visit; and the lack of access to counselling services. One of the recommendations from the Mental Health Reform briefing paper called for the government to ensure "*that mental health and substance misuse services in primary care will be provided for under the new Universal Health Insurance scheme*" (McDaid, 2013, p. 4). The Irish Government's drug strategy, (2017-2025) recognises the needs for reducing harms and supporting the recovery of people with substance use problems through integrated drug treatment services (Department of Health, 2017). In May 2017 the Irish Government published a report on the future of health care in Ireland referred to as 'Sláintecare' which sets out a roadmap for the introduction of universal health insurance and the implementation of "*integrated primary and community care, consistent with the highest quality of patient safety in as short a time-frame as possible*" (Burke et al., 2018, p. 1278) However, the implementation of "Sláintecare" has a ten year timeline and could take many more years for the full integration into clinical practice (Burke et al., 2018; MacGabhann et al., 2010). Therefore, the adaptation of some of the recommendations from this study and those reported by the US Surgeon General may help bridge the gap between the current and the envisioned health service of the future for people currently in OAT in Ireland;

- Supplementary training for all General Practitioners, including GP's working in OAT centres on the needs of people with the comorbidity of substance use and mental health disorders with a referral pathway to psychosocial treatment services.

- Educational institutions could incorporate mandatory training on substance use and mental health disorders to all undergraduate and post graduate clinical and medical students.
- The Irish Health Care Provider, the HSE, could provide more trained psychologists and psychotherapists in outpatient and Primary Care facilities to treat patients with DD who are referred by their GP.
- The introduction of screening and brief interventions into general practice and medical modalities including an appropriate referral pathway to further treatment for all patients presenting with DD.

The literature is generally unanimous that childhood abuse and maltreatment pose as significant lifelong risk factors to overall physical and psychological well-being for the affected individuals. Therefore, the second recommendation from the study is to screen all individual in OAT for ACEs. Campbell (2020) proposes that screening for ACEs would give healthcare providers the opportunity to understand the prevalence of chronic physical and mental health disorders related to ACEs within specific populations, a view shared by Harris (2020) among others. Moreover, screening for ACEs can also provide effective and valuable information to health care providers on the psychological needs of their patients (Kalmakis et al., 2018). The literature is also clear of the impact PTSD can have on people's lives (Darke et al., 2015; Lee et al., 2019; Mills et al., 2018; Villagómez et al., 1995). Therefore, screening for PTSD is also a recommendation from this study. Individuals with PTSD symptoms; re-experiencing, avoidance, and hyperarousal may react negatively to medical procedures which could retrigger a traumatic experience (Ouimette et al., 2008). Furthermore, screening can alert health care providers to the psychological needs and the potential negative reactions of the patient to treatment, (Ouimette et al., 2004) and can also give health care staff an opportunity for dialogue to occur with the patient (Mishra et al., 2021). Furthermore, early intervention for PTSD can potentially avoid the condition from becoming chronic (Litz et al., 2002).

A third recommendation is to treat the comorbidity of substance misuse and mental health psychopathology concurrently, ideally, within the same treatment setting; According to Chen et al. (2006) this approach is widely supported in the literature (Drake



et al., 2004; Moggi et al., 1999; Spivak et al., 2020; Wise et al., 2001). The Irish Government's National Drug Strategy 'Reducing Harms, Support Recovery' recognises that dual diagnosis (DD) is a major problem for people who have both a mental health disorder and an addiction issue (Department of Health, 2017). However, according to Keenan (2005) the issue of dual diagnosis has been known for many years in Ireland and has not resulted in significant improvements in services provided to people with a DD. Creating an integrated DD addiction service is very complex as it involves the integration of a wide range of skills within a single setting, including psychiatric and mental health practitioners, general health services and addiction services (Drake et al., 2004). Therefore, some of the points mentioned in the first recommendation discussed above, may help bridge the gap in treatment services in anticipation of the full roll out of Sláintecare in Ireland.

The fourth and final recommendation of this study is the introduction of a trauma informed approach (TRA) to support people with PTSD and mental health disorders in addiction treatment centres (Berenz & Coffey, 2012; Najavits & Hien, 2013). Elliott et al. (2005) suggest that within human service systems, trauma survivors make up the majority of service users. Many people who attend addiction services have been exposed to significant trauma throughout their lives and failure to address trauma can lead to inadequate treatment and recovery (Barnett Brown et al., 2013). Health care providers should be cognisant of the potential for psychological trauma and respond appropriately with understanding and empathy in all their interactions with patients (Lambert et al., 2017; Muskett, 2014). Najavits et al. (2006).

A trauma informed service does not require the integration of different services and it can also significantly improve the psychological well-being of people who attend the addiction services (Barnett Brown et al., 2013). Furthermore, a TRA recognises the prevalence of trauma and ACEs in the population that can result in traumatic experiences for the affected person (Goddard et al., 2022; Gutowski et al., 2022). Introduction of a TRA with a healthcare setting requires a whole system approach and involves every member of staff from the receptionist and administration staff, through to the senior clinical staff and management, all working together for the well-being of the service users (SAMHSA, 2014). Moreover, a TRA is not just an approach for

substance use treatment services, it can be integrated into any health care setting (SAMHSA, 2014). Sperlich et al. (2017) proposes that in recognising the prevalence of ACEs in the population and the impact of domestic abuse and PTSD on women in maternity care (for example), a trauma informed model of midwifery can result in more positive outcomes for women in maternity services. Additionally, Messina et al. (2014) reported that trauma informed care can significantly reduce PTSD among women in prison. Where, trauma education and the development of coping skills, can play a vital role in supporting these woman in recovery from substance use disorders (Messina et al., 2014).

In summary, there were four overall recommendations from this study for the treatment of people in addiction services. The first recommendation suggests a paradigm shift in the philosophical position of harm reduction towards a bio-psycho-social model of addiction treatment, which recognises and also includes treatment for the psychological harms caused through harmful substance use. The second recommendation is to screen all service users for ACEs and PTSD. Screening would alert health care providers of the potential psychological issues suffered by a patient, therefore, enabling the clinical staff to provide a model of care appropriate to the needs of the person. The third recommendation recognises the need to treat people with the comorbidity of substance use disorder and mental health problems concurrently, and within the same treatment setting. Providing an evidence based approach for addiction treatment. Finally, the fourth recommendation proposes that a trauma informed approach could be introduced into any treatment setting without the integration of different services. A TRA would provide an evidence based approach for the treatment and management of people who have been exposed to significant trauma in their lives.

The recommendations from this study propose that people in treatment for an opiate use disorder would benefit from the application of a bio-psycho-social model of care within a harm reduction framework that is trauma informed. Therefore, the application of these recommendations in addiction treatment centres may present a pathway to recovery for the affected people that is closer to the vision of Dole and Nyswander (1965).

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## Appendices

### Appendix 1: Ethical approval



Coláiste na Tríonóide, Baile Átha Cliath  
Trinity College Dublin  
Ollscoil Átha Cliath | The University of Dublin

Prof. Catherine Comiskey  
School of Nursing and Midwifery,  
Trinity College Dublin  
24 D'Olier Street,  
Dublin 2

1<sup>st</sup> March 2019

**Ref:** 181201

**Study:** The Healthy Addiction Treatment (HAT) nursing Phase two focus on clients

Dear Prof Comiskey,

Further to a meeting of the Faculty of Health Sciences Ethics Committee held in December 2018. We are pleased to inform you that the above project has ethical approval to proceed.

**As a researcher you must ensure that you comply with other relevant regulations, including DATA PROTECTION and HEALTH AND SAFETY.**

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Prof. Brian O'Connell'.

Prof. Brian O'Connell  
Chairperson  
Faculty Research Ethics Committee

## Appendix 2: Participant consent forms



**TRINITY COLLEGE DUBLIN**  
**SCHOOL OF NURSING AND MIDWIFERY**  
**PARTICIPANT INFORMATION LEAFLET**

**PROJECT TITLE:** The Healthy Addiction Treatment (HAT) nursing model Phase two focus on clients

**ADDICTION TREATMENT CENTRES:** Domville House: Thompson Centre: Wellmount: Bonnybrook: Mountview: Donabate

**PRINCIPAL INVESTIGATORS:** Prof Catherine Comiskey, School of Nursing & Midwifery, D'Olier Street, Trinity College, Dublin 2.

**RESEARCHERS:** Dave McDonagh, PhD Candidate, Karen Galligan PhD Candidate, Marie Hyland PhD Candidate; School of Nursing & Midwifery, D'Olier Street, Trinity College, Dublin 2.

**Data Controller:** Prof Catherine Comiskey, Trinity College Dublin.

**Data Processor:** David McDonagh, Trinity College Dublin.

**Data Protection Officer:** Data Protection Officer, Secretary's Office, Trinity College Dublin, Dublin 2

**Data Protection Officer for Addiction Centres:** Aine Hall, Domville House, Ballymun, Dublin 9.

### General

You are invited to participate in this follow-up research project which is being carried out in your local addiction treatment centre by Prof. Catherine Comiskey, Trinity College Dublin. You are being invited because you participated in phase one of this project approximately 2 years ago.

The study is designed to investigate service user experiences and needs in Opiate Agonist Treatment. The information collected will be collated into a report which may help inform practice to enhance nursing care to service users attending the addiction services into the future.

Participation in the study is entirely voluntary, and if you decide that you do not to take part you can stop at any time. You don't have to give a reason for not taking part or for opting out and if you decide not to take part, it won't affect your current or future medical care.

You can change your mind at any time by contacting David McDonagh, 01 8964739. If you choose not to continue, this will not affect your medical care in any way. If you choose not to take part anymore, you will be asked to fill in a withdrawal form. If you wish, you can ask for your data stored to be destroyed. If you request this, we will destroy all data that are still in our possession. We will no longer use your data for research from this point onwards.

However, it will not be possible to destroy data already used in research studies of this project.

If you agree to participate, this will involve providing personal information in order to complete a structured questionnaire during a one to one interview with a researcher from Trinity College. The interview will be conducted in your local addiction service clinic or a location agreed with you by the interviewer. The interview will take between 30 and 45 minutes to complete. You may also be asked to agree to be contacted to participate in a future follow-up study.

Any information or data obtained from you during this study which can be identified will be treated confidentially. This will be done by removing all personally identifiable information from the questionnaires and applying an ID code for the purpose of the research. All identifiable information will be kept in a separate location, in locked filing cabinet in School of Nursing and Midwifery Trinity College.

The results of the study will be reported in medical/scientific journals and disclosed at medical/scientific conferences. No information which could potentially reveal your identity will be disclosed.

### **Data Protection**

Your privacy is important to us. We take many steps to make sure that we protect your confidentiality and keep your data safe. Your data will be controlled by David McDonagh.

The information collected in the questionnaires is the only data which will be used in this research.

Personal data collected:

- Service username
- Date of Birth
- Contact telephone number

Personally identifiable information will be removed from the questionnaires and stored in a separate secure location in the School of Nursing, Trinity College. Personal information will only be used to contact you for any follow-up studies.



The original recording and all other data will be available only to the present investigating team, Prof. Catherine Comiskey, David McDonagh, Karen Galligan, and Marie Hyland. The investigation team have all attended training seminars on data protection law provided by Trinity College. Materials that are sensitive will be kept in a secure location in the School, which will be locked when the researchers are not present. All audio recordings and personal contact information will be stored on a password protected computer in School of Nursing and Midwifery Trinity College. Audio data may be transcribed and anonymised for future studies. If copies are made available to researchers elsewhere, similar conditions regarding the storage and use of recordings will apply. Data collected for this study will be stored for a period of five years.

Under, The European General Data Protection Regulation, we can use your personal information for scientific research (Article 9(2) (j) in the public interest Article 6(1) (e). We will also ask for your explicit consent to use your data as a requirement of the Irish Health Research Regulations.

Under the Law you are entitled to:

- The right to access to your data and receive a copy of it
- The right to restrict or object to processing of your data
- The right to object to any further processing of the information we hold about you (except where it is de-identified)
- The right to have inaccurate information about you corrected or deleted
- The right to receive your data in a portable format and to have it transferred to another data controller
- The right to request deletion of your data

By law you can exercise the following rights in relation to your personal data unless the request would make it impossible or very difficult to conduct the research. You can exercise these rights by contacting David McDonagh, 01 8964739, email [mcdonad7@tcd.ie](mailto:mcdonad7@tcd.ie) or the Trinity College Data Protection Officer, Secretary's Office, Trinity College Dublin, Dublin 2, Ireland. Email: [dataprotection@tcd.ie](mailto:dataprotection@tcd.ie). Website: [www.tcd.ie/privacy](http://www.tcd.ie/privacy).

### **Ethics**

This study was approved by the Faculty Research Ethics Committee of Trinity College, Dublin, on the 3rd of March 2019. Approval number 181201.

### **Funding**

This study is being jointly funded by the Nursing and Midwifery Planning and Development (NMPDU) Unit for Nursing and Midwifery Innovation Initiatives and Trinity College Dublin through a post-graduation student grant as part of the College PhD programme.

### **Remuneration**

A €20 phone credit voucher for the network of your choice will be provided for your participation in this study after completion of the questionnaire.

### Future Studies

A member of the investigation team may contact you in the future, to seek your consent to participate in a follow-up study. Your future participation is completely voluntary and any future studies will only take place if ethical approval have been granted by an appropriate Research Ethics Committee

### Further Information

If you have any concerns or questions, you can contact:

- Principal Investigator: Prof. Catherine Comiskey 01 896 2776.
- Data Protection Officer, Addiction Services: Aine Hall, 01 8620111
- Data Protection Officer, Trinity College Dublin: Data Protection Officer, Secretary’s Office, Trinity College Dublin, Dublin 2, Ireland. Email: [dataprotection@tcd.ie](mailto:dataprotection@tcd.ie). Website: [www.tcd.ie/privacy](http://www.tcd.ie/privacy).

Under GDPR, if you are not satisfied with how your data is being processed, you have the right to lodge a complaint with the Office of the Data Protection Commission, 21 Fitzwilliam Square South, Dublin 2, Ireland. Website: [www.dataprotection.ie](http://www.dataprotection.ie).

If you would like to take part in this study, you will be asked to sign the Consent Form on the next page. You will be given a copy of this information leaflet and the signed Consent Form to keep.

General	Initial Box
I confirm I have read and understood the <b>Information Leaflet</b> for the above study. The information has been fully explained to me and I have been able to ask questions, all of which have been answered to my satisfaction.	
I understand that this study <b>is entirely voluntary, and if I decide that I do not want to take part, I can stop taking part in this study at any time without giving a reason.</b> I understand that deciding not to take part will not affect my future medical care.	
I understand that <b>I will receive a small gratuity for my time in taking part in this study.</b>	
I know how to contact the research team if I need to.	
I agree to take part in this research study having been fully informed of the <b>risks, benefits and alternatives</b> which are set out in full in the information leaflet which I have been provided with.	
I agree to being contacted by researchers by phone as part of this research study.	

<b>Data processing</b>	
I agree to allow personal information about me to be used with academic research institutions for the purpose of addiction research, as described in the Information leaflet.	
I understand that personal information about me, including the transfer of this personal information about me outside of the EU, will be protected in accordance with the General Data Protection Regulation.	
I understand that there are <b>no direct benefits to me</b> from participating in this study. I understand that <b>results from analysis of my personal information will not be given to me.</b>	
I understand that <b>I can stop taking part in this study</b> at any time without giving a reason and this will not affect my future medical care.	

***Signature of research participant:***

*I have been given a copy of the Participant Information Leaflet and a copy of this consent form to keep.*

-----

Signature of participant

-----

Date

***Signature of researcher***

I believe the participant is giving fully informed consent to participate in this study.

-----

Signature of researcher

-----

Date

## Appendix 3: Survey Booklet

### INTAKE INTERVIEW – VISIT 2

#### CONFIDENTIALITY STATEMENT

We would like to stress that all information you give in this questionnaire will be treated confidentially.

No information about you as an individual, including your name and address will be passed on to anyone outside of this research study.

All the details are collected purely for the purpose of research and the information is used purely for statistical purposes.

**Treatment Setting ID**

**Client ID Number**

**Date Interview Started**

Day

Month

Year

**Date Interview Completed**

Day

Month

Year

**Location Interview Started**

**Location Interview Completed**

On site

On site

Elsewhere (please specify)

Elsewhere (please specify)

.....

**Interviewer**.....

**Start Time AM PM**

**SECTION 0**

(TO BE REMOVED BY OFFICE)

**Name of treatment site in words:**

.....

*Notes to Interviewer*

- *Gather as much information as possible*
- *Try to get contact details for a person/people who do not live with the client*
- *Try to get phone numbers other than mobiles*

**CLIENT'S PERSONAL DETAILS**

Full Name:

.....

Nicknames/Aliases:

.....

Address:

.....

.....

.....Phone Number(s) (preferably more than a mobile):

.....

**CONTACT PERSON 1** (Mother or close family member, if possible)

Full Name:

.....

Address:

.....

.....

.....Relationship to interviewee:

.....

Do they know about treatment?

Yes

No

Phone Number(s):

.....

**CONTACT PERSON 2**

Full Name:

.....

Address:

.....

.....

.....Relationship to interviewee:

.....

Do they know about treatment?

Yes

No

Phone Number(s):

.....

**CONTACT PERSON 3**

Full Name:

.....

Address:

.....

.....

Relationship to interviewee:

.....

Do they know about treatment?	Yes	No
Phone Number(s):	.....	

**SECTION 0 cont'd**

(TO BE REMOVED BY OFFICE)

These contact details will only be used if we cannot reach you at any of the other numbers. If that is the case, we would like your permission to ask these people to let you know that we are trying to contact you.

<p><b>TREATMENT REFERRER</b></p> <p>Name: .....</p> <p>Agency: .....</p> <p>Address: .....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Phone Number(s): .....</p>
<p><b>G.P.</b></p> <p>Name:.....</p> <p>Practice: .....</p> <p>Address: .....</p> <p>.....</p> <p>Phone Number(s): .....</p>
<p><b>SOCIAL WORKER</b></p> <p>Name: .....</p>

Agency:  
.....  
Address:  
.....  
.....  
Phone Number(s):  
.....

**KEY WORKER/DRUG WORKER (not necessarily from this setting)**  
Name:  
.....  
Agency:  
.....  
Address:  
.....  
.....  
Phone Number(s):  
.....



**SECTION A: DEMOGRAPHICS & BACKGROUND**

**A1\* Client Gender (OTI S1 Q1)**

Male (1)

Female (0)

Other .....

**A2\* Age? (S1 Q2) .....Yrs**

**A3 When is your date of birth? Day \_\_ Month \_\_\_ Year \_\_\_\_**

**A4 What is your place of birth?**  
*Give the place where your mother lived at the time of your birth. If Ireland (including Northern Ireland), write in the COUNTY.*

**If elsewhere ABROAD, write in the COUNTRY**

**A5 What is your nationality?**

*If you have more than one nationality, please declare all of them.*

		Tick
1	Irish	<input type="checkbox"/>
2	Other nationality- write below	<input type="checkbox"/>
3	No Nationality	<input type="checkbox"/>

**A6 Where do you usually live?**

**1 Current Location**

*(If Ireland, including northern Ireland, write in town and county.)*

**2 Elsewhere ABROAD, write in the COUNTRY.**

--

**A7 What is your ethnic or cultural background?**

Choose ONE section from A-D then tick the appropriate box

<b>A</b>	<b>White</b>	<b>TICK</b>
1	Irish	
2	Irish Traveller	
3	Any other White background	
<b>B</b>	<b>Black or Black Irish</b>	
4	African	
5	Any other black background	
<b>C</b>	<b>Asian or Asian Irish</b>	
6	Chinese	
7	Any other Asian background	
<b>D</b>	<b>Other including mixed background</b>	
0	Other write in description box below	

**A8 What is your current relationship status**

1	Single	
2	In a relationship	
3	Engaged	
4	Married/Civic Union	
0	Other	

**A9 \* How many years of school did you complete? (OTI 1Q3).....yrs.**

**A10 At what age did you finish your education?**

.....

**A11 What is the highest level of education you have completed?**

- 0. No formal education
- 1. Primary education
- 2. Lower secondary (preparation for Junior Cert. or equivalent)
- 3. Upper secondary (preparation for Leaving Cert. or equivalent)
- 4. Third level

**A12\* Have you completed any courses after school? (OTI S1Q4)**

- No courses..... 1
- Yes, trade/technical..... 2
- Yes, university/college..... 3

**A13\* How are you employed at the moment? (OTI S1 Q6)**

- Not 1
- Employed.....
- .....
- FT..... 2
- .....
- PT..... 3
- .....
- Student..... 4
- .....

Home 5

Duties.....

.....

**A14\*** How much of the last 6 months have you been employed? (OTI S4 Q2)

All of the time ..... 4

Most of the time..... 3

Half of the time..... 2

Some of the time..... 1

None of the time ..... 0

**A15\*** How many different FT jobs did you have in the last six mths? (OTI S4 Q3).

One..... 0

...

Two..... 1

...

Three..... 2

Four or more..... 3

None 4

.....

**A15b** Are you currently on disability benefit? Yes (1)  No (0)

**A16** Have you ever been in prison? (OTI Q10).

Yes (1)  No (0)

**A17 Are you currently expecting a baby?**

(f10) No (0) .....   
 Yes (1) .....

**A18 Do you have any children younger than 18 years (Parent/Guardian)?**

(F11) No (0) .....   
 Yes (1) .....

**Details**.....

**A19**  
(F12)

	Gender		Age (Yrs/Mths)	Live with you? (Y/N) *	Biological Parent? (Y/N)
Child 1	M	F			
Child 2	M	F			
Child 3	M	F			
Child 4	M	F			
Child 5	M	F			
Child 6	M	F			

**\* If child does not live with you, what type of accomodation is your childr currntly living in? (e.g. living with mother, living in care, living in foster home, Prison, homeless, living with other family member)**

<b>Child 1</b>	
<b>Child 2</b>	
<b>Child 3</b>	
<b>Child 4</b>	
<b>Child 5</b>	
<b>Child 6</b>	

**A20 Do any of your children have a problem with drugs or alcohol?**

No (0) .....

Yes with drugs (1) .....

Yes with Alcohol (2) .....

Yes with Drugs and Alcohol (3).....

**A21 In the past 3 months, on how many days have you seen or spoken  
(f14) with each of your children? (If in prison or residential setting, record  
for period prior to admission)**

<b>Child 1</b>	
<b>Child 2</b>	
<b>Child 3</b>	
<b>Child 4</b>	
<b>Child 5</b>	
<b>Child 6</b>	

**A22 Overall how would you describe your relationship with your  
(f15) children?**

(4) Very Good.....

(3) Good.....

(2) Okay-Alright.....

(1) Poor.....

(0) Very Poor.....

**A23a Does your child have any learning disabilities or developmental  
disorders such as ADHD, Autism, dyslexia etc?**

Yes (1) ..

No (0) ...

**A23b** If Yes,

- (i) Please state the name of the disability.

- (ii) Please confirm if the child received the assessment/diagnosis from a professional and state what type of professional carried out assessment e.g. psychiatrist, psychologist, etc.

**Section B Treatment Information**

**B1\*** *What is the main type of drug treatment you are currently in? (OTI S1 Q7)\**

Not in Treatment	0
Methadone (Mgs)	1 (Dose____.mgs)
Detoxification	2
Therapeutic Community	3
Narc Anon	4
Drugs Counselling	5

**B2** **What type of drugs are you in treatment for? (I.e. what drug(s) brought you here)?**  
**(CODING: Yes (1) / No (0))**

	Tick
<b>Heroin</b> (smack, hammer, horse, scag).	
<b>Other Opiates</b> (other than heroin e.g. street methadone/done, morphine, pethidine, codeine).	
<b>Tranquillisers</b> (e.g. Serepax, Rohypnol, Mogadon, Valium).	
<b>Barbiturates?</b> (E.g. Nembutal, Seconal).	
<b>Cocaine</b> (coke, snow, crack)	
<b>Amphetamines</b> (speed).	
<b>Inhalants</b> (e.g. amyl nitrite/rush, glue, laughing gas, aerosols, petrol).	
<b>Hallucinogens</b> (e.g. LSD/acid, e, magic mushrooms) See Q 41 – 45 Section 2 OTI	
<b>Cannabis</b> (marijuana, dope, grass, hash, pot).	



Tobacco	
Alcohol	

*How long have you been in your current treatment? (OTI S1 Q8)\**

**B3 \***

\_\_\_\_\_ *Mths*

**B4\*** *Have you been in any types of treatment in the past? (S1Q9)\**

Yes	1
No	0

**(B5) What is the most important reason you have for coming to this service at this time?**

.....

...

.....

...

**Prompt Notes: 1) Access to Methadone, 2) Stability and Stay Well, 3) To get clean, 4) Methadone Maintenance & Support**

**B6 Do you think that coming here will help you to achieve any of the following?**

	No (0)	Yes (
Less Crime		
Staying out of jail or trouble		
Better family relationships		
More contact with your children		
Job, employment skills or education		
Better physical health		

Improved emotional-mental health		
A better daily routine		
Improved housing circumstances		
Better financial services		
Other		

**B7 Who would you say has been most important in getting you to come to this treatment at this time?** (this can include anyone who encouraged you to come here)

.....  
 ...  
 .....

**B8 How Important do you feel that it is for you to have help with your drug use at this time?**

(B11 )

0. Not Important at all	
1. A little Important	
2. Moderately Important	
3. Quite Important	
4. Extremely Important	

**B9 Notes on Treatment**

(B13

)

**Section C Drug Use**

***N.B. For all categories of Drugs in RED in this section, if the subject responds that their last drug of use was more than a month ago, score zero for that category.***

**I'm going to ask you some questions on your use of drugs. I'll emphasise again that the information you give me is completely confidential.**

**C1a**

**(C2) Heroin**

Now I'm going to ask you some questions about Heroin (Smack, hammer, horse, scag)

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?
<b>Prompt: Background or reason to start using heroin</b>			

***Heroin ( OTI S2 1-5) \****

*If the subject responds that their last use of the drug was more than a month*

**C1b\*** *ago, score 0 for that category. Do not include use on day of interview.*

1. On what day did you last use Heroin	
2. How many hits/smokes/snorts/did you have that day?	
3. On which day before that did you use heroin?	
4 And how many hits did you have on that day?	
5. And when was the day before that?	

(q1 =      , q2 =      , t1=      , t2 =      )

Q

The data obtained from the subject is then used to get an estimate of recent consumption by the simple formula :

$$Q = \frac{q1 + q2}{t1 + t2}$$

where Q = average amount per day

q1 = amount consumed on the last use occasion

q2 = amount consumed on the second last use occasion

t1 = interval between the last day of drug use and the next to last use day

t2 = interval between the second and third last days of drug use

That is, simply add the number of use episodes reported by the subject, and divide by the total of the two intervals between use reported. Some examples of this procedure are set out below.

**C2a Other Opiates:** These questions are about your use of *opiates other than heroin e.g. street methadone, done, morphine, pethidine, codeine*).

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**Other Opiates**

**C2b\***

These questions are about your use of *opiates other than heroin e.g. street methadone, done, morphine, pethidine, codeine*). (OTI S2 Q6-10)\*

1. On what day did you last use Opiates other than heroin (do \_\_\_\_\_  
not include legally obtained methadone).
2. How many pills/doses etc. did you have that day? \_\_\_\_\_
3. On which day before that did you use opiates other than \_\_\_\_\_  
heroin?
- 4 And how many pills/doses etc. did you have on that day? \_\_\_\_\_
5. *And when was the day before that?* \_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q:

\_\_\_\_\_

**C3a Alcohol**

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C3b\* Alcohol S2 OTI:** These questions are about your use of alcohol.

1. On what day did you last drink alcohol? \_\_\_\_\_
2. How much alcohol did you drink on that day? \_\_\_\_\_

Please ask the client to tell you what drink they had, and what quantity of it. *E.g. if they said they drank wine, ask them how much – bottle(s) etc*

Alcohol	Please state quantity	No of Standard Drinks
Wine	<i>e.g. No of glasses, bottles, flagons, casks</i>	
Spirits <u>Type</u> of Spirit and Quantity	<i>(e.g. naggon, half bottle, pub measure etc)</i>	
Beer	<i>(e.g., bottles (330ml), cans (500ml), pints,</i>	
Fortified Wine	<i>e.g. No of glasses, bottles, flagons, casks</i>	
Cider		
Other		

**TOTAL STANDARD DRINKS \_\_\_\_\_**

3. On which day before that did you drink alcohol? \_\_\_\_\_

4. And how much did you drink on that day? \_\_\_\_\_

Please ask the client to tell you what drink they had, and what quantity of it. *E.g. if they said they drank wine, ask them how much – bottle(s) etc*

<b>Alcohol</b>	<b>Please state quantity</b>	<b>No of Standard Drinks</b>
Wine	<i>e.g. No of glasses, bottles, flagons, casks</i>	
Spirits <b>Type</b> of Spirit and Quantity	<i>(e.g. naggon, half bottle, pub measure etc)</i>	
Beer	<i>(e.g., bottles (330ml), cans (500ml), pints,</i>	
Fortified Wine	<i>e.g. No of glasses, bottles, flagons, casks</i>	
Cider		
Other		

**C3b**  
Continued

**TOTAL STANDARD DRINKS \_\_\_\_\_**

5. And when was the day before that? \_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q: \_\_\_\_\_

**C4a Cannabis** These questions are about your use of Marijuana (dope, grass, hash, pot).

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C4b\* Cannabis** Section 2 OTI

These questions are about your use of Marijuana (dope, grass, hash, pot).

1. On what day did you last use Marijuana? \_\_\_\_\_

2. How many joints, bongs etc did you have on that day? \_\_\_\_\_

3. On which day before that did you use Marijuana? \_\_\_\_\_

4. And how many joints, bongs etc did you have on that day? \_\_\_\_\_

5. And when was the day before that? \_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q: \_\_\_\_\_



**C5a Amphetamines (Speed)**

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C5b\* Amphetamines S2 OTI (Speed)**

1. On what day did you last use Amphetamines? \_\_\_\_\_

2. How many tablets, snorts, hits, etc. did you have on that day?

\_\_\_\_\_

3. On which day before that did you last use amphetamines?

\_\_\_\_\_

4. And how many tablets, snorts, hits, etc. did you have on that day?

\_\_\_\_\_

5. And when was the day before that?

\_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q:

\_\_\_\_\_

**C6a Cocaine (coke, snow, crack, etc.).**

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C6b\* Cocaine See Q 26 – 30 Section 2 OTI**

These questions are about your use of cocaine (coke, snow, crack, etc.).

1. On what day did you last use Cocaine?

\_\_\_\_\_

2. How many snorts, hits, smokes, etc. did you have on that day?

\_\_\_\_\_

28. On which day before that did you use Cocaine? \_\_\_\_\_

29. And how many snorts, hits, smokes, etc. did you have on that day?

\_\_\_\_\_

30. And when was the day before that?

\_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q: \_\_\_\_\_

**C7a** **Tranquillisers** (e.g. Serepax, Rohypnol, Mogadon, Vallium) Q 31- 35 S2  
OTI

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C7b\*** **Tranquillisers** (e.g. Serepax, Rohypnol, Mogadon, Vallium) Q 31- 35 S2  
OTI

1. On what day did you last use **Tranquillisers**?

\_\_\_\_\_

2. How many pills did you have on that day? \_\_\_\_\_

3. On which day before that did you use **Tranquillisers**? \_\_\_\_\_

4. And how many pills did you have on that day? \_\_\_\_\_

5. And when was the day before that?  
\_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q: \_\_\_\_\_

**C8a Barbiturates** (e.g. Nembutal, Seconal) See Q 36 – 40 Section 2 OTI

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C8b\* Barbiturates** (e.g. Nembutal, Seconal) See Q 36 – 40 Section 2 OTI

1. On what day did you last use **Barbiturates**?  
\_\_\_\_\_

2. How many pills did you have on that day? \_\_\_\_\_

3. On which day before that did you use  
**Barbiturates**? \_\_\_\_\_

4. And how many pills did you have on that day? \_\_\_\_\_

5. And when was the day before that? \_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q:  
\_\_\_\_\_:

**C9a** **Hallucinogens** (e.g. LSD/acid, e, magic mushrooms) See Q 41 – 45 Section 2 OTI

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C9b\*** **Hallucinogens** (e.g. LSD/acid, e, magic mushrooms) See Q 41 – 45 Section 2 OTI

1. On what day did you last use **Hallucinogens**?

\_\_\_\_\_

2. How many tabs, pills, etc. did you have on that day?

\_\_\_\_\_

3. On which day before that did you use **Hallucinogens**?

? \_\_\_\_\_

4. And how many tabs, pills, etc. did you have on that day? \_\_\_\_\_

5. And when was the day before that? \_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q:

\_\_\_\_\_

**C10a** **Inhalants** (amyl nitrate-rush, glue, laughing gas, aerosols, petrol) See q 46 – 50 Section

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**c10b\*** *Inhalants* (amyl nitrate-rush, glue, laughing gas, aerosols, petrol)

1. On what day did you last use **Inhalants**?

---

2. How many sniffs did you have on that day? \_\_\_\_\_

3. On which day before that did you use **Inhalants**?  
? \_\_\_\_\_

4. And how many sniffs did you have on that day? \_\_\_\_\_

5. And when was the day before that?

---

(q1= , q2= , t1= , t2= ) Q: \_\_\_\_\_:

**Tobacco**

**C11a**

Ever Used? (Y/N)	Age of 1 <sup>st</sup> Use	Has Use Ever been a problem? (Y/N)	IF ever a problem, what was age of first problem?

**C11b\*** *Tobacco. See q 51- 55 Section 2 OTI*

1. On what day did you last use **Tobacco**?

---

2. How many cigarettes did you have on that day? \_\_\_\_\_

3. On which day before that did you use Tobacco? \_\_\_\_\_

4. And how many cigarettes did you have on that day? \_\_\_\_\_

5. And when was the day before that?  
\_\_\_\_\_

(q1= , q2= , t1= , t2= ) Q:  
\_\_\_\_\_

General comments on Drug use

**OTI DRUG USE SUMMARY**

<b>Heroin Use Total</b>	
<b>Polydrug Use Total</b>	

**(CODING: Yes (1) / No (0))**

**POLYDRUG USE**

<b>Other Opiates</b>		<b>Tranquillisers</b>	
<b>Alcohol</b>		<b>Barbiturates</b>	
<b>Cannabis</b>		<b>Hallucinogens</b>	
<b>Amphetamines</b>		<b>Inhalants</b>	
<b>Cocaine</b>		<b>Tobacco</b>	

**C12 New Psychoactive substances.**

1. On what day did you last use **NPS**?

\_\_\_\_\_

2. How many did you have on that day? \_\_\_\_\_

3. On which day before that did you use **NPS**? \_\_\_\_\_

4. And how many ? did you have on that day? \_\_\_\_\_

5. And when was the day before that? \_\_\_\_\_

**Comments on NPS**

**C13 Have you ever injected?**

(0) No  (If person has NEVER injected go to Section D)

(1) Yes

How old when first injected?

\_\_\_\_\_

**C14 Drug use- how many times have you hit up (injected) in last month?**

S3 (If the subject hasn't injected in the **past month**, score 0 for this question

Q1 and move to Section D Health )

Hasn't hit up	0
Once a week or less	1
More than once a week but less than once a day	2
Once a day	3
2-3 times a day	4
More than 3 times a day	5

**C15 Where have you mostly injected in last month? (CODING: Yes (1) / No (0))**

<b>a</b>	<b>Arm(s)</b>		
<b>b</b>	<b>Hand(s)</b>		
<b>c</b>	<b>Neck</b>		
<b>d</b>	<b>Leg(s)</b>		
<b>e</b>	<b>Foot/Feet</b>		
<b>f</b>	<b>Groin</b>		
<b>g</b>	<b>Other</b>		<b>Specify</b>

**C16 How many times in last month have you used a needle after someone else had already used it?**

S3 Q2

No Times	0
1 Time	1
2 times	2
3-5 Times	3
6-10 times	4
More than 10 times	5

**How many different people have used a needle before you? (as above)**

No Times	0
----------	---



<b>C17</b>	1 Time	1
<b>OTI</b>	2 times	2
<b>S3Q3</b>	3-5 Times	3
	6-10 times	4
	More than 10 times	5

**C18** How many times in last month has someone used a needle after you  
**OTI** have used it? (as above)

<b>S3</b>	No Times	0
<b>Q4</b>	1 Time	1
	2 times	2
	3-5 Times	3
	6-10 times	4
	More than 10 times	5

**C19** *How often in last month have you cleaned needles before using them?*

<b>OTI</b>	<i>Don't reuse</i>	<i>0</i>
<b>S3</b>	<i>Everytime</i>	<i>1</i>
<b>Q5</b>	<i>Often</i>	<i>2</i>
	<i>Sometimes</i>	<i>3</i>
	<i>Rarely</i>	<i>4</i>
	<i>Never</i>	<i>5</i>

**C20** *Before using needles again, how many times in last month did you use  
**OTI** bleach to clean them? (as above)*

<b>S3</b>	<i>Don't reuse</i>	<i>0</i>
<b>Q6</b>	<i>Everytime</i>	<i>1</i>
	<i>Often</i>	<i>2</i>
	<i>Sometimes</i>	<i>3</i>
	<i>Rarely</i>	<i>4</i>
	<i>Never</i>	<i>5</i>

**Have you ever reused your own needles or syringes?**

- C21** (0) No   
 (1) Yes

How many times in past month?

**C22** Where did you get your injecting equipment the last time you injected?  
(CODING: Yes (1) / No (0))

Needle exchange or pharmacy		
Partner		
Family Member		
Friend		
Acquaintance		
Stranger		
Dealer		
Other		Specify

**Section D– Health**

**D1** In general how would you say your health is:

(3) Excellent

(2) Good

(1) Fair

(0) Poor

**D2 Health Symptoms S (IV OTI).** These questions are about your health.

I am going to read out a list of health problems.

Please answer “Yes” if you have had any of these problems over the last month.

[Note: Circle “Yes” or “No” responses as indicated by participant, and count the

number of “Yes” responses in each group of symptoms to give a sub-total

**(CODING: Yes (1) / No (0))**

**1. General**

a. fatigue/energy loss	Yes	No
b. poor appetite	Yes	No
c. weight loss/underweight	Yes	No
d. trouble sleeping	Yes	No
e. fever	Yes	No
f. night sweats	Yes	No
g. swollen glands	Yes	No
h. jaundice	Yes	No
i. bleeding easily	Yes	No
j. teeth problems	Yes	No
k. eye/vision problems	Yes	No
l. ear/hearing problems	Yes	No
m. cuts needing stitches	Yes	No
<b>N. SUB-TOTAL</b>		

**2. Injection Related Problems**

a. overdose	Yes	No
b. abscesses/infections from injecting	Yes	No
c. dirty hit (made feel sick)	Yes	No
d. prominent scarring/bruising	Yes	No
e. difficulty injecting	Yes	No
<b>F. SUB-TOTAL</b>		

**3. Cardio/Respiratory**

a. persistent cough	Yes	No
b. coughing up phlegm	Yes	No
c. coughing up blood	Yes	No
d. wheezing	Yes	No
e. sore throat	Yes	No
f. shortness of breath	Yes	No
g. chest pains	Yes	No
h. heart flutters/racing	Yes	No
i. swollen ankles	Yes	No
<b>J. SUB-TOTAL</b>		

**4. Genito-urinary**

a. painful urination	Yes	No
b. loss of sex urge	Yes	No
c. discharge from genitals	Yes	No
d. rash on/around genitals	Yes	No
<b>E. SUB-TOTAL</b>		

**5. Gynaecological  
(WOMEN ONLY) (in the last few months)**

a. irregular period	Yes	No
b. miscarriage	Yes	No
<b>C. SUB-TOTAL</b>		

**6. Musculo-skeletal**

a. Joint pains/stiffness	Yes	No
b. Broken bones	Yes	No
c. Muscle pain	Yes	No
<b>D. SUB-TOTAL</b>	<input type="text"/>	

**7. Neurological**

a. headaches	Yes	No
b. blackouts	Yes	No
c. tremors (shakes)	Yes	No
d. numbness/tingling	Yes	No
e. dizziness	Yes	No
f. fits/seizures	Yes	No
g. difficulty walking	Yes	No
h. head injury	Yes	No
i. forgetting things	Yes	No
<b>J. SUB-TOTAL</b>	<input type="text"/>	

**8. Gastro-intestinal**

a. nausea	Yes	No
b. vomiting	Yes	No
c. stomach pains	Yes	No
d. constipation	Yes	No
e. diarrhoea	Yes	No
<b>F. SUB-TOTAL</b>	<input type="text"/>	

**HEALTH TOTAL:** \_\_\_\_\_

**General Comments on Health**

Are you currently experiencing an episode of physical pain that has lasted 3 or more months? "

---

**HEP C** Yes  No  **HIV** Yes  No

---

**D3 S3 Q7 – How many people, including clients, have you had sex within the last month?**

None	0
One person	1
Two people	2
3-5 people	3
6-10 people	4
More than 10 people	5

**If no sex in the last month**, score 0 for sexual behaviour section and go to Section E

**D4 S3 Q8 How often have you used condoms when having sex with your regular partner(s) in the last month?**

No. Reg Partner/No Penetrative Sex	0
Everytime	1
Often	2
Sometimes	3
Rarely	4
Never	5

**D5 S3 Q9 How often did you use condoms when you had sex with casual partners in last month?**

No cas. Partners/No penetrative sex	0
Everytime	1
Often	2
Sometimes	3
Rarely	4
Never	5

**D6 S3 OTI Q10 How often have you used condoms when you have been paid for sex in the last month?**

No Paid Sex / No penetrative sex	0
Everytime	1
Often	2
Sometimes	3
Rarely	4
Never	5

**D7 S3 OTI Q11 how many times did you have anal sex in the last month?**

<i>No Times</i>	<i>0</i>
<i>One Time</i>	<i>1</i>
<i>Two Times</i>	<i>2</i>
<i>3-5 Times</i>	<i>3</i>
<i>6-10 Times</i>	<i>4</i>
<i>More than 10 times</i>	<i>5</i>

**D8 Sexual Behaviour Subtotal (Q7-11 in Red OTI)**

**D9 Drug Use Sub Total – Sexual behaviour Sub Total (Q1-6 and Q 7)**

## Section E Psychological Adjustment – General Health Questionnaire

I should like to know if you had any medical complaints and how your health has been in general over the past few weeks.

Please answer all the questions on the following pages simply by circling the answer that you think most applies to you. Remember that we want to know about present and recent complaints, not those you had in the past.

Coding		0	1	2	3
1	<b>Been Feeling well and in good health?</b>	Better than usual	Same as usual	Worse than usual	Much Worse than usual
2	<b>Been feeling in need of a pick me up?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
3	<b>Been Feeling Run down and out of sorts?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
4	<b>Felt that you were ill?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
5	<b>Been Getting any pains in your head?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
6	<b>Been Getting a feeling of tightness or pressure in your head?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
7	<b>Been having hot or cold spells?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
8	<b><i>Lost much sleep over worry?</i></b>	Not at all	No more than usual	Rather more than usual	Much more than usual



9	<b>Had Difficulty in Staying asleep once you were asleep?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
10	<b>Felt Constantly under strain?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
11	<b>Been Getting Edgy and Bad Tempered?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
12	<b>Been getting scared or panicky for no good reason?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
13	<b>Found everything getting on top of you</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
14	<b>Been feeling nervous and string up all the time?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
15	<b>Been Managing to keep busy and occupied?</b>	More so than usual	Same as usual	Rather less than usual	Much more than usual
16	<b>Been taking longer over the things you do?</b>	Quicker than usual	Same as usual	Longer than usual	Much longer than usual
17	<b>Felt on the whole that you were doing things well?</b>	Better than usual	About the same	Less well than usual	Much less well
18	<b>Been satisfied with the way you've carried out your task?</b>	More satisfied	About the same	Less than usual	Much less satisfied
19	<b><i>Felt that you were playing a useful part in things</i></b>	More so than usual	Same as usual	Less useful than usual	Much less useful
20	<b>Felt capable of making decisions about things?</b>	More so than usual	Same as usual	Less so than usual	Much less capable

21	<b>Been able to enjoy your normal day to day activities?</b>	More so than usual	Same as usual	Less so than usual	Much less than usual
22	<b>Been thinking of yourself as a worthless person?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
23	<b>Felt that life is entirely hopeless</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
24	<b>Felt that life is not worth living?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
25	<b>Thought of the possibility that you might do away with yourself?</b>	Definitely not	I don't think so	Has Crossed my mind	Definitely have
26	<b>Found at times that you couldn't do anything because your nerves were so bad?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
27	<b>Found yourself wishing you were dead and away from it all?</b>	Not at all	No more than usual	Rather more than usual	Much more than usual
28	<b>Found that the idea of taking your own life kept coming into your mind?</b>	Definitely not	I don't think so	Has Crossed my mind	Definitely has

### GHQ SUMMARY DATA

A	B	C	D	TOTAL

## General Comments on Health

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### Description

The GHQ-28 was developed by Goldberg in 1978 and has since been translated into 38 languages. Developed as a screening tool to detect those likely to have or to be at risk of developing psychiatric disorders, the GHQ-28 is a 28-item measure of emotional distress in medical settings. Through factor analysis, the GHQ-28 has been divided into four subscales.

These are:

Somatic symptoms (items 1–7);

Anxiety/insomnia (items 8–14);

Social dysfunction (items 15–21),

And severe depression (items 22–28)

(Goldberg in 1978). It takes less than 5 minutes to complete. The GHQ-28 must be purchased and is available at the following website: <https://shop.psych.acer.edu.au/acer-shop/product/>

## Section F Social Functioning

### F1 Where have you been living for the past 3 months

1	Own house/flat	
2	Rent house/flat	
3	Bedsit/hotel/boarding house	
4	Hostel/shelter,	
5	Squatting,	
6	Sleeping rough,	
7	House of relatives	
8	House of friends	
9	Hospital,	
10	Residential rehab	
11	Prison,	
12	Detox unit,	
13	Halfway house,	
0	Other.	

### F2 In which of these places are you living at the moment

Enter code from above \_\_\_\_\_

### F3 ***S4 Q1 How many different places have you lived in over the last six months?***

One	0
Two	1
Three	2
Four	3
Five or More	4

**F4 With whom do you live?**

(1) Alone	
(2) Parents or family	
(3) Alone with child	
(4) Partner alone	
(5) Partner and child(ren)	
(6) Friends	
(7) Foster Care	
(8) Not known	
(0) Other	
<b>Total</b>	

**F5 S4 Q 11 how much of the last 6 months have you been living with someone who uses heroin?**

All of the time	4
Most of the time	3
Half of the time	2
Some of the time	1
None of the time	0

**F6 S4 Q12 how many of the people you hang around with now are users? (Include Partner)**

None	0
Less than half	1
About a half	2
More than half	3
All of them	4

**F7 S4 Q4 How often in the last 6 mths have you had conflict with your relatives?**

Very Often	4
Often	3
Sometimes	2

Rarely	1
Never	0
N/A	888

**F8 S4 Q5 How often in the last 6 mths have you had conflict with your Partner?**

Very Often	4
Often	3
Sometimes	2
Rarely	1
Never	0
N/A	888

**F9 S4Q6 How often in the last 6 mths have you had conflict with your Friends?**

Very Often	4
Often	3
Sometimes	2
Rarely	1
Never	0
N/A	888

**F10 S4 Q7 About how many close friends would you estimate you have? (INCLUDE PARTNER)**

None	4
One	3
Two	2
Three	1
Four or more	0

**F11**     ***S4 Q8 When you are having problems, are you satisfied with the support you get from your friends?***

Very Satisfied	0
Satisfied	1
Reasonably OK	2
Not Satisfied	3
Very Unsatisfied	4
n/a	888

***S4 Q9 About how often do you see your friends?***

**F12**

Very Often	0
Often	1
Sometimes	2
Rarely	3
Never	4
n/a	888

**F13**     ***S4 Q10 how many people around you now have known you for more than 6 mths?***

None	4
Less than Half	3
About Half	2
More than half	1
All of them	0
N/A	888

**Section G legal**

**SECTION V: CRIME**

In this section I am interested in any crimes that you may have committed. Any information that you give here is completely confidential.

**Property Crime**

First, I am going to ask you some questions on property crime. By property crime I mean things such as break and enter, robbery without violence, shoplifting, stealing a prescription pad, stealing a car, or receiving stolen goods. I am interested in the number of times that you committed a property crime, not the number of times you've been caught.

1. How often, on average, during the last month have you committed a property crime? (READ OPTIONS)

- No property crime ..... 0
- Less than once a week ..... 1
- Once a week ..... 2
- More than once a week..... 3  
(but less than daily)
- Daily ..... 4



## Dealing

Now I am going to ask you some questions about dealing. By dealing I mean selling drugs to someone. I am interested in the number of times that you've dealt drugs, not the number of times you've been caught.

2. How often, on average, during the last month have you sold drugs to someone?

- No drug dealing..... 0
- Less than once a week..... 1
- Once a week..... 2
- More than once a week..... 3  
(but less than daily)
- Daily..... 4

## Fraud

Now I am going to ask you some questions about fraud scams. By fraud I mean things such as forging cheques, forging prescriptions, social security scams, or using someone else's credit card. I am interested in the number of times that you've committed fraud, not the number of times that you've been caught.

3. How often, on average, during the last month have you committed a fraud?

- No fraud..... 0
- Less than once a week..... 1
- Once a week..... 2
- More than once a week..... 3  
(but less than daily)
- Daily..... 4

## Crimes Involving Violence

Finally, I am going to ask you some questions about crimes involving violence. By crimes involving violence I mean things such as using violence in a robbery, armed robbery, assault, rape, etc. I am interested in the number of times that you've committed a crime involving violence, not the number of times that you've been caught.

4. How often, on average, during the last month have you committed a crime involving violence?

- No violent crime ..... 0
- Less than once a week ..... 1
- Once a week ..... 2
- More than once a week ..... 3  
(but less than daily)
- Daily ..... 4

**CRIME TOTAL** \_\_\_\_\_

### General Comments on Crime

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**OPIATE TREATMENT INDEX  
SCORESHEET**

**SCALES**

	<b>Drug use (Poly)</b>	<b>HIV risk</b>	<b>Social</b>	<b>Crime</b>	<b>Health</b>	<b>GHQ</b>
<b>Initial</b>						
<b>F/up 1</b>						
<b>F/Up2</b>						

**DRUG USE SCORES**

	<b>Initial</b>	<b>F/Up 1</b>	<b>F/Up 2</b>
Heroin			
Other opiates			
Alcohol			
Cannabis			
Amphetamines			
Cocaine			
Tranquillizers			
Barbiturates			
Hallucinogens			
Inhalants			
Tobacco			

## Adverse Childhood Events Scale (ACES)

1. Did a parent or other adult in the household often or very often... Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt? No\_\_\_ Yes \_\_\_
2. Did a parent or other adult in the household often or very often... Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured? No\_\_\_ Yes \_\_\_
3. Did an adult or person at least 5 years older than you ever... Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you? No\_\_\_ Yes \_\_\_
4. Did you often or very often feel that ... No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other? No\_\_\_ Yes \_\_\_
5. Did you often or very often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it? No\_\_\_ Yes \_\_\_
6. Was a biological parent ever lost to you through divorce, abandonment, or other reason?  
No\_\_\_ Yes \_\_\_
7. Was your mother or stepmother:  
Often or very often pushed, grabbed, slapped, or had something thrown at her? or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?  
No\_\_\_ Yes \_\_\_
8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs? No\_\_\_ Yes \_\_\_
9. Was a household member depressed or mentally ill, or did a household member attempt suicide? No\_\_\_ Yes \_\_\_
10. Did a household member go to prison? No\_\_\_ Yes \_\_\_

## PCL-5

**Instructions:** Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

## Family Tree Questionnaire

Participant No: \_\_\_\_\_

DATE: |\_\_|\_|\_|\_|

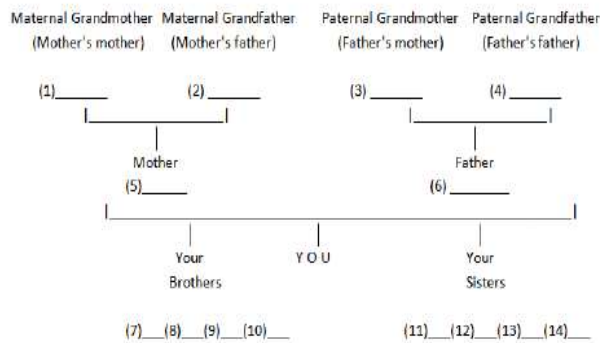
mo dy yr

### FAMILY TREE QUESTIONNAIRE

**INSTRUCTIONS:** For each relative listed below, we want you to categorize their drinking behavior into one of five categories. Only include blood relatives; that is, relatives by birth. Not included would be those adopted, half-siblings, and step-relatives.

#### CODE EACH RELATIVE USING ONE OF THE FOLLOWING 5 CODES:

1. **NEVER DRANK:** A person who (has) **never** consumed alcohol beverages (i.e., a lifelong abstainer; teetotaler).
2. **SOCIAL DRINKER:** A person who drinks moderately and is not known to have a drinking problem.
3. **POSSIBLE PROBLEM DRINKER:** A person who you believe or were told might have (had) a drinking problem, but whom you are not certain actually had a drinking problem.
4. **DEFINITE PROBLEM DRINKER:** Only include here persons who either are known to have received treatment for a drinking problem (including being a regular member of Alcoholics Anonymous), or who are known to have experienced several negative consequences of their drinking.
5. **NO RELATIVE:** Only applicable for brothers and sisters.
6. **DON'T KNOW/DON'T REMEMBER**



Significant others:	
(a) _____	(b) _____
Code: ____	Code: ____
(c) _____	(d) _____
Code: ____	Code: ____

Please indicate whether you had a positive or negative relationship with each of your family members ('+' or '-' mark)

Please indicate whether your parents had a positive or negative relationship ('+' or '-' mark)

Please indicate whether your siblings had a positive or negative relationship with each of your parents ('+' or '-' mark)

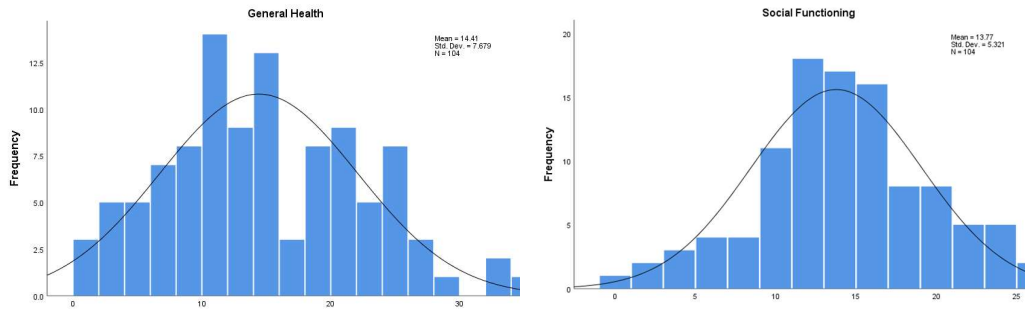
Please indicate whether significant others had a positive or negative relationship with your family ('+' or '-' mark)

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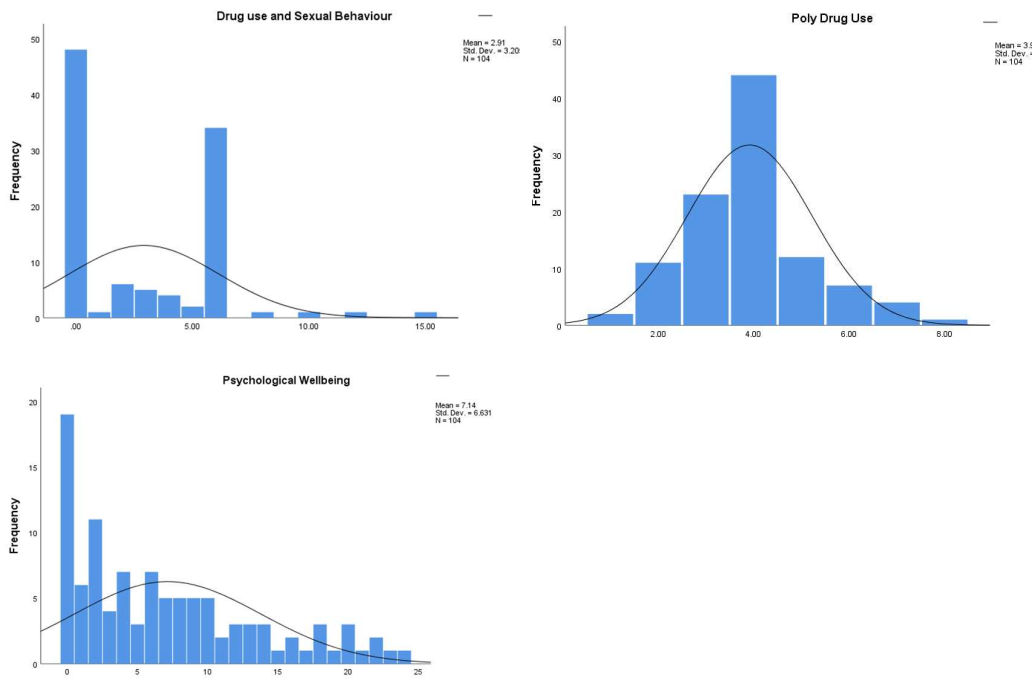
Table to record drinking status of each family member

Maternal Grandmother (Mothers Mother)
Maternal grandfather (Mothers father)
Paternal Grandmother (Fathers Mother)
Paternal grandfather (fathers father)
Mother
Father
Your brothers
Your sisters
You
Significant Other
Overall notes on family drink/drug taking

## Appendix 4: Histograms of normality tests for treatment outcomes



Histograms: General health and Social functioning



Histograms: Drug use and sexual behaviour: Polydrug use: and Psychological wellbeing.

### *Shapiro-Wilk test for normality*

Treatment outcome	Skewness	Kurtosis	df	p
Psychological Wellbeing	.833	-.282	104	.001
Polydrug Use	.534	.774	104	.001
General Health	.344	.366	104	.094
Social Functioning Total	-.104	.127	104	.300
HIV Risk Taking Behaviour	0.850	.611	104	.001



## Appendix 5: General Health Symptoms by category

Symptoms = yes	Female	Male	Total
<b>General Health</b>			
Fatigue	30, 79%	43, 65%	73, 70%
Poor appetite	28, 74%	40, 61%	68, 65%
Weight loss/gain	18, 47%	23, 35%	41, 39%
Trouble sleeping	28, 74%	40, 61%	68, 65%
Fever	13, 34%	29, 44%	42, 40%
Night sweats	25, 66%	37, 56%	62, 60%
Swollen Glands	6, 16%	11, 17%	17, 16%
Jaundice	1, 3%	2, 3%	3, 3%
Bleed easily	15, 40%	22, 33%	37, 36%
Teeth problems	29, 76%	48, 72%	77, 74%
Vison problems	16, 42%	30, 46%	46, 44%
Hearing problems	6, 16%	17, 26%	23, 22%
Cuts needing stitches	1, 3%	2, 3%	3, 3%
<b>Injecting related</b>			
Overdose	0, 0%	1, 2%	1, 1%
Abscesses or Infection	0, 0%	2, 3%	2, 2%
Dirty hit	0, 0%	1, 2%	1, 1%
Scars or Bruises	0, 0%	3, 5%	3, 3%
Difficulty injecting	0, 0%	3, 5%	3, 3%
<b>Symptoms = yes</b>			
<b>Female</b>			
<b>Male</b>			
<b>Total</b>			
<b>Cardio</b>			
Persistent coughing	16, 42%	19, 29%	35, 34%
Coughing up phlegm	18, 47%	39, 59%	57, 55%
Coughing up blood	4, 11%	5, 8%	9, 9%
Wheezing	26, 68%	35, 53%	61, 59%
Sore throat	12, 31%	12, 18%	24, 23%
Shortness of breath	28, 74%	35, 53%	63, 61%
Chest pains	7, 18%	20, 30%	27, 26%
Heart fluttering or racing	20, 53%	29, 44%	49, 47%
Swollen ankles	14, 37%	10, 15%	24, 23%
<b>Genito urinary</b>			
Painful urination	4, 11%	5, 8%	9, 9%
Loss of sex urge	15, 40%	17, 26%	32, 31%
Genital discharge	5, 13%	0, 0%	5, 5%
Genital rash	1, 3%	2, 3%	3, 3%
<b>Symptoms = yes</b>			
<b>Female</b>			
<b>Male</b>			
<b>Total</b>			
<b>Gynae</b>			
Irregular periods	20, 53%	n/a	n/a
Miscarriage	1, 3%	n/a	n/a
<b>Musculo</b>			
Joint pains	25, 66%	26, 39%	51, 49%
Broken bones	3, 8%	7, 11%	10, 10%
Muscle pain	18, 47%	23, 35%	41, 39%

<b>Neurological</b>				
	Headaches	21, 55%	17, 26%	38, 37%
	Blackouts	3, 8%	8, 12%	11, 11%
	Tremors	21, 55%	14, 21%	35, 34%
	Numbness	17, 45%	18, 27%	35, 34%
	Dizziness	17, 45%	19, 29%	36, 35%
	Fits or seizures	3, 8%	7, 11%	10, 10%
	Difficulty walking	8, 21%	17, 26%	25, 24%
	Head injury	2, 5%	6, 9%	8, 8%
	Forgetting things	16, 42%	36, 55%	52, 50%
<b>Gastro</b>				
	Nausea	13, 34%	18, 27%	31, 30%
	Vomiting	9, 24%	9, 14%	18, 17%
	Stomach pains	13, 34%	23, 35%	36, 35%
	Constipation	23, 61%	31, 47%	54, 53%
	Diarrhoea	8, 21%	9, 14%	17, 16%

## Appendix 6: Regression residual scatter plots, statistics and casewise diagnostics

### Assumptions for general health

1. For the assumption of no multicollinearity, the values for tolerance were above the critical value of  $\geq .2$  (min= .567), and the variance inflation factor (VIF) values were below the critical value of  $\leq 10$  (max= 1.763), (see table 6.3.1), therefore, collinearity among the predictor variables was not considered as an issue for the model.
2. For two independent variables and a p value of .05, the critical Chi square value is 5.99. Analysis of the Mahalanobis statistic found a maximum value of 8.035 (see table 6.4.4, Appendix 5), scrutiny of the data, case by case data found five cases exceeded the critical value of 5.99, representing 4.8% of cases.
3. The Durbin-Watson statistic for the regression model was 1.880 indicating the independence of residual errors.
4. The assumptions of normality, linearity and homoscedasticity were tested by examination of the scatterplot's diagrams. The figure 6.3.2 (see Appendix 5), found that there was a positive linear relationship between independent and dependent variables within the model as the scatterplot points are closely packed to a linear line in a positive direction. Therefore, confirming the absence of homoscedasticity (Tabachnick & Fidell, 2014).

5. Casewise diagnostics found that four cases exceeded standardised residual outside limits of  $\pm 2$  standard deviations, or 3.8% of the total sample. According the Field (2018), it would be expected to find 5% to have standardised residuals outside these limits, therefore these data are to be expected, furthermore, 98% of cases lie within  $\pm 2.5$  standard deviations (see Table 6.3.3 Appendix 6).

*Table 6.4.3 Casewise diagnostics of standardised residuals for general health*

Case Number	Std. Residual	DV score	Predicted	Residual
1	-2.628	10	24.28	-14.283
74	2.021	22	11.02	10.983
80	2.523	32	18.29	13.711
104	2.498	25	11.42	13.577

Table 6.4.4 Residuals statistics for dependent variable, general health

	Min	Max	Mean	Std. Dev	N
<b>Predicted Value</b>	6.79	26.93	14.28	5.41	104
<b>Std. Predicted Value</b>	-1.385	2.325	-.005	.996	104
<b>Standard Error of Predicted</b>	.536	1.617	.893	.240	104
<b>Adjusted Predicted Value</b>	6.85	27.25	14.29	5.423	104
<b>Residual</b>	-14.283	13.711	.131	5.518	104
<b>Std. Residual</b>	-2.628	2.523	.024	1.015	104
<b>Stud. Residual</b>	-2.687	2.563	.023	1.030	104
<b>Deleted Residual</b>	-14.928	14.153	.125	5.681	104
<b>Stud. Deleted Residual</b>	-2.775	2.639	.025	1.039	104
<b>Mahal. Distance</b>	.001	8.035	1.964	1.699	104
<b>Cook's Distance</b>	.000	.109	.011	.018	104
<b>Centered Leverage Value</b>	.000	.079	.019	.017	104

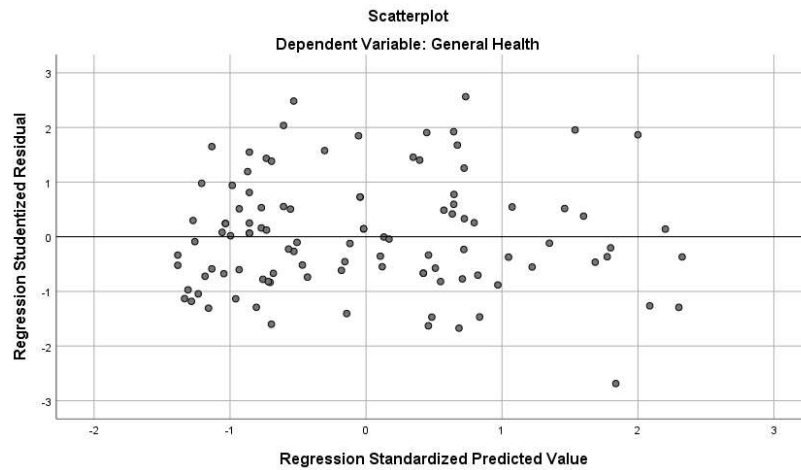


Figure 6.4.1: Scatterplot of standardised residual for general health

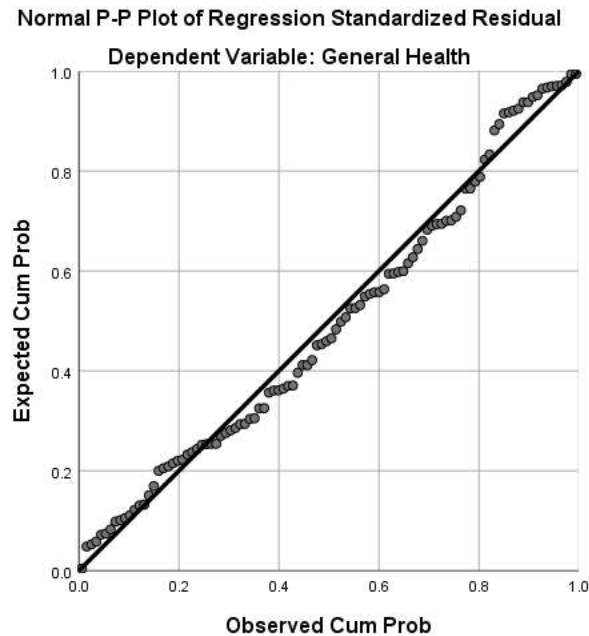


Figure 6.4.2: Regression plot for general health

#### Assumptions for social functioning

1. The values for tolerance and VIP were within the critical values of  $\geq .2$  (min= .952) and  $\leq 10$  (max= 1.050) respectively (see table 6.4.1), therefore collinearity among the predictor variables is not an issue for the model.
2. Analysis of the Mahalanobis statistic found a maximum value of 9.844 (see table 6.5.4; Appendix 5), which exceeded the critical Chi square value of 5.99 for two independent variables. Scrutiny of the data found five cases exceeded the critical value representing 4.8% of all cases.
3. The Durbin-Watson statistic for the regression model was 1.834 indicating the independence of residual errors.
4. The figure 6.4.2 (see Appendix 6), found that there was a positive linear relationship between independent and dependent variables within the model as the scatterplot points are closely packed to a linear line in a positive direction.
5. Casewise diagnostics found that five cases exceeded standardised residual outside limits of  $\pm 2$  standard deviations, or 4.8% of the total sample and within

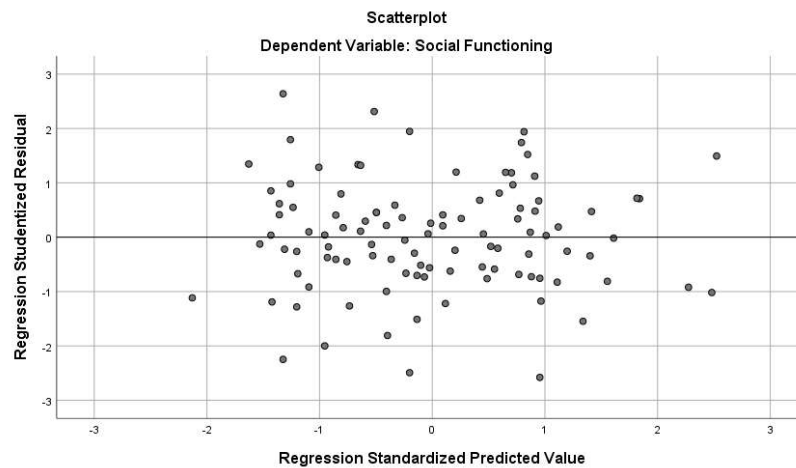
a 5% limit, furthermore, 98% of cases lie within  $\pm 2.5$  standard deviations (see table 6.4.3 Appendix 6).

*Table 6.5.3 Casewise diagnostics of standardised residuals for social functioning*

Case Number	Std. Residual	DV total score	Predicted Value	Residual
19	2.600	24	11.04	12.959
34	2.266	24	12.71	11.294
36	-2.479	1	13.35	-12.353
89	-2.215	0	11.04	-11.041
95	-2.555	3	15.73	-12.733

*Table 6.5.4: Residuals Statistics for dependent variable social functioning*

	Min	Max	Mean	Std. Dev	N
<b>Predicted Value</b>	9.38	18.96	13.74	2.064	104
<b>Std. Predicted Value</b>	-2.130	2.524	-.012	1.002	104
<b>Standard Error of Predicted Value</b>	.493	1.624	.814	.248	104
<b>Adjusted Predicted Value</b>	9.75	19.27	13.74	2.064	104
<b>Residual</b>	-12.733	12.959	.027	4.918	104
<b>Std. Residual</b>	-2.555	2.600	.005	.987	104
<b>Stud. Residual</b>	-2.579	2.638	.006	1.001	104
<b>Deleted Residual</b>	-12.978	13.343	.032	5.065	104
<b>Stud. Deleted Residual</b>	-2.656	2.722	.006	1.013	104
<b>Mahal. Distance</b>	.010	9.844	1.982	1.953	104
<b>Cook's Distance</b>	.000	.088	.010	.016	104
<b>Centered Leverage Value</b>	.000	.097	.019	.019	104



*Figure 6.5.1: Scatterplots for Studentised residual.*

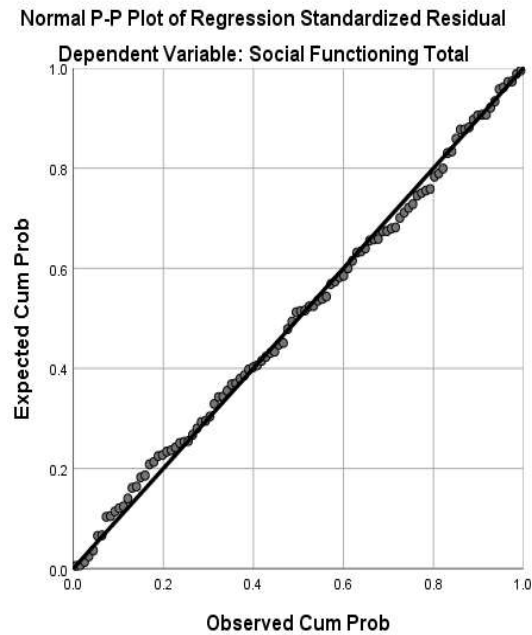


Figure 6.5.2: Scatterplot of standardised residual for dependent

#### Assumptions of the polydrug use

1. The values for tolerance and VIP were within the critical values of  $\geq .2$  (min= .930) and  $\leq 10$  (max= -1.075) respectively (see table 6.5.1), therefore collinearity among the predictor variables is not an issue for the model.
2. Analysis of the Mahalanobis statistic found a maximum value of 7.568 (see table 6.5.4; Appendix 6), which exceeded the critical Chi square value of 5.99 for two independent variables. Scrutiny of the data found four cases exceeded the critical value representing 3.8% of all cases.
3. The Durbin-Watson statistic for the regression model was 1.696 indicating the independence of residual errors.
4. The figure 6.6.2 (see Appendix 6), showed that there was a positive linear relationship between independent and dependent variables within the model as the scatterplot points congregate around a linear line in a positive direction.
5. Casewise diagnostics found that seven cases exceeded standardised outside limits of  $\pm 2$  standard deviations, or 6.7% of the total sample, however 99% of cases lie within  $\pm 2.5$  standard deviations. According to Field (2018) these

residuals are above 5% however they are within an acceptable limit (see table 6.5.3 Appendix 6)

*Table 6.6.3 Casewise diagnostics of standardised residuals for polydrug use*

Case Number	Std. Residual	DV Score	Predicted Value	Residual
1	2.116	7.00	4.3914	2.60862
14	2.697	7.00	3.6752	3.32480
34	-2.108	2.00	4.5983	-2.59834
67	-2.164	1.00	3.6678	-2.66780
73	2.298	8.00	5.1674	2.83255
81	2.304	7.00	4.1593	2.84068
96	2.283	7.00	4.1859	2.81408

*Table 6.6.4: Residuals statistics for dependent variable, polydrug use*

	Min	Max	Mean	Std. Dev	N
<b>Predicted Value</b>	2.8577	5.1674	3.9310	.44709	104
<b>Std. Predicted Value</b>	-2.392	2.751	-.002	.995	104
<b>Standard Error of Predicted Value</b>	.122	.357	.201	.061	104
<b>Adjusted Predicted Value</b>	2.8374	5.0216	3.9304	.44948	104
<b>Residual</b>	-2.66780	3.32480	-.01756	1.22771	104
<b>Std. Residual</b>	-2.164	2.697	-.014	.996	104
<b>Stud. Residual</b>	-2.180	2.728	-.014	1.012	104
<b>Deleted Residual</b>	-2.72412	3.40040	-.01691	1.26831	104
<b>Stud. Deleted Residual</b>	-2.223	2.821	-.012	1.024	104
<b>Mahal. Distance</b>	.015	7.568	1.964	1.840	104
<b>Cook's Distance</b>	.000	.176	.011	.023	104
<b>Centered Leverage Value</b>	.000	.074	.019	.018	104

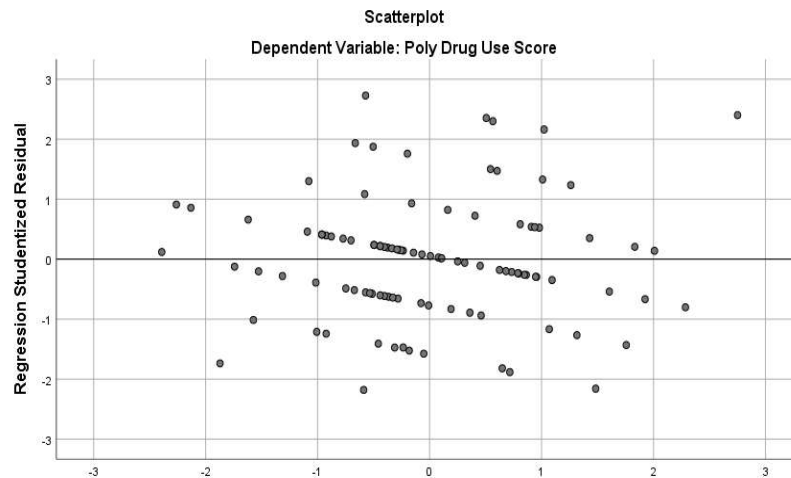




Figure 6.6.1: Scatterplots for studentised residual.

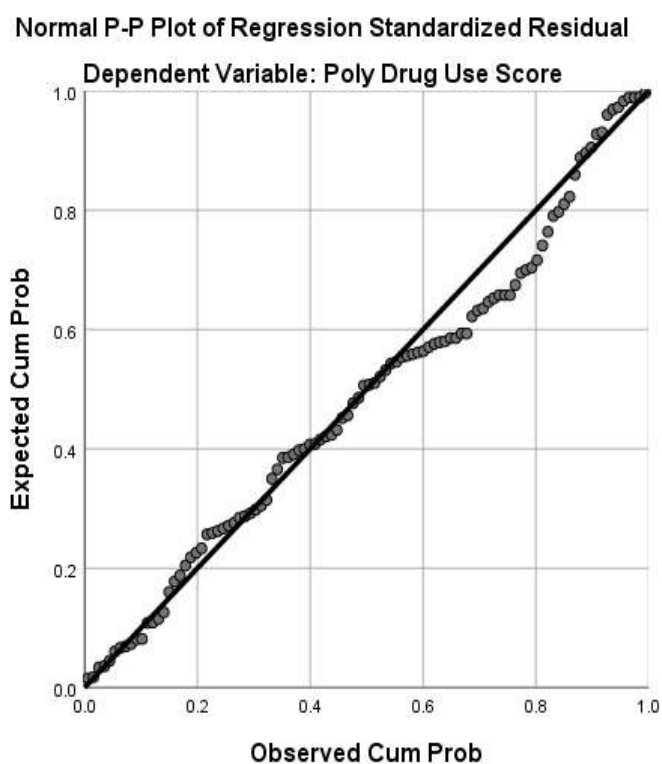


Figure 6.6.2: Scatterplot of standardised residual for Polydrug use

#### Assumptions for psychological wellbeing

1. The values for tolerance and VIP were within the critical values of  $\geq 0.2$  (min= .391) and  $\leq 10$  (max= -2.560) respectively (see table 6.6.1), therefore collinearity is not considered an issue for the model.
2. Analysis of the Mahalanobis statistic found a maximum value of 12.182 (see table 6.6.4 in Appendix 6), which exceeded the critical Chi square value of 7.81 for three independent variables. Scrutiny of the data identified three cases exceeded the critical values representing 2.9% of all cases.
3. The Durbin-Watson statistic for the regression model was 1.910 indicating the independence of residual errors.
4. The figure 6.6.2 (see Appendix 6), found that there was a positive linear relationship between independent and dependent variables within the model

as the scatterplot points follow along a linear line in a positive direction, indicating the absence of homoscedasticity.

5. Casewise diagnostics found that five cases exceeded standardised outside limits of  $\pm 2$ , or 4.8% of the total sample, therefore these data are considered acceptable. Furthermore, 98% of all cases lie within  $\pm 2.5$  standard deviations (see table 6.6.3 in Appendix 6).

*Table 6.7.3: Casewise diagnostics of standardised residuals for psychological wellbeing*

Case Number	Std. Residual	DV totals	Predicted Value	Residual
1	2.224	19	8.93	10.065
42	2.682	20	7.86	12.136
59	2.316	18	7.52	10.481
91	2.071	23	13.87	9.128
100	-2.623	0	11.87	-11.871

*Table 6.7.4: Residual statistics for psychological wellbeing*

	Min	Max	Mean	Std. Dev	N
<b>Predicted Value</b>	-1.96	19.09	7.17	4.942	103
<b>Std. Predicted Value</b>	-1.849	2.411	.000	1.000	103
<b>Standard Error of Predicted Value</b>	.463	1.626	.864	.221	103
<b>Adjusted Predicted Value</b>	-2.07	19.56	7.16	4.934	103
<b>Residual</b>	-11.871	12.136	.000	4.458	103
<b>Std. Residual</b>	-2.623	2.682	.000	.985	103
<b>Stud. Residual</b>	-2.652	2.717	.002	1.005	103
<b>Deleted Residual</b>	-12.131	12.454	.017	4.638	103
<b>Stud. Deleted Residual</b>	-2.737	2.810	.004	1.016	103
<b>Mahal. Distance</b>	.077	12.182	2.971	2.100	103
<b>Cook's Distance</b>	.000	.119	.010	.017	103
<b>Centered Leverage Value</b>	.001	.119	.029	.021	103

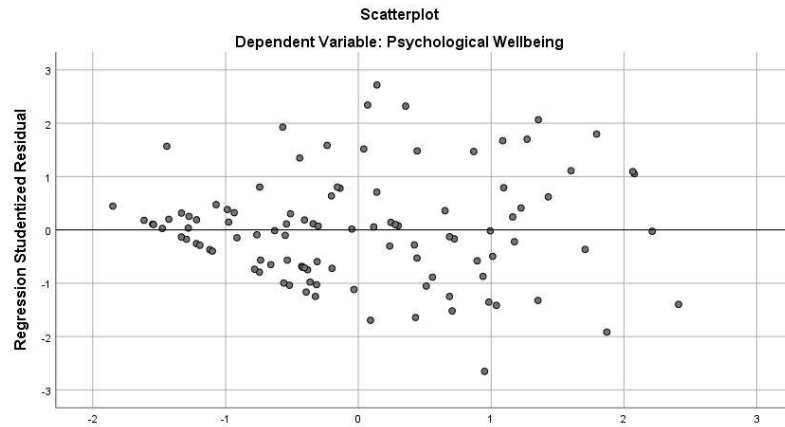


Figure 6.7.1: Residuals scatterplots for standardised residual value.

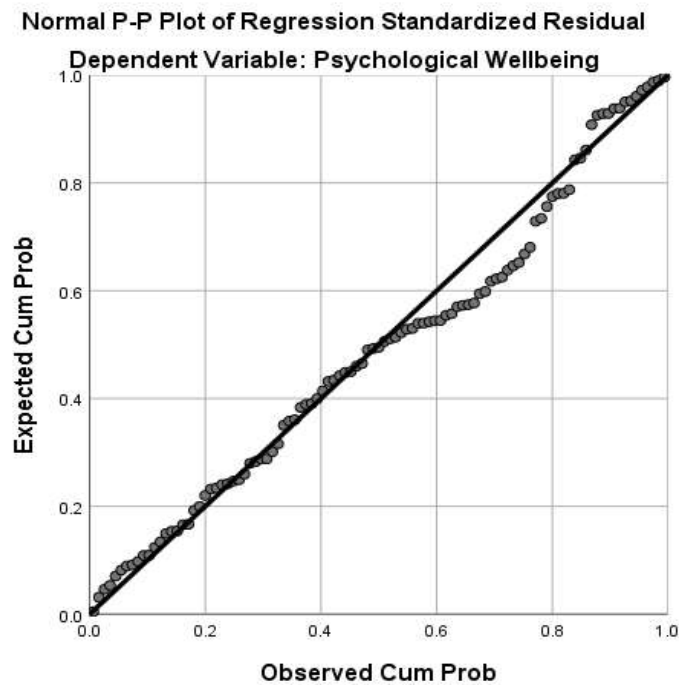


Figure 6.7.2: Scatterplot of standardised residual for Psychological wellbeing

**Assumptions for PTSD.**

1. For the assumption of no multicollinearity, the values for tolerance were above the critical value of  $\geq .2$  (min = .641), and the variance inflation factor (VIF) values were below the critical value of  $\leq 10$  (max= 1.422), (see table 6.9.1), therefore collinearity among the predictor variables were not considered an issue for the model.

2. For four independent variables and a p value of .05, the critical Chi square value is 9.35. Analysis of the Mahalanobis statistic found the maximum value of 8.494 was within the critical value of 9.35.
3. The Durbin-Watson statistic for the regression model was 1.829 indicating the independence of residual errors.
4. The assumptions of normality, linearity and homoscedasticity were tested by examination of the scatterplot's diagrams. The figure 9.3.2 (see Appendix 6), showed that there was a positive linear relationship between independent and dependent variables within the model as the scatterplot points are aligned in a linear positive direction.
5. Casewise diagnostics found that two cases exceeded standardised residual outside limits of  $\pm 2$  standard deviations, or 1.9% of the total sample (see table 6.9.3 in Appendix 6).

*Table 6.9.3: Casewise diagnostics of standardised residuals for PTSD*

<b>Case Number</b>	<b>Std. Residual</b>	<b>Trauma score</b>	<b>Predicted Value</b>	<b>Residual</b>
69	2.749	70	31.43	38.570
76	3.230	70	24.67	45.321

*Table 6.9.4 Residuals Statistics for dependent variable PTSD*

	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Dev</b>	<b>N</b>
<b>Predicted Value</b>	10.94	53.55	30.02	15.155	103
<b>Std. Predicted Value</b>	-1.249	1.562	.010	1.000	103
<b>Standard Error of Predicted Value</b>	2.362	4.300	3.049	.618	103
<b>Adjusted Predicted Value</b>	10.53	54.55	29.99	15.183	103
<b>Residual</b>	-27.893	45.321	.086	13.711	103
<b>Std. Residual</b>	-1.988	3.230	.006	.977	103
<b>Stud. Residual</b>	-2.048	3.368	.007	1.005	103
<b>Deleted Residual</b>	-29.615	49.290	.118	14.512	103
<b>Stud. Deleted Residual</b>	-2.083	3.566	.010	1.020	103
<b>Mahal. Distance</b>	1.871	8.494	3.970	2.027	103
<b>Cook's Distance</b>	.000	.199	.012	.025	103
<b>Centered Leverage Value</b>	.019	.084	.039	.020	103

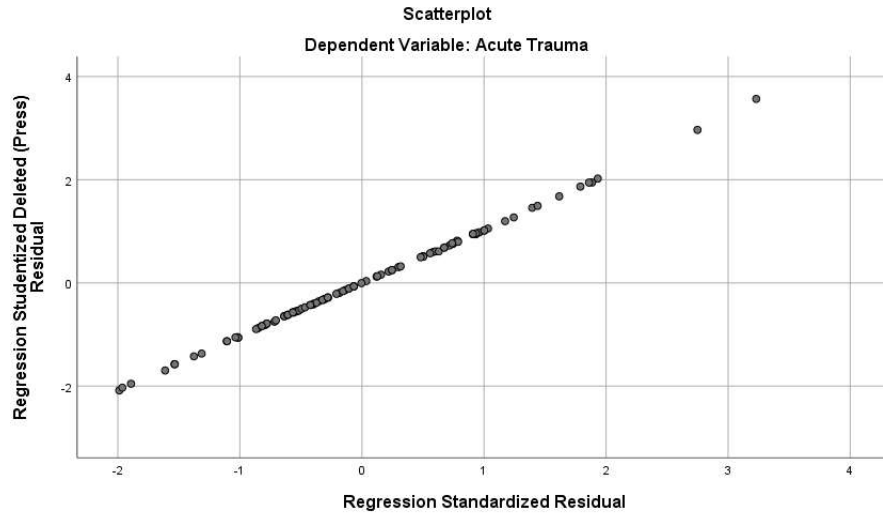


Figure 6.9.1: Residuals scatterplots for studentised deleted residual.

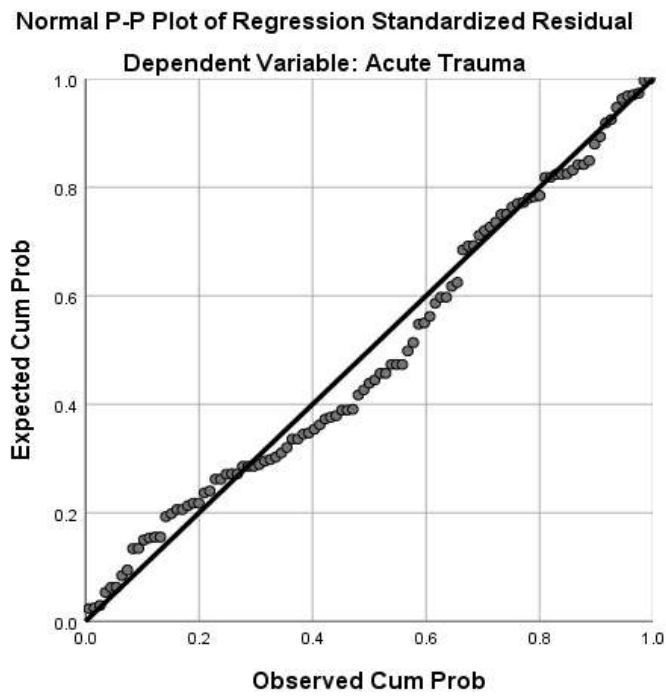


Figure 6.9.2: Scatterplot of standardised residual for PTSD

## Appendix 7: Qualitative analysis participant selection table

ID	Gender	ACE 4	PTSD	ACEs	Comments	Interview Time (mins)
82	Female	1	79	9	Selected	44
93	Male	1	70	9	Selected	32
19	Female	1	62	9	Selected	68
118	Male	1	57	9	Selected	68
79	Female	1	49	9	Selected	27
92	Female	1	47	9	Selected	55
77	Male	1	45	9	Selected	44
78	Male	1	39	9	Interviewed in prison Not audio	35
31	Male	1	38	9	Selected	92
123	Female	1	32	9	Below Cut-off of $\geq 33$	28
113	Female	1	26	9	Below Cut-off of $\geq 33$	55
85	Female	1	71	8		55
125	Female	1	63	8		82
126	Male	1	58	8		113
119	Male	1	57	8		79
14	Female	1	56	8		34
44	Female	1	46	8		68
67	Male	1	34	8		123
61	Female	1	27	8	Below Cut-off of $\geq 33$	57
104	Male	1	43	7		78
5	Male	1	64	6		86
87	Male	1	54	6		138
83	Male	1	53	6		50
46	Female	1	49	6		36
24	Male	1	22	6	Below Cut-off of $\geq 33$	36
47	Male	1	33	5		38
88	Male	1	55	4		98
48	Female	1	44	4		104
96	Female	1	43	4		38
57	Female	1	33	4		58
29	Male	1	31	4	Below Cut-off of $\geq 33$	62
117	Female	1	31	4	Below Cut-off of $\geq 33$	90
60	Female	1	29	4	Below Cut-off of $\geq 33$	23
18	Male	1	28	4	Below Cut-off of $\geq 33$	39
55	Female	1	49	3		100
50	Female	1	23	3	Below Cut-off of $\geq 33$	49
76	Female	1	70	2		72
105	Male	0	60	8	Refused to have interview audio	112
65	Male	0	51	7	Selected	38
7	Male	0	48	7	Selected	62
6	Male	0	44	7	Only part recorded	35
69	Female	0	70	6	Selected	49
11	Male	0	42	6	Selected	41
25	Male	0	32	6	Below Cut-off of $\geq 33$	48
101	Male	0	13	6	Below Cut-off of $\geq 33$	39
99	Female	0	32	5	Below Cut-off of $\geq 33$	95
124	Male	0	30	5	Below Cut-off of $\geq 33$	35
22	Male	0	27	5	Below Cut-off of $\geq 33$	31
32	Male	0	27	5	Below Cut-off of $\geq 33$	55
106	Male	0	21	5	Below Cut-off of $\geq 33$	47
41	Male	0	17	5	Below Cut-off of $\geq 33$	47
23	Female	0	14	5	Below Cut-off of $\geq 33$	27
89	Male	0	14	5	Below Cut-off of $\geq 33$	47
75	Female	0	58	4	Selected	33
90	Female	0	57	4	Selected	42

<b>ID</b>	<b>Gender</b>	<b>ACE 4</b>	<b>PTSD</b>	<b>ACEs</b>	<b>Comments</b>	<b>Interview Time (mins)</b>
103	Male	0	56	4	Selected	49
81	Female	0	44	4	Selected	82
68	Male	0	11	4	Below Cut-off of $\geq 33$	38
2	Male	0	3	4	Below Cut-off of $\geq 33$	15
129	Male	0	1	4	Below Cut-off of $\geq 33$	41
30	Male	0	24	3	Below Cut-off of $\geq 33$	37
100	Male	0	21	3	Below Cut-off of $\geq 33$	98
39	Male	0	14	3	Below Cut-off of $\geq 33$	79
73	Male	0	14	3	Below Cut-off of $\geq 33$	57
21	Male	0	10	3	Below Cut-off of $\geq 33$	44
115	Male	0	41	2		109
51	Female	0	37	2		47
17	Male	0	36	2		69
42	Male	0	25	2	Below Cut-off of $\geq 33$	44
34	Male	0	24	2	Below Cut-off of $\geq 33$	46
114	Female	0	21	2	Below Cut-off of $\geq 33$	31
13	Female	0	19	2	Below Cut-off of $\geq 33$	34
54	Male	0	18	2	Below Cut-off of $\geq 33$	105
108	Female	0	11	2	Below Cut-off of $\geq 33$	83
122	Male	0	7	2	Below Cut-off of $\geq 33$	61
1	Male	0	5	2	Below Cut-off of $\geq 33$	34
72	Male	0	0	2	Below Cut-off of $\geq 33$	21
131	Male	0	0	2	Below Cut-off of $\geq 33$	26
59	Female	0	42	1		21
127	Male	0	25	1	Below Cut-off of $\geq 33$	87
37	Male	0	24	1	Below Cut-off of $\geq 33$	28
40	Male	0	23	1	Below Cut-off of $\geq 33$	25
63	Male	0	22	1	Below Cut-off of $\geq 33$	32
27	Male	0	21	1	Below Cut-off of $\geq 33$	22
64	Male	0	21	1	Below Cut-off of $\geq 33$	33
52	Male	0	15	1	Below Cut-off of $\geq 33$	90
20	Male	0	10	1	Below Cut-off of $\geq 33$	42
91	Female	0	7	1	Below Cut-off of $\geq 33$	62
121	Male	0	5	1	Below Cut-off of $\geq 33$	33
130	Male	0	5	1	Below Cut-off of $\geq 33$	43
49	Male	0	3	1	Below Cut-off of $\geq 33$	43
70	Female	0	14	0	Below Cut-off of $\geq 33$	47
111	Female	0	10	0	Below Cut-off of $\geq 33$	53
102	Female	0	9	0	Below Cut-off of $\geq 33$	21
94	Male	0	8	0	Below Cut-off of $\geq 33$	26
56	Female	0	7	0	Below Cut-off of $\geq 33$	36
58	Male	0	6	0	Below Cut-off of $\geq 33$	57
66	Male	0	4	0	Below Cut-off of $\geq 33$	24
16	Male	0	3	0	Below Cut-off of $\geq 33$	21
97	Female	0	3	0	Below Cut-off of $\geq 33$	28
3	Male	0	2	0	Below Cut-off of $\geq 33$	34
4	Male	0	2	0	Below Cut-off of $\geq 33$	62
95	Male	0	0	0	Below Cut-off of $\geq 33$	30
38	Female		20		Refused to answer the ACE	45

## Appendix 8: Thematic analysis initial coding

