بسم الله الرحمن الرحيم

**DUBAI MEDICAL COLLEGE**

# The prisoners of drug use related crimes in UAE:

# Demographic characteristics and the need for new management strategies.


**Student name:**

Aisha Buti Al-Madhloum

**Supervised by:**

Prof. Hafez Ahmed

Dr. Majed Agour

Dr. Rania Hamed Shalaby


Word count: 14,976

**MSc Addiction Science**

**Submission Date: 30/11/2021**

**Acknowledgement**

The completion and perfection of this study would not have been possible without the assistance and the partaking of the persons whose names might not be mentioned by name, but always by heart. Their emotional support and patience with my mistakes will never be forgotten as their continuous pumps of motivation.

My mother, my father and my beloved husband, I thank you for being there 24 hours a day to remind me of my strength and being the strongest part of myself.

To all my sisters, my beautiful children, and my dearest friends. Thank you for holding my head up for me when I was down.

And last but not least, the reason I am enriched with all this knowledge, my silent saviours, my endless source of wisdom, my respected Professors. I would like to express my gratitude to my primary supervisor, prof. Hafez Ahmed, who guided me throughout this project and helped me finalize this thesis as the best version of it. I would also like to thank dr. Rania for hear great effort and support during the journey. Also, I wish to show my appreciation to dr. Maged for his guidance and support.

I thank you.

## Abstract

**Introduction:** Substance use disorder (SUD) is an important public health problem that needs prevention and proper management as it is related to committing crimes and imprisonment. In order to cope with this problem, it is important to analyse and identify the risk factors and the biopsychosocial problems that lead to substance use disorder related crimes.

**Aim**: This study aims to explore the demographic characteristics of substance use disorder inmates, incarcerated in the Punishment and Correctional Institution Dept. (PCID) in Sharjah – UAE, and to explore the factors that lead to substance use disorder among this population. The study also targets to investigate the offenders' experiences of imprisonment in order to inform the need of prison-based management strategies to reduce the possibility of recidivism.

**Method**: In this study, a cross-sectional descriptive design is applied, in the form of a structured questionnaire interview. The study residents are 104 prisoners under custodial sentences, who are incarcerated due to addiction related crimes, in the PCID in Sharjah-UAE. The prisoners, who willingly agreed to take part in the study and met the inclusion criteria were asked to complete a questionnaire, and asked to join in the structured interview. Their experiences of imprisonment and the need of treatment while they are fulfilling their penalty in the prison were explored. The collected data included reasons for beginning substance use, the first substance of use, and the factors that led them into substance abuse. Both quantitative and qualitative data were collected, according to the question type.

**Results**: The study data was collected from 104 subjects, (89 males -15 females) (response rate = 66%), aged between 18 to 50 years with a mean of ± SD (30 ±7.1) years, predominantly male (n = 89, =85.6%) and mostly from the UAE (n = 64, =61.5%). More than half of the population were single (n = 57, =54.8%), unemployed (n = 64, =61.5%), and had only completed secondary education (n = 44, =42.3%). The youngest age of first use of drug was 11 years with a mean of ± SD (20.3 ±6.5) years. The three major patterns of substance use disorder by the participants included polysubstance (n = 61,= 58.7%), amphetamine/ methamphetamine (n = 15,=14.4%) and THC (n = 15, =14.4%). The major initial substances abused were, opioids" including tramadol" (n = 32, =30.8%), THC (n = 28, =26.9%) and prescribed medication (n = 25, =24.0%). The main primary source of drug use was friends (n = 52, 50.0%) followed by parents and relatives together (n = 20, =19.2%) and schoolmates (n

= 10, =9.6%). The most important familial risk factors that cause individuals to misuse drugs were found to be, parental divorce and neglect (n = 58, = 55.8%), with a minimal reference to death of a parent (n = 5, = 4.8%) or addiction among family members (n = 4, = 3.8%). Other reasons for drug use include a lack of knowledge regarding the dangers of drugs (n = 26 = 25.0%), curiosity (n = 19, = 18.3%) and psychological problems (n = 3, = 2.9%). The majority of participants stated that, imprisonment is not effective in reducing SUD and the majority (n =67, =73%) had returned to prison for the same crime. The vast majority (n =70, =67%) of participants agreed that, isolating them from other crimes prisoners would be an effective management strategy, and stated that treatment in prison would enhance their life performance and reduce recidivism.

**Conclusions**: The study indicates that many risk factors should be taken into consideration to prevent substance use disorder impacting on crime commitment and imprisonment. Risk factors and prisoners' needs should be considered and taken into account when formulating guidance to support the development of appropriate treatment and rehabilitation strategies to be implemented within and outside prison environment.

***Key words:*** substance, drugs, disorder, abuse, relapse, incarceration, prison, imprisonment, demographic, inmates, recidivism, custodial, sentence, treatment, addiction

## Glossary abbreviation

UAE: United Arab Emirates

NIDA: National Institute on Drug Abuse

ASAM: American Society of Addiction Medicine

UNODC: United Nations Office on Drugs and Crime

SUD: Substance use disorder

DSM: Diagnostic and Statistical Manual of Mental Disorders

APA: American Psychiatric Association

ICD: International Classification of Diseases

WHO: World Health Organization

SAMHSA: Substance Abuse and Mental Health Services Administration

MAT: Medication Assisted treatment

PCID: Punishment and Correctional Institution Department

## List of Figures



## List of tables

## Contents

## Introduction:

In human body the brain is the most complex organ, as people need it to drive a car, to breathe, to enjoy a meal, to produce an artistic masterpiece and to practise routine activities (Di Liegro, 2019). The brain regulates the body' fundamental functions, facilitates responses and interpretation of experiences and shapes the thoughts, passions, and actions (Guidali, et al, 2019). Drugs can change and affect major brain areas that are controlling life-sustaining functions and behaviour in compulsive ways that characterize addiction (Marks, 2018).

Addiction is a chronic brain disorder that is described as drug demanding and use, in an impulsive way, with difficulty in stopping and controlling it despite the adverse consequences, (Peele, 2016). For most people, it is voluntary to start consuming drugs, nevertheless, repeated drug use interferes with brain activities leading to brain changes which challenge the addicted person's self- control and result in low resistance to the vicious urges for drug abuse (UNODC, 2020). These changes could be persistent, and drug addiction is a "relapsing" disorder. Thus, even people at recovery from drug use disorder who completed their treatment phase are at increased risk of relapsing and returning to drug use even after periods of abstinence (NIDA 2018).

Richard and Moustafa (2020) stated that, addiction refers to substance use disorder at the most severe end of the scale and is categorised by a person's incapability to control the impulse to use drugs even when there are damaging consequences. These behavioural differences are also accompanied by changes in brain function, particularly in the brain's natural inhibition and reward centres (Hampton. et al, 2019).

Historically and culturally addiction passed through different models. Hypotheses of addictive behaviour and willing for treatment were centralized between two groups of models. Some models showing addiction as a moral failure that judge addicts to be responsible for acquiring addiction. In discrepancy, other models viewed addiction as a specific neurobiological adaption happening in response to chronic drug or alcohol use causing a specific brain condition in which the addicts lose the choice or control to stop (Pickard, 2015). Criminal model existed prior to 1600 AD, where societies defined any addictive behaviour or unconscionable alcohol- drug consumption as a crime against society and a moral failing that deserves a penalty (Heather, 2017). More recently, other models and groups of addiction were described which define the state of dependence as a biopsychosocial condition and choose the proper way of management, (Miller, 2013). In fact, there are

internationally accepted descriptions of disease terms for substance use disorders particularly in ICD-10 and DSM-5, and different models that relate addiction to several causes and provocations. In addition, there are culturally constructed understanding of many terms that can lead to confusion of impulsive use of substances. The Holy Quran banned the consumption of alcohol or any substance that shadows, masks or controls the mind no matter the quantity consumed. Thus, in Islamic countries any use of psychoactive substances is prohibited and incriminated (Dar Al-Ifta'a, 2021).

The frequency of drug and alcohol use is unexpectedly high in the UAE, despite the fact that drug and alcohol use is banned legally and religiously (Alblooshi, 2015). The severity and complexity of world recreational drug problems are expanding. According to the World Drug Report by the UNODC in 2020, around 269 million people used recreational drugs in 2018, some 30 million higher than the figure reported for 2009, with 35 million of those suffering from substance use disorder and need active treatment.

The impact of COVID-19 on recreational drug consumption was analysed by UNODC in 2020 report, and while the results are not yet completely reported, border and other restrictions related to the epidemic have formerly caused shortage of the supply of drugs on the road, and contributed to the added prices and downgraded purity. Nevertheless, drugs consumption is not reduced.

Number of drug users who have contact with the criminal justice system and legal authorities is large (NIDA, 2018). The development of treatment interventions for SUD in criminal justice settings is a simultaneous interest and a challenge in numerous countries (Gallagher, 2015).

Given the limited number of studies on substance use disorder and addiction in the UAE amongst people who commit crimes and get a prison sentence, an important gap in human knowledge has thus been identified, which provides a good rational for conducting the current study. The anticipated results of this study are likely to contribute to the substance use disorder literature in the UAE and give a useful and supporting data for the policy and law makers to produce appropriate legislations and properly allocate resources. The results of the study are likely to help in modernising the existing prevention and treatment programs and agendas presently in use in the UAE, or yield new interventions as might be required.

## 1.1 Study rationale:

The available published research on alcohol and substance use in Arab countries, particularly in relation to crimes and imprisonment, is relatively limited. Due to the strict prison regulations, it is hard to carry out prison-based studies to investigate rates of substance use disorders specifically in prison community and assess the risk factors and motives. This is why most of the current studies rely on clinical settings or treatment centres to evaluate the prevalence, demographics and associated factors. Regardless of the benefits added from such strategies, many drawbacks are clearly visible. The same situation applies to the treatment of substance user under custodial sentence. There is limited available literature relating to substance use disorder under management in prison or in community, in Arab countries generally and in UAE specifically. According, and while considering the rising number of recidivism cases in the prison (UNODC 2019), (DED, 2020), and in the view of the absence of a specialized unit in the organizational structure of the central prison at Sharjah prison, that specializes in treating prisoners of substance use disorder related crimes (Sharjah Police, 2020), it was sensible to conduct this study to provide the needed information and explore the facts and evidence which may help in establishing a specialized unit for the management of addiction in a Punishment and Correctional Institution Dept. in Sharjah in the UAE.

## 1.2 Aims and objectives:

### 1.2.1 Aims:

The study aims to identify the characteristics, social demographics and other factors that characterize substance use disorders among incarcerated individuals in the PCID. in Sharjah – UAE. In addition, the study aims to explore the psycho-social and healthcare needs of management among prison population, who have committed SUD related crimes that might help in preventing relapses, repeating crimes and re-entry into prison.

### 1.2.2 Objectives:

Specifically, the following objectives will be targeted:

1- To describe the demographic characteristics of a population of substance use disorder subjects incarcerated in the PCID in Sharjah – UAE
2- To define the employment and educational status in the defined population.
3- To assess the commonly used substances, the first substance of use and the age of starting addiction.
4- To outline factors that led into the creation of the problem of substance use in their lives.

5- To explore patient experiences of imprisonment from the patient perspective.
6- To assess the needs for treatment and management in the prison community from the patient perspective and as guided by international guidelines.

## 1.3 Hypothesis:

### 1.3.1 Research Hypothesis

(H1): There is an impact of demographics, education, employability, social and family factors on the problem of substance use disorder and related crime commitment and incarceration.

(H2): There is a need for special treatment and rehabilitation of the prison population with crimes related to drug use disorder that might relate to the crime and incarceration.

### 1.3.2 Null hypothesis

(N1): There is no impact of demographics, education, employability, social and family factors on the problem of substance use disorder and related crime commitment and incarceration.

(N2): There is no need for special treatment and rehabilitation of the prison population with crimes related to drug use disorder that might relate to the crime and incarceration.

# Literature review

## 1.4 Introduction

There are a few studies that examine (SUD) problems in the United Arab Emirates. Whilst most of the carried-out studies are useful, they are not recent, and did not assess all important drug use-related aspects. The following literature review highlights the most important background aspects of this study. The initial section critically appraises a group of articles that describe the demographic and other characteristics of substance and alcohol consumers in general, focusing on the social and other factors that contribute to substance use disorder. The following section emphasises the prevalence of SUD in prison community, as well as highlights the drug abuse policies and laws in the UAE, with a comprehensive assessment of SUD management and the need for a prison-based management system while considering both benefits and costs. The purpose of the literature review is to show that this research is not in isolation, but is part of a well-established field of past and on-going research. The aim is to show the related studies that have been done, the current state of knowledge about (SUD), and to clarify the gaps in human knowledge which this study specifically sets out to fill.

## 1.5 Search Strategy

The electronic databases used in this literature review were Academic Search, EMBASE, PubMed, PsycInfo, MEDLINE and ScienceDirect. A further search was conducted utilising the academic search engine Google Scholar.

The inclusion criteria for articles in the literature review were articles published from 2010 to 2021, written in English and addressed topics similar to the research topic. A period of 11 years was selected because it was expected that a smaller period would produce fewer papers. However, only one study which was conducted in the UAE in 1995 was included to explore the phenomena of "*Drugs abuse in the United Arab Emirates"*, in two different centuries. The literature search was limited to published articles appearing in the above search engines. 'Grey literature' containing of unpublished reports and articles available on the internet was avoided due to concerns about accuracy and quality. All results were observed for applicability to the research topic and the irrelevant titles and duplicates were excluded. Then, of the remaining articles abstracts were reviewed and excluded as appropriate.

The Boolean search operators is used to further enhance the identification of relevant studies, which allowed for more focused approach to literature searches (Karimi et al., 2010). The use

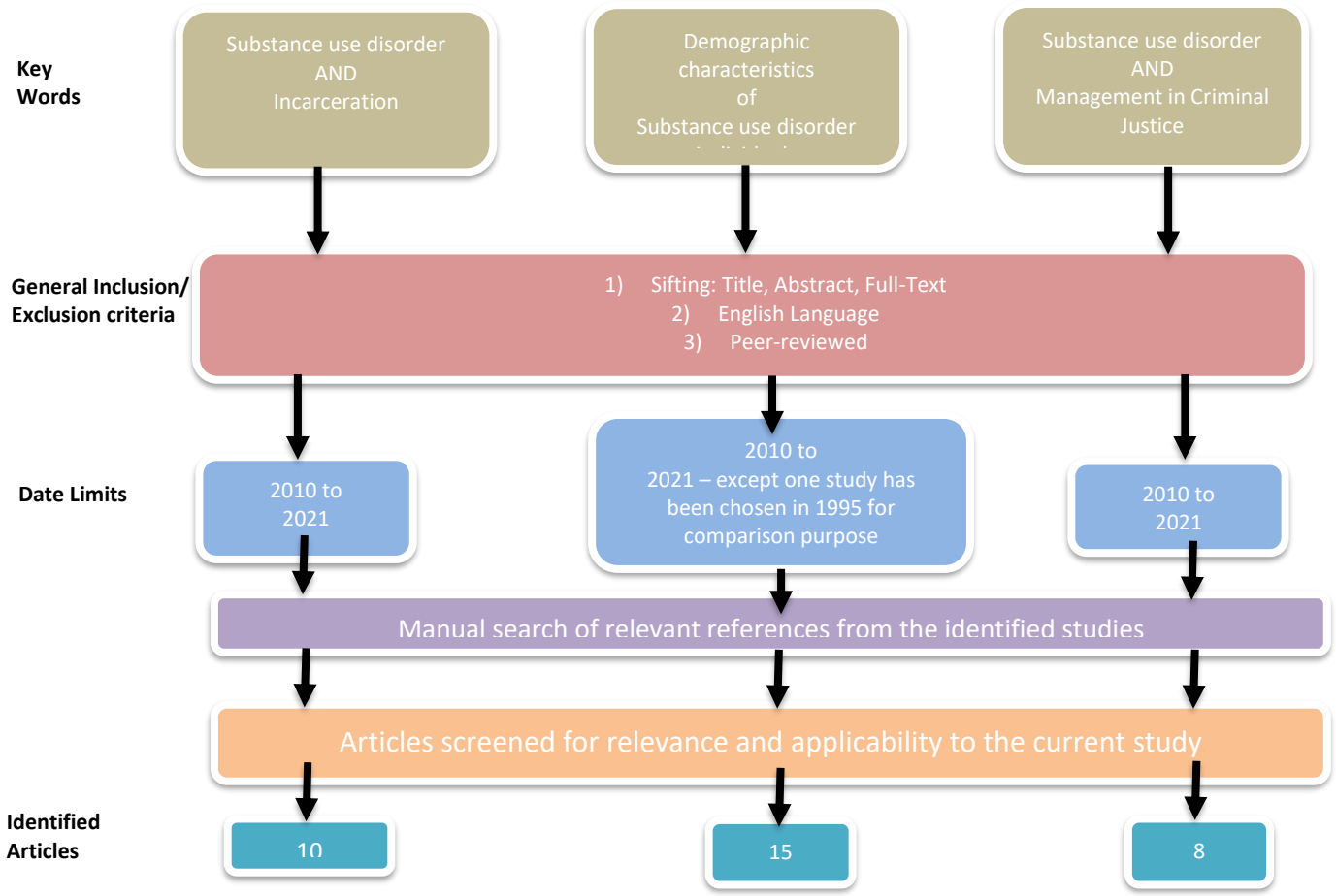
of Boolean operators is recommended due to the ability to use terms such as (and, not, or), but not to restrict elements within a search.

This allowed the initial search to be refined and restrict identified articles by publication year if deemed necessary. To ensure this tool was implemented correctly, McGowan et al. (2016) implemented recommendations as this provided an opportunity to assess if the elements effectively addressed the search terms and correctly combined with the Boolean operators.

The initial search focused on identifying articles about relevant studies focusing on demographic characteristics and factors related to substance use disorder, and the need and efficacy of prison-based treatment according to the prisoners' perceptions and global guidelines. *key words* used were substance, drug, misuse, disorder, abuse, relapse, incarceration, prison, imprisonment, demographic, inmates, recidivism, custodial, sentence, treatment, addiction.

Using the search strategy described above, the number of papers that were found under the identified database using the mentioned key words, after applying the selected period (2010 – 2021), and removal of duplicated articles, based on their title, and basis of their abstract 65. The total number of articles assessed for eligibility was 38. A further 5 articles were excluded due to non-relevance. 33 articles were included in the final literature review.

To ensure that high-quality articles were included in the study, the critical appraisal skills programme tool (CASP) was employed to critique the identified studies. The CASP tool has received extensive praise in the literature due to its ability to highlight the strengths and limitations and if it is deemed to be methodologically sound. Therefore, this justifies its inclusion within the current study.




## 1.6 Demographic characteristics and social factors in substance use disorder

Substance use disorder, an essential public-health issue, is growing day by day in UAE and in the rest of the world (DED, 2020). There are various pressures experienced by drug users which motivate them towards using drugs. Different models of drug use discuss factors that influence drug use. Models of addiction were classified by (Miller, 2013), grounded on beliefs about attributions of charge for acquiring the addictive behavior and the responsibility for fixing the addictive problem. "Moral Model" insists that people who developed addiction are morally weak with poor will power. However, the "Enlightenment Model" proposes that the addict is responsible for evolving the addiction only, but is not responsible for resolving the problem, as healing necessitates a higher power such as a spiritual entity. In response to the moral and enlightenment models the "Medical/ Disease" model views addiction as a chronically relapsing brain disease, with a biomedical/genetic causes, (Douaihy, 2018).

The "Biopsychosocial model" of addiction emphasizes that genetic/biological, psychological, and sociocultural aspects lead to substance use, and all need be taken into attention in both prevention and treatment modalities, (Miller, 2013). Accordingly, several models variously

emphasize environmental, social, cultural, familial and peer pressure in initiating this disorder (Al Ghaferi, 2017).

Studies have revealed that the most significant risk factors for substance use disorder are family problems, substance use disorder in family members (Lipari et al. 2013), and psychological problems (Welty, 2019). Moreover, the influence of peers and friends has been specified as critical, in adolescents learning and adopting substance use disorder (McDonough, et al. 2016).

### 1.6.1 Curiosity

Being able to use substances and being curious, are important risk factor for substance use disorder (Can 2015). Selling medicines that have possible addictive effects in pharmacies without prescriptions, and having access to these substances in an environment such as a laboratory can ease substance use behaviours (Can, 2015; Görgülü, 2019). Literature have acknowledged many factors that raise the risk for substance use such as experimental curiosity, peer and family effect, absence of parental supervision and personality problems (Alhyas, 2015).

### 1.6.2 Educational level

There are numerous negative outcomes associated with using drugs among college students, including poor academic performance and a higher possibility of unemployment after graduation (Welsh, et al. 2019). The likelihood of cannabis use increases during the college years as suggested by Schulenberg (2017). In addition, the study stated that, there is a considerable evidence that heavy cannabis use has short-term impact on memory and learning, and it plays a negative role in the academic and health outcomes. Another study suggested that adolescents who abused substances, typically do more poorly in academic performance (Hedin, 2020). This finding also supports the claim made by Akanbi, et al. (2015) that, drug consumers project significant changes in their behaviour, which include poor performance at school, increased absenteeism, chronic dishonesty, aggression and reduced self-esteem. In addition, Andrade (2014) found, that adolescents attending schools with higher rates of academic failure were more expected to drink and use recreational substances more, and score lower grades.

### 1.6.3 Employability

Being without job is considered a high-risk factor for drug use disorder according to the findings of Afkar, et al. (2017). They suggested that occupational factors influence the

initiation of substance use behaviour as well as relapse of addiction. The results of the study revealed that during the first 1-3 months, 56 cases out of 103 studied cases, returned to addiction after quitting it. They indicated that the main cause of the relapse of addiction is their occupational condition (Afkar, et al. 2017).

### 1.6.4 Family and peer effect

Childhood maltreatment is considered to be a familial risk factor. Divorced parents, parental substance use disorder, death of a parent, parent-child strained relationships are all important risk factors. The Federal CAPTA describes maltreatment as child neglect or abuse, which includes any act or lack of an act by a child's caretaker that ended in physical or emotional harm (Child Welfare Information Gateway, 2013).

Whitesell, et al. (2013) stated that neglect is legally defined as any situation where a child's caregiver does not provide adequate living necessities, such as protection, food, clothing and health care. Sufferers of neglect in their childhood, are at greater risk for substance use (Chen, 2011). The same study stated that, neglect affects the adolescent brain development, as in adolescence phase, children are undergoing developmental variations, and neglect through this period can have long-term negative effects.

In 2017, a study by Shader reported that, comparing adolescents with two parents, youth of single parents are at higher risk for drug abuse. One of the reason identified in the study was that, single parents may have more financial crises and have less time to monitor their children. Peer dependency for information related to appropriate behaviours would be the result of less parental supervision, therefore they are at high risk to substance abuse (Rathinabalan, et al. 2017). Sadness in families and relationship difficulties between children and parents is a risk factor for drug abuse as stated by (Somani 2016), in a study conducted in Pakistan. Another study found that weak relationship between children and parents leads to increased alcohol consumption among youth (Ballester. et al, 2020).

Parent experience of an SUD is another risk factor to substance abuse in families. Among adolescents raised in a family of (SUD) parent, up to 35% of the young drug users in Pakistan reported their parents also use drugs and they find it to be a normal behaviour, which suggested that addiction was due to coping skills and normalization (Somani 2016).

The sum of these conditions make the children of the SUD family's vulnerable to deviant peer and their pressure to abuse drugs in the future (Aliiaskarov et al, 2014). During

adolescence, friendship and peer pressure is very critical in initiating substance use disorder and is considered to be one of the strongest reason behind this problem (Espelage et al, 2014).

The deviant peer relationship, is the casual factor which encourages the use of substance among adolescence, wherein an adolescent associated with a group of people who use substances, or in the form of perceived popularity (Trucco, et al. 2011). Another study by Mackenzie, et al. (2013), has shown that deviant peer relationships are positively associated with adolescent substance use. It is possible that a shared liking to use drugs and alcohol attracts deviant individuals to form peer groups or that, in order to gain social standing or join a group, individuals are motivated to use substances and thus form a deviant peer group (Tucker, et al. 2011). In contrast, parental involvement and respect for parents have been negatively related with substance use (Whitesell, et al. 2013). This is consistent with the said findings of (Tucker, et al. 2011).

### 1.6.5 Gender and marital status

In the context of familial relationships, females are more likely than males in initiating the use of substances due to conflicts within the home and parents' relationship, (Piko, B.F, delete 2012). Many women react to stress (as may occur in a negative family environment) by avoiding handling the situation and increasing attention to emotions, which can reinforce depression and lead to substance use, while males are often more straight confrontational (Kort-Butler 2019). These styles of handling may be a result of socially constructed factors of gender beliefs (Kort-Butler 2019).

However, the National Epidemiologic Survey of Alcohol and Related Conditions–III, estimated substance use disorder prevalence to be generally higher for men compared to women at most ages until the 70s (Vasilenko, et al., 2017). Different studies revealed that males use recreational substances more commonly than females. Somani (2016) suggested that parents provide more supervision and monitoring to the girls than boys. This could be one of the reasons why females consume less substances of abuse due to more closer parental supervision (Hemovich, 2011).
Another study conducted in Nigeria agreed with the fact that, males were indulging in drug abuse more than females (Funmilayo, et al. 2019).

Marriage is a social organisation and its effects on mental health differ across societies. In societies which emphasize marriage, being married is associated with lower depression, lower anxiety, lower suicide risk, and lower SUD. Causation and selection are two models

that explain the relationship between mental health and marital status. Selection model suggests that healthy and socially desired people are more likely to become and stay married. However, in causation models, marriage confers benefits directly to participants (Spiker, 2014).

### 1.6.6 Common drugs of abuse

According to the UNODC report of 2020, cannabis is considered to be the most commonly used substance in 2018, with an estimation of 192 million people using it worldwide. Moreover, the same report stated that, based on the data from 69 countries covering the duration between 2014 and 2018, cannabis has been the main drug that brings people into contact with the criminal justice system, accounting for more than half of drug law offences cases.

By analysing the data in 2020 from Sharjah Police Headquarters, the most usable illicit drug in the UAEis amphetamine, which has the highest number of consumption among illicit drug users, followed by prescribed medications such as Layrica and Tramadol, followed by the opioids (heroin, morphine and Fyntanyl) which have lower demand, and later onset of use age.

### 1.6.7 Age and substance of first use

Commonly, substance use is initiated in early childhood or adolescence, and is generally associated with several psychological, physical, social and emotional problems (Poudel, 2017). Latest estimations point out that the majority (74.0%) of substance users admitted to treatment centres started substance use at the age of 17 or younger, and 10.2% began the use at the age of 11 or younger (Poudel, 2017). Another recent study in U.S. states that, the most commonly used illicit psychoactive drug by U.S. adolescents is cannabis, and is also the main drug for which U.S. youth present for substance use treatment (Vasilenko, et al. 2021). A study was conducted in London reveals that, the most abused substances among adolescence is alcohol followed by cannabis (Penney. J, et al., 2016). Further study by NIDA (2019) showed an increase in marijuana use among adolescence in the past five years, including vaping with marijuana.

1.6.7.1 The effect of COVID-19 Pandemic on teens' drugs consumption

In the view of the COVID-19 pandemic, last year, dramatic changes were brought to adolescents lives as many teenagers stayed at home with parents and other family members. Moreover, these were the largest year-to-year reductions in supposed availability of marijuana

and alcohol ever documented since the survey began in 1975 (Miech, et al. 2021). However, despite the anticipated drop in availability of marijuana and alcohol, usage rates remained high for these substances and did not change significantly.

### 1.6.8 Psychological problems

Although numerous risk factors that encourage adolescent to use drugs and dependence, there are some personal factors that can lead to the risk of developing substance use disorder. Reports suggested that, depression is the most commonly encountered risk factor for SUD (Edition, 2013). Similarly, adolescents who are diagnosed with post-traumatic stress disorder or mental illness are at greater risk for SUD (Edition, 2013).

Depression is characterized by feelings of pain, sadness, gloom, or anger. When the person's depressive mood disturbs their daily life, this indicates clinical depression in the individual as defined by PubMed Health (2019). Genetics and stressors such as parental divorce, parental SUD, depression of a family member, or feelings of inadequacy are indicators of depression as suggested by Hoven, (2018). Stressors can lead to feelings of sadness, which some adolescents have reported it to be a motivator for them in deciding to begin substance use. This practice of self-medication (substance use) is familiar among adolescents who may not be clinically diagnosed with depression, yet still suffer from some form of depressed mood (Hoven, 2018).

Among adolescents, comorbidity of depression and substance use disorders are common. Hoven (2018) has reported that these outcomes are linked with each other. An indication suggested that, after the onset of substance use, depressed adolescents may be at higher risk for developing substance use disorder at an earlier age (Edition, 2013). When comparing genders and probability of developing SUD, depressed boys are twelve times more expected to become dependent on recreational substances compared to boys not suffering from depression; and depressed girls, are four times as likely to develop substance use disorder, compared to girls who do not suffer from depression (Clark, 2011).

Several studies have revealed that, brain reward system and the amount of released dopamine are responsible of depression (Ng, T.H., et al. 2019). Lower dopamine production in the brain accompany depression, which may motivate a person to search for other sources for a dopamine fix (Berridge 2015). Substance use is often associated with rises in brain dopamine (Pastor 2017). Some types of substance use decrease the natural production of dopamine, resulting in depression (Pastor, 2017). It is also possible that depression causes deficiency in

dopamine, which can be alleviated by using recreational substances (Berridge, 2015). Both processes that lead to dopamine reduction in the brain are theoretically acceptable, however, depression begins before the onset of substance use, rather than substance use being a precursor to depression as the majority of studies have revealed (Volkow, 2015). This indicated the primary shortage of dopamine may go before substance use as this sequence claims. This is more in line with the idea that feelings of sadness and pain experienced during depression may lead adolescents to seek relief in the form of substance use (UNODC, 2015).

### 1.7 Management of substance use disorder in prison-based community

Substance use disorder exists in Arab countries including UAE (Sweileh, 2014). However, reports showed lower prevalence of substance use disorder and higher abstinence rates when comparing the Middle East region with the West and some countries in the East (United Nations Office on Drugs and Crime, 2018). This results thought to be due to the Islamic culture and regulations that are followed by those countries about the fact that the consumption of alcohol and illicit drugs is forbidden and consider a crime (WHO, 2014).

The UAE is a Muslim country and the use of alcohol and illicit drugs are strictly forbidden and criminalized according to the drug law and legislation in the UAE, which states: "possesses with intent to use, or personally uses or abuse, in other than authorized cases, any of the narcotic substances or substances stipulated in Schedules 1,2,4,5 shall be punished by imprisonment for a period of no less than two years. And no less than 6 months not exceeding two years for substances stipulated in Schedules 3,6,7,8" (drug law number 40, UAE, 2016) (drug law number 39, UAE, 2016).

According to the social workers reports, in the Punishment and Correctional Institution Dept. in Sharjah (2021), about half of state inmates were under the influence of drugs or alcohol or both when they committed their crime, no matter what it was. Relatively, the effect of substance intoxication including cognitive-perceptual distortion, disinhibition, bad judgment, attention deficit and neurochemical changes, cause criminal behaviour, especially violent and impulsive behaviour (Florek, 2021). Intoxication for prolonged period of time may also lead to aggression and crime due to factors such as sleep deprivation, nutritional deficits, withdrawal and impairment of neuropsychological functioning (Sher, 2016). Crimes are more likely to be committed by substance users than nonusers, and heavier alcohol and drug use reported highly by criminal offenders than non-offenders (Bennett, et al. 2008).

SUD can contribute to crime either because of the psychopharmacological properties of substances which might cause aggression, irritability, excitability, or paranoia associated with the physiological effect of drugs, the economic motivation to get drugs, or systemic crime related with the illegal drug market (Miller, 2013). A study explored the prevalence of crimes committed due to drug abuse, found that 73 percent of violent offenders in state prisons committed their crime to get money for drugs, were under the influence of drugs or alcohol at the time, and/or have a history of alcoholism, alcohol abuse, or regular drug use (Belenko, 2016).

In the past 2 decades there has been a rise in incarceration or in other modalities of criminal justice supervision in the US (Peters, 2017). This tremendous increase has been accompanied with the enforcement of new laws and penalties regarding drug offenses. During the same time, science have been advancing, allowing us to study the neurobiology behind the addiction and scientifically presenting it as a brain disorder, that can be more prone to people with genetic tendencies. It is a disappointment that even with the presence of pharmacological treatment, drug abusers do not receive the proper treatment, especially those incarcerated (Wakeman, 2015).

Adding to the fact that drug users are at higher risk for life-long infectious diseases like HIV and Hepatitis C, and due to the effects of the drugs, they can have psychiatric disorders on top of that, which highlights the pressing need for treating the drug addiction (Ho, 2015).

Accordingly, the UAE is not sparing effort to manage, control and fight the growth of substance use disorder (Drug Enforcement Department, 2020). It is a Signatory to the international laws on Drug Demand Reduction. The UAE Federal National Council passed a federal law of 65 articles lowering and fighting drugs consumption in 1986, which includes a list of banned substances (the Controlled Drugs Act, 1986). This law has been later revised in 1995, 2005 and 2009. There was a conviction and zero tolerance of use of banned substances resulting in a mandatory sentence for imprisonment of 4 years for the use of schedule 1 drugs (Controlled Drugs Act 14/1995). Some flexibility has been added in the Article law number 43 which states that: “A criminal case shall not be instituted against anyone who came for treatment on his own or brought by his relatives to the second degree” after the revisions in drug laws in 1995 and 2005. (Drug Law, Number 43, UAE, 2016). This modification in the law was made to reduce the number of drug offenders and increases the treatment opportunity for individuals.

However, prisons-based treatment is still not available in the UAE for whom custody is due to addiction crime (Punishment and Correctional Institution Dept., 2020). Statistics conducted by Peters (2017) demonstrated that lack of addressing addiction in incarceration, has increased the rates of recidivism. In several states, a portion of people released has returned in less than 3-4 years for the same violations and tested positive for drug use. Wakeman (2015), stated that criminal justice professionals have underestimated the effects of vulnerability to drugs, as they enforce a very controlled system under supervision, but as soon as the individual is released into the society again where they will face the same stressors as normal people on top of the pressure of the criminal record and rejection by society, they can relapse into old habits in their first night back home, especially if home is located in an area where drugs are being displayed easily on the curb (Peters, 2017).

### 1.7.1 The need of treatment for substance use disorder prisoners

As discussed earlier, addiction is a brain disorder (Welty, 2019), and the epiphany that a drug abuser feels acts on the reward circuit that controls the individual's craving, which will strike as soon as he is back in the same environment that opened the doors to take the first hit (Karila, et al. 2011). The theory explains, being in that location will trigger a neurobiological circuit, which will make the individual crave that rewarding feeling, which resulted from the long-term use of drugs that persists for months even after abstinence. This process itself explains the rates of recidivism and points out the need for treatment to persist even after being released (Baillargeon 2010).

Over the years, addiction has been classified as a chronic brain disease (NIDA, 2016). The neurobiology of addiction has been proven to be affected by genetic factors in 40%-60% of affected individuals. Those individuals who are more vulnerable, when exposed to drug use repetitively, this can provoke certain neuro adaptations that control the compulsive behaviour and losing control when exposed to the drugs. These behaviours are what characterize addiction. The effect of genes on vulnerability towards addiction behaviour has been proven by molecular and neuroimaging studies (Ernst 2015). It also proved that how using addictive drugs many times can alter the structure of the brain and can have long-lasting effect on its function (Volkow 2018). The brain controls our learning, memory, motivation, and mood by circuits of neuronal activities (Nora. 2012). It has been proven through imaging studies that these circuits are disrupted in individuals who are addicted to drugs, where the reward and motivation circuits plays a huge role in function (Ernst, 2015). The study stated that, when those circuits are disrupted, this made the individual lose the power to control them, as it

impairs their ability to stop themselves from harm. They lose control of their emotions, and their desires become controlled by the drug effects (Volkow 2018).

The reward and motivation circuits play the biggest role and manipulated by drugs (Volkow 2018). The repetitive intake of drugs will slowly desensitize the circuits from responding to the negative and positive settings. This explains why a drug addict after a while loses the motivation to carry on with activities that would have positive impact on his life, and just as the positive and rewarding circuit is desensitizes, he no longer perceives the danger and avoids situations that would stimulate the feeling of punishment. This loss of balance in the neuro-circuit system can explain the decreased motivation to withhold from drug abuse or to fear the consequences when doing so, as in being imprisoned (Ernst 2015).

Tai (2013) illustrated the reason behind relapse in the presence of triggers. It suggested that, when an individual is exposed to repeated drug use, this will form new links to memories that would make the person to expect pleasurable outcomes in future exposures, and these are not only controlled by being exposed to the drug, but with a stimulus that was present with the drug use, like a place or a person. This will act like a trigger for the addicted person, and is the cause of relapse that occurs after being released even if the addict was motivated to abstain from drug use.

This conditioning that perceives the drugs as reward will increase the inner awareness, as in anxiety and tension which will occur once exposed to drugs and will drive the individual to indulge in it. Also, the study points to a different cause of relapsing, as it claims that, when using drug repetitively, this effects the areas in the brain that controls mood and anxiety. This fact explain why addicts are found to have mental health diseases, and their vulnerability to relapse when facing a minor inconvenience (Tai 2013).

The impulsiveness found that in the characteristics of drug addicts are explained by the effect of the impairment that is caused by the drugs on neural substrates, especially the ones that are in control of decision-making behavioural inhibition, emotions and desires (Kohno, 2015).

The long-term use of the drug will manipulate the brain of the drug addict, increasing his risk of relapse the more they are exposed to the drug, and this is why drug addiction should be recognized as a chronic relapsing disease that need to be treated (Koob 2011).

### 1.7.2 Benefits of prison-based treatment

1.7.2.1 Recidivism reduction

Researches have shown the benefits of treating drug abusers in the criminal justice system. The therapeutic interventions that have been used as a replacement to imprisonment include treating individuals in drug courts with judicial oversight, prison and jail based treatment, and programs that can help the individual to survive and transition into the community that they will serve (Matusow, et al. 2013). As encouragement to drug abusers, the judicial system can manipulate the reward system through the treatment modalities provided, looking out for them, and the presence of legal sanction threats.

Another study stated that, the most commonly implied intervention is the behavioural treatment to address and treat the drug abuse brain disorder (Roberts, 2015). The programs implemented all work together to provide a therapeutic community for the individual. These interventions target the cognition of the person to enhance their coping and decision making skills, boost behavioural changes that will associate with abstinence, and programs that focus on motivation so that they will be willing to accept and progress within the therapy program knowing that the activities will be non-drug related (Roberts 2015). It was suggested by the same study that, medical intervention can work hand-by-hand with the behavioural treatment, as medications have been used for decades to manage drug toxicity and abuse. For heroin treatment methadone assisted therapy, buprenorphine and naltrexone are in favour, and alcoholism is better treated with naltrexone and topiramate.

Research over the years have shown a constant decrease in drug abuse and drug related crime after community-based treatment was reinforced. A meta-analysis (Prendergast 2015), was done on community-based treatment for drug users and the results showed that treatment was found to be 1.8 times more beneficial in decreasing drug abuse compared to other therapies. On the other hand, another meta-analysis was done by Taxman in US (2014), including 66 of; incarceration-based treatment, providing a therapeutic community, and counselling therapies, were found to be 1.4 and 1.5 time better to reduce recidivism, respectively. Individuals that were in drug courts along with judicial supervision and treatment for drug abuse in exchange for being incarcerated were found to have half of the recidivism rates of dropouts from the drug court, but more to those with comparison samples of the study. As for individuals who were included in prison-based treatment, that was followed upon by being in a community based program after being released, were found to have a chance of being drug-free 7 times

and less chance of being arrested due to criminal behaviour by 3 times, in comparison to those not receiving treatment whatsoever (Taxman 2014).

When exploring the benefits of using medications in the treatment of drug abuse, a randomized trial was done on heroin addict inmates by (Rich, et al. 2015), methadone assisted treatment was started before being released from prison, and individuals were asked to continue treatment in the community. The sample were asked to come for a follow-up on 3 intervals, at 1, 3, and 6 months' post-release. Results showed significant drop in rates of re-use of heroin post-release in those who received the medical treatment (MAT) along with counselling when compared to individuals who were receiving counselling session only. This highlights a potential of using methadone as a maintenance treatment for imprisoned persons who present with opioid addiction. However, this approach has not been receptive in prison systems (Rich, et al. 2015).

1.7.2.2 Cost-effectiveness of prison-based treatment

Economically speaking, a study conducted to provide initial estimates of the economic effects of addiction in the United Arab Emirates, international and local data bases were used to arise estimates of substance-related healthcare expenditures, lost productivity and criminal behaviour reveals that, the UAE spent equivalent to 1.4% of gross domestic product, estimated at US dollar 5.47 billion in 2012 as a cost of addiction (Doran, 2016). Numbers reveals that drug and alcohol abuse is becoming a growing burden on the economy of the United Arab Emirates (Doran, 2016).

looking at the cost-effectiveness of different approaches in the treatment of drug-involved criminals, when criminal justice costs were included, all forms of MAT (with buprenorphine, methadone, and naltrexone) were associated with cost savings compared with no treatment, yielding savings of $25 000 to $105 000 in lifetime costs per person. The largest cost savings were associated with methadone plus contingency management (Fairley, et al. 2021)

In addition, for every £1 invested in drug treatments, £2.50 are returned to society. It was estimated that drug treatment prevented approximately 4.9 million crimes in 2010/2011, corresponding to £960 million in savings to society (including the public, businesses and the justice and health systems (Clark, et al, 2017).

# METHODLOGY

The principal focus of the present study is to describe substance use disorder in Sharjah prison using incarcerated sample under their sentence of addiction case, as a representative of the wider SUD population in the prisons in the UAE, and to explore the concept of social factors, demographic characteristics in its relation to addiction in this population. Moreover, to understand their needs to establish prison-based treatment that might help in preventing or lowering relapses incidence, repeating crimes and recidivism.

## 1.8 Ethics Approval for involving and protection of Human Subjects

The research protocol and plan was submitted to the Director of Human Resources Department, and Deputy Director of the PCID at The Sharjah Police General Headquarter, to get the permission on conducting the study. Once the permission was granted, the proposal was submitted to the Director of the Research and Ethics Committee in DMC for ethical approval.

Prior to participation, informed consent was obtained from the participants, and assurances about taking part in the study is voluntary were made in the study information sheet and provided to all study participants.

### 1.8.1 Confidentiality

Also, prior to each interview the participant informed that the information will be used only for research purposes and would be treated **anonymously**, as well as, identity will not be shown in any publication resulting from this study. During the interview, withdrawal from could be at any point of time.

Only those who volunteered and agreed were included in the study. The study presented no risks to the participants. All “COVID-19” precautions of wearing masks and keeping distance were followed. Moreover, all security precautions in dealing with prisoners were taken such as the presence of guards in a nearby place and securing the exit and entrance of the connected area.

All prisoners’ participants were incarcerated either, being under influence of substance use, drug possession or failure to do the periodic urine examination of the drug test in the Drug Enforcement Department. The majority of imprisonment prisoners due to drug use issues in Sharjah prison in the UAE are male; however, both gender was feasible to study. The total number of prisoners of drug use related crimes in the prison was 259 for both male and

female in all nationalities. The respondents self-select themselves into the study, therefore, study population is considered a volunteer sample. The following criteria used for sample selection:

### 1.8.2 Inclusion Criteria

a) Prisoners with substance use disorder related crimes,

c) Prisoners 18 and above years of age,

d) Prisoners from both genders,

e) Prisoners who are UAE nationals and expats.

### 1.8.3 Exclusion Criteria

a) Prisoners with severe mental illness.

b) Prisoners with severe medical illness.

c) Prisoners with drug trafficking cases (promotors and sellers).

## 1.9 Sample Size

Sample size was determined by certain approach as revealed below, to offer sufficient power to identify statistically significant differences. Slovin's Formula was used as the population size is finite and known (Stephanie Ellen 2020), (TP Ryan – 2013). The confidence level sat at **95 percent** (giving a margin error of **0.05**), the total population of prisoners of drug abuse crimes is **259** prisoners of all nationality in both gender. The time frame set to be started on the 1st of July 2021, until the 15th of July 2021. The interviews started on 4th of July 2021 and ended on 28th of July 2021. To determine the sample size, this equation used:

**Sample size equation ==> n= N / 1+ (Ne)2**

n: sample size, N: total population, e: error tolerance (0.05).

**n= 259 / 1 + (259 x 0.05)2 = 157**.

The **adequate number of participants** for this study is = **157**

Out of the 157 prisoners invited to participate in the interview, **104 prisoners responded**.

**The response rate= 66%.**

During the time frame given in the prison by the Institution, a total of 104 were interviewed (**89males, 15 females**), **64 were UAE nationals, 15 were Arab nationals and 25 were Other nationalities**.

## 1.10 Study Design

In the form of a questionnaire, this study used a cross-sectional descriptive design. It was expected, that the questionnaire tool will offer a deeper and broader perspective of substance use disorders in the UAE among the prisoners, as believed by the researcher. The questionnaire relied on the PCID prisoners who meet the inclusion criteria and voluntarily accept to participate in the study.

## 1.11 Source of Data

### 1.11.1 Original Questionnaire Development

The questionnaire tool was developed for the purpose of the study to collect data from an imprisonment population. Based on information that the study was designed to capture, questions were developed by the research team (researcher and supervisors). Then the final questionnaire version was revised and discussed with the Director of the Research and Ethics Committee in Dubai Medical College, and the Consultant Psychiatrist of Addiction Treatment and Rehabilitation in Erada Centre for drug addiction treatment in Dubai, to ensure that all the main areas of interest were included, and later was approved by institutional ethics committees of Dubai Medical College and Deputy Director of the Punishment and Correctional Institution Department at The Sharjah Police General Headquarter prior to use. The questionnaire was completed in English and translated into Arabic and Ordo verbally.

### 1.11.2 Questionnaire Content:

There are 4 main sections and 21 question in the questionnaire. As appropriate, some questions have fixed choices and some have open-ended answers. The four main sections of the questionnaire are detailed below.

**Section 1:** Demographic information

This section includes items on age, gender, nationality, marital status, education, and occupation.

**Section 2**: Substance use and criminal history

This part contains questions about the current use of opioid, amphetamine/methamphetamine, prescribed medication, polysubstance. Moreover, information such as the age of first use, first

substance of abuse, number of returns to prison due to the same issue, or other crimes were gathered.

**Section 3:** Factors contribute in substance use disorder

In this section, questions focused on social characteristics which contributes on substance use disorder such as familial problems, primary source of drugs. Also, it collects information about other factors such as curiosity, psychological problems, shortage of awareness in drug issues culturally, mentally and legally.

**Section 4**: Treatment demand

In this section questions focused on the prisoners' perceptions of their sentence, if imprisonment heals their disorder and considers a useful method that correct the substance user pathway and cognitions. Also, the questions determine the prisoners' opinions about the need of treatment unit in the PCI, that provide them with treatment therapies while fulfilling their penalty in the prison.

### 1.11.3 Piloting

The pilot was designed to test the questionnaire in a like sample of SUD prisoners to evaluate its feasibility and validity, to shorten complex or multiple questions, and to provide the researcher with data on issues arising from the questionnaire questions in order to improve and clarify the final questionnaire. The questionnaire was piloted on 10 prisoners drawn from the same population. Prisoners were asked for their opinion on both content and administration. In addition, the time consumption by each individual was calculated to guess the number of participants and reach the target number of sample size. Some minor changes were made in the multiple choice answers to improve the data. Major changes made due to the time limitation, such as eliminating the past history section, which is about the history of childhood and any kind of abuse or harm to self and others. Moreover, piloting lead to shift for an electronic questionnaire to save time and effort.

### 1.11.4 Procedure

The data collection was conducted between 4$^{th}$ July 2021 till 28$^{th}$ July 2021. During this time face-to-face structured interviews were done by the researcher (A.B. Al Madhloum), the time frame was 5-10 minutes for each individual as estimated, to reach the target number and was followed. The structured interviews were conducted in (Arabic, English and Ordo with translator) and recorded. The interviews were conducted in a private office in the prison with

nearby guard for security precautions. Participants were verbally reassured of confidentiality and that no issue if they withdraw from the interview at any time, and that they will be recorded during the interview.

The data were entered automatically to the Excel program as the questionnaire was electronic. The researcher checked the data for any error. There was couple of missing data which were filled by listening to the records.

### 1.11.5 Data Management and Analysis

The Statistical Package for Social Sciences (SPSS), version 24 was used to analyse the data. The hypothesis variables, tests and detailed explanation of the analysis plan, will be discussed in the coming sections.

## Data Analysis

The following data analysis examine the findings compiled from 104 drug users' prisoners through a structured questionnaire that was conducted by personal interviews.

It is important for the study of the prisoners of drug use related crimes in the UAE to include the demographic characteristics that describe the relationship between drug use disorder and specific characteristics of drug users, such as the relationship between drug use and age group, gender, nationality of drug users, educational level, marital status, and job situation, to explores the specific demographic characteristics of prisoners with substance use disorder. And examine, some correlates of drug use, describing factors that may be viewed as causes of drug use. Moreover, this study aims to analyse prisoners' perceptions of imprisonment experience in reducing the burden of SUD problem, and being treated by arranged systematic intervention in the prison.

This understanding throws a light on the nature of drug abuse in the UAE in general and prison in particular, and helps drug policy makers to identify which groups of people in society may become drug abusers and thereby devise prevention programmes accordingly.

### 1.12 Descriptive Statistics

The study collected data from **104 subjects aged between 18 to 50 years**, mean 30.17 (±7.10yrs), who were predominantly male (n = 89,=85.6%) (Figure 1a) and were from the UAE (n = 64,=61.5%) (Figure 1b). The majority of the population were single (n = 57,= 54.8%) (Figure 2a), unemployed (n = 64,=61.5%) (Figure 2b) and had completed secondary education (n = 44) (42.3%) (Figure 2c).

Figure 1: (a) the gender disparities in the sample (b) nationality disparities

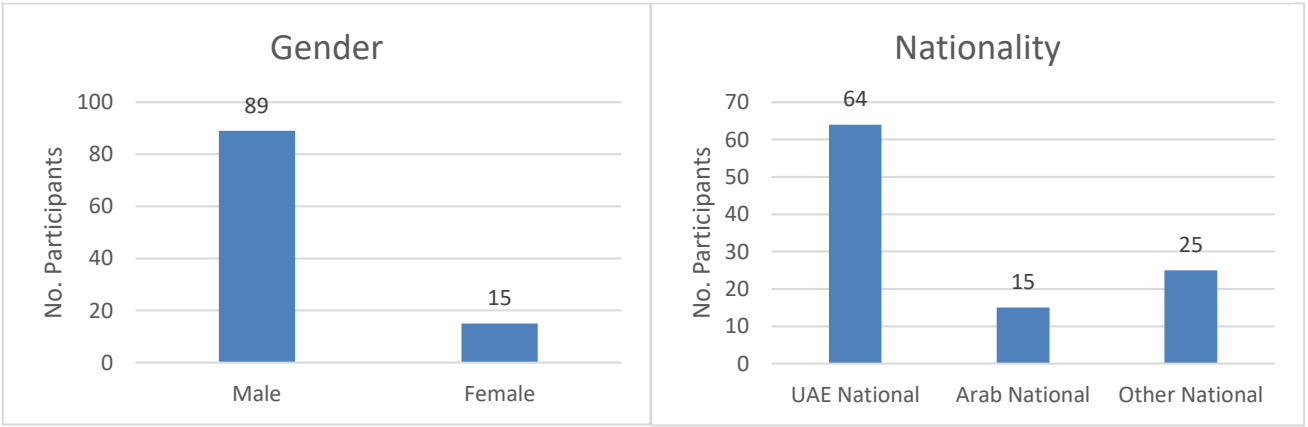
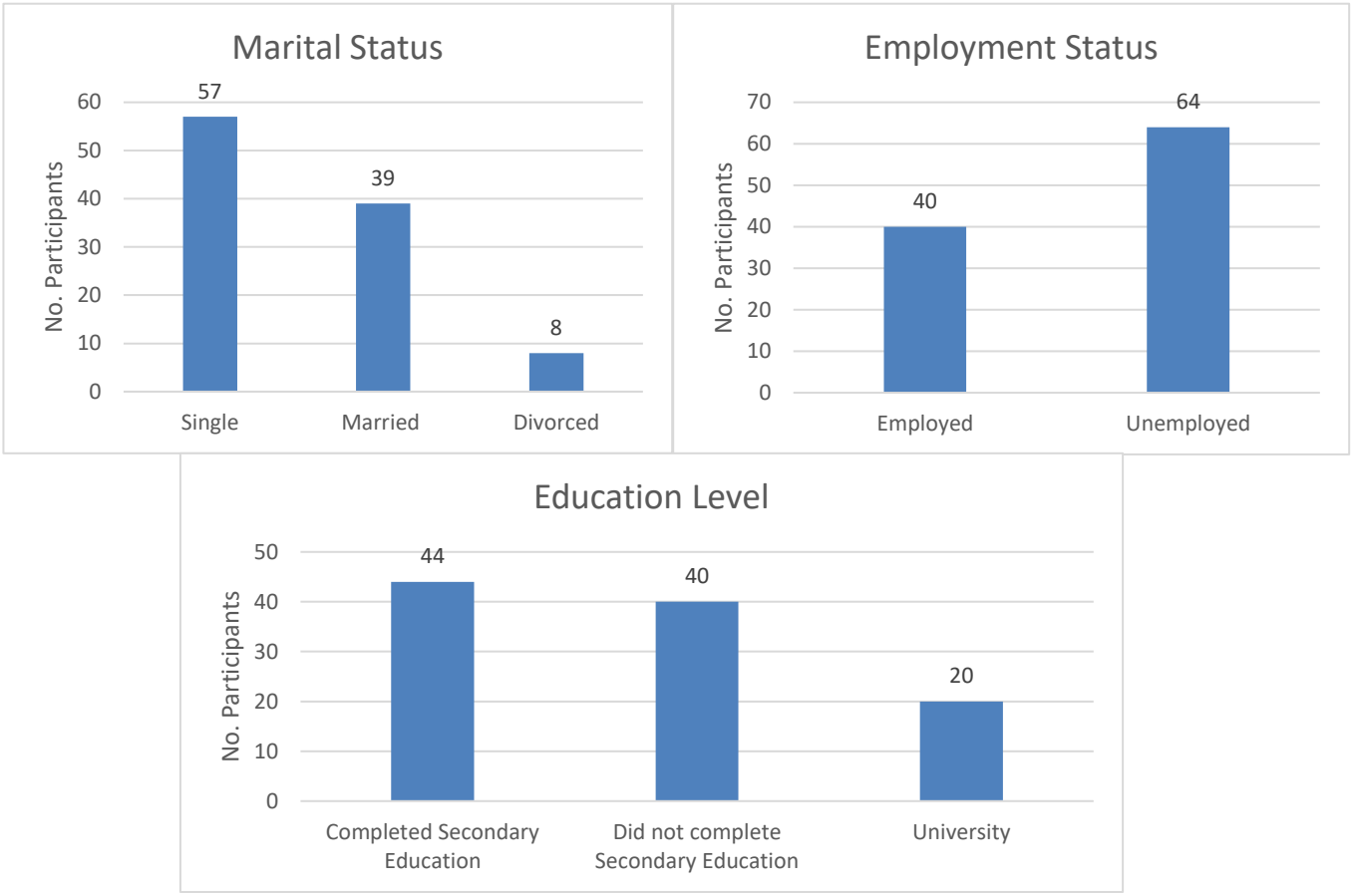


Figure 2: (a) the marital status of participants (b) employment status of participants (c) education level of the participants




The starting age of drug use ranged from 11 to 42 years (20.30±6.45yrs). The three major substances taken by the participants included Polysubstance (n = 61,=58.7%), amphetamine/ methamphetamine, and THC (n = 15,=14.4%) (Figure 3), with the majority taking either Opioids (n = 32,=30.8%), THC (n = 28,=26.9%) or Prescribed medication (n = 25,=24.0%) as an initial substance abused (Figure 4). When asked regarding the primary source of drug use, the main source was friends (n = 52, =50.0%) as well as parents and relatives (n = 20, =19.2%), and schoolmates (n = 10,=9.6%) (Figure 5). Family problems which led to drug abuse were typically due to parental divorce and neglect (n = 58,=55.8%) with minimal reference to death of a parent (n = 5,=4.8%) or addiction among family members (n = 4,=3.8%) (Figure 6a). Other reasons for drug use include a lack of knowledge regarding the dangers of drugs (n = 26, 25.0%), curiosity (n = 19,=18.3%) and psychological problems (n = 3,=2.9%) (Figure 6b).

Figure 3:  the range of major substances consumed by the participants

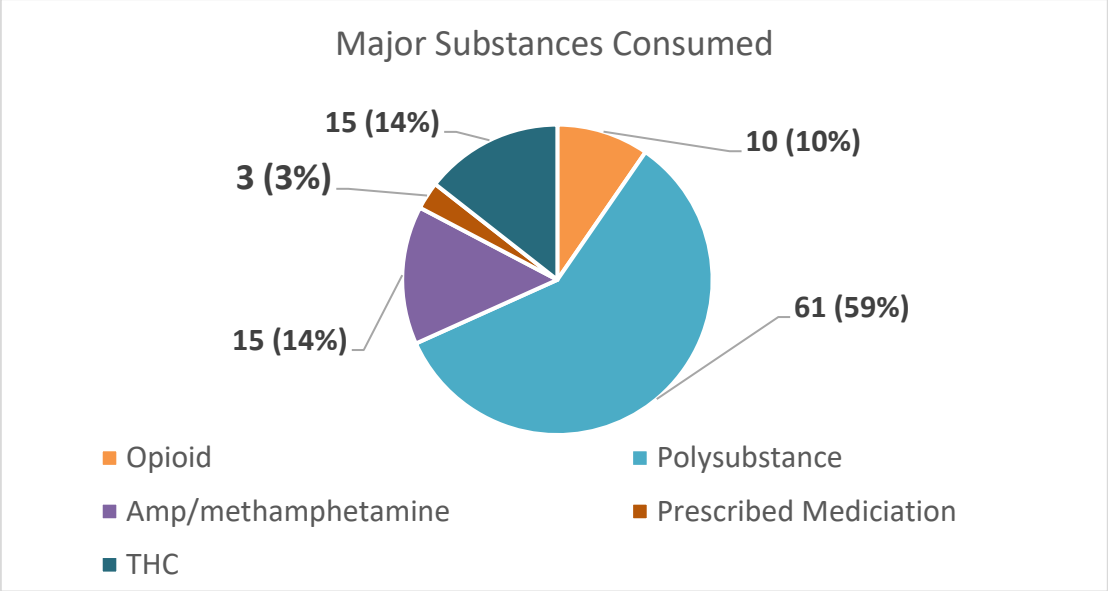



Figure 4: the participants' primary source of drugs: 68.1% of the study population were supplied of drugs by friends or schoolmates. Whereas, 22% of the participants were supplied by relatives including family

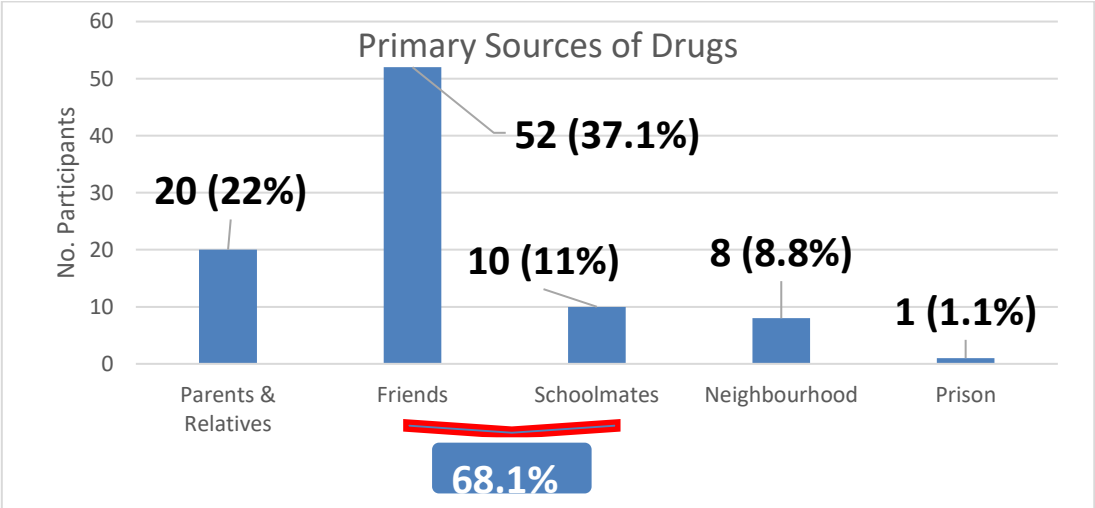


Figure 5: first substance of use (opioid- including tramadol)

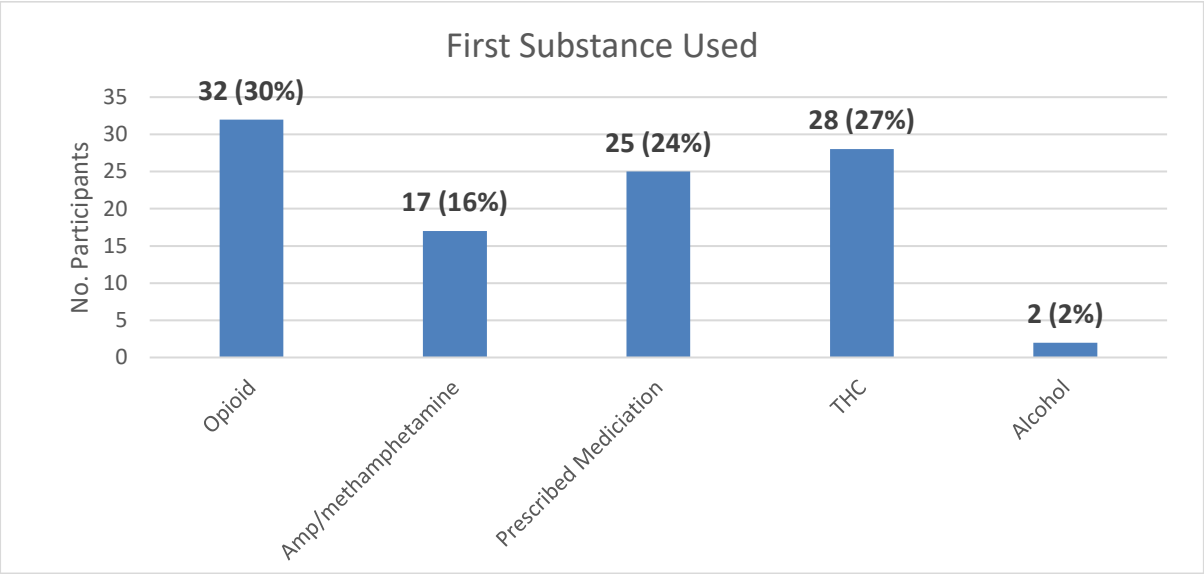
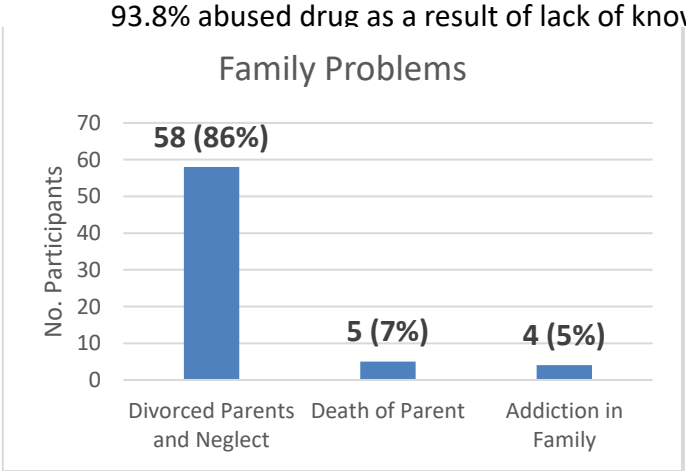
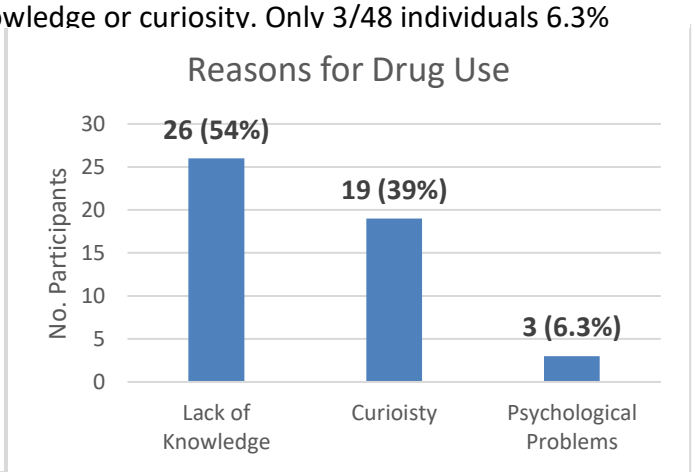



Figure 6: (a) family problems, (b) reasons for drug use

a- 86% of the study population started abusing drug due to the divorce of parents and suffering from neglect.

b- Main reasons for drug use among the participants: unlike expected 45/48 individuals which is 93.8% abused drug as a result of lack of knowledge or curiosity. Only 3/48 individuals 6.3%



When the participants were questioned regarding the impact of isolating addiction prisoners from other crime prisoners, the vast majority of participants agreed (n = 70,=67.3%) that this would be effective (Figure 7a). However, when asked if imprisonment supported healing from addiction, the results demonstrated that this was not believed to be effective (n = 76,=73.1%) (Figure 7b). However, there was a close to unanimous decision that specialised units are recommended for addiction management (n = 89,=85.6%) (Figure 7c). The majority of participants had returned to prison for the same crime (n = 65,=62.5%) compared to returning for non-addiction related crimes (n = 40,=38%) (Figure 7d).

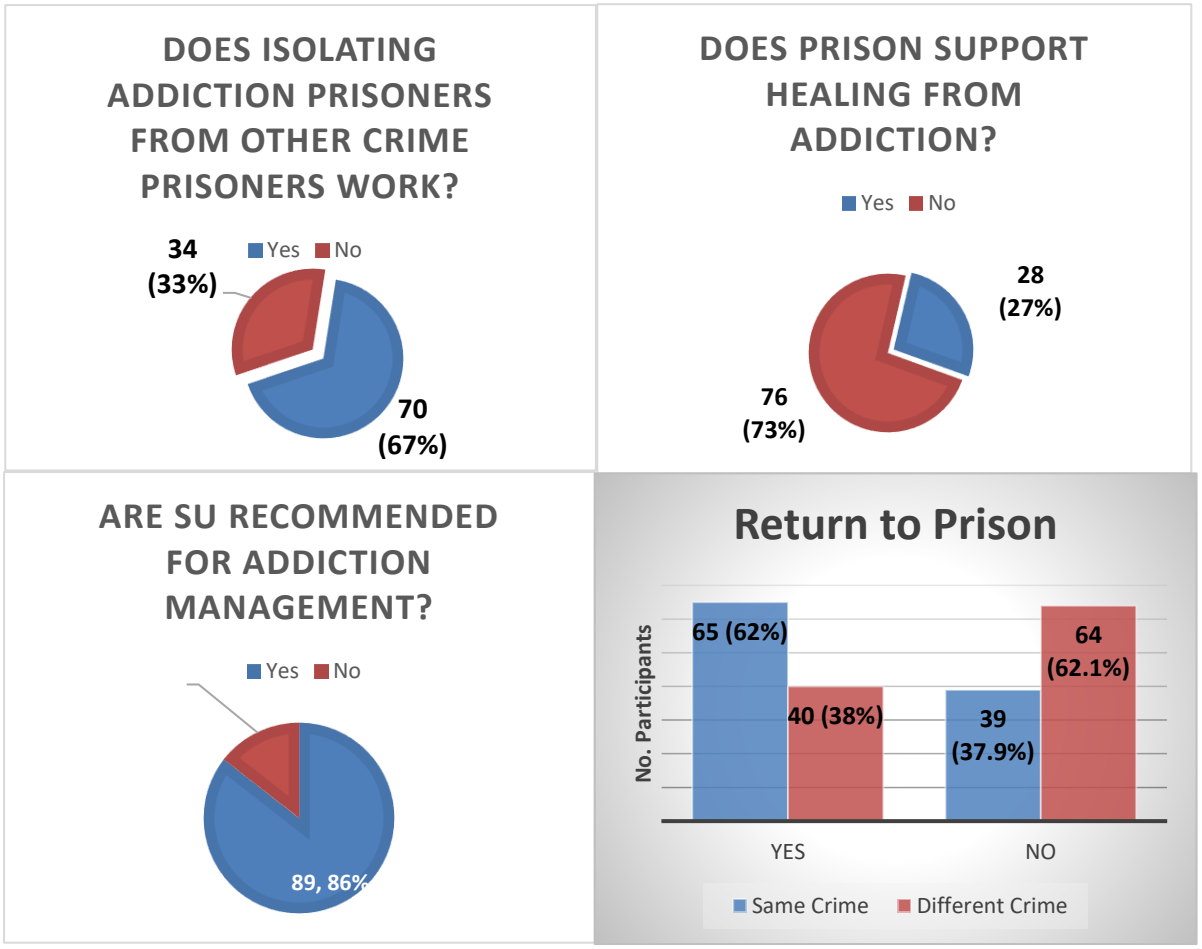
Figure 7

(a) The majority of participants believed that isolating addiction prisoners was beneficial

(b) The majority of participants did not believe that prison helped recover from addiction

(c) The majority of participants believed that specialised units (SUs).

(d) The number of participants return to the prison for the same crime is significantly higher, comparing to the numbers of return for non-addiction related crimes.



**When questioning regarding re-incarceration, the range of re-incarceration for the same crime ranged from 1 to 10 (2.96±1.68) both gender**, compared to **re-incarceration for a non-addiction related crime which ranged from 0 to 10 (0.59±1.36)**.

### 1.13 Analysis

The initial analysis saw the conducted of a series of independent **t-tests** to identify differences between **nationality and gender, age, education**, **addiction-related incarceration and non-addiction related incarcerations**. Initially comparisons were made between UAE nationals and Arab nationals. Firstly, a significant difference was identified with gender, t (77) = -2.475, $p < 0.001$, with **the UAE** (1.09±0.29) having a **greater proportion of males compared to Arab nationals** (1.33±0.49). Secondly, there was a greater proportion of UAE nationals who had completed secondary education (1.63±0.68) compared to Arab nationals (1.93±0.96), t (77) = -1.456, $p = 0.003$. Finally, the **UAE nationals (3.45±1.93) were found to have a greater number of addiction-related incarcerations compared to Arab nationals** (2.20±0.56), t (77) 2.483, $p < 0.001$. No other significant differences were observed between the nationalities. (Figure 8) shows the comparison between the UAE, Arab and Other nationalities in behave the mean number of repeated incarceration due to the addiction crimes.

The secondary analysis focused on identifying differences between **UAE nationals and Other nationals**. The analysis identified a sole significant difference, t (87) = 3.253, $p < 0.001$, where the UAE nationals were found to have a **greater number of addiction-related incarcerations compared to other nationals** (2.16±0.75).

In the final analysis, **Arab nationals were compared to other nationals** and **three significant differences were identified**. Firstly, the **Arab nationals were found to have a greater number of female participants** (1.33±0.49) **compared to Other nationals** (1.16±0.37), t(38) = 1.265, $p = 0.022$). Secondly, Arab nationals had a greater number of participants who had completed secondary education compared to other nationals (2.04±0.74), t (38) = -0.396, $p = 0.025$. Finally, **Arab nationals were found to have greater incarceration for non-addiction related crimes** (0.87±1.64) **compared to other nationals** (0.36±0.49), t (38) = 1.450, $p = 0.025$. (Figure 10), (table 1)

Table 1: compares means number of addiction related incarceration between UAE, Arab and other nationalities. Mean number of addiction related re-incarceration in UAE participants is significantly higher compared to Arab and Other nationalities

| | Nationalities | N | Mean | Std. Deviation |
|---|---|---|---|---|
| **Addiction related incarceration** | UAE Nationals | 64 | 3.45 | 1.927 |
| | Arab Nationals | 15 | 2.20 | 0.561 |
| | Other Nationals | 25 | 2.16 | 0.746 |
| **Other crimes incarceration** | UAE Nationals | 64 | 0.61 | 1.508 |
| | Arab Nationals | 15 | 0.87 | 1.642 |
| | Other Nationals | 25 | 0.36 | 0.490 |

Figure 8: Mean number of addiction related incarceration: UAE participants had a significant higher mean incarceration number as compared to Arab and Other nationalities

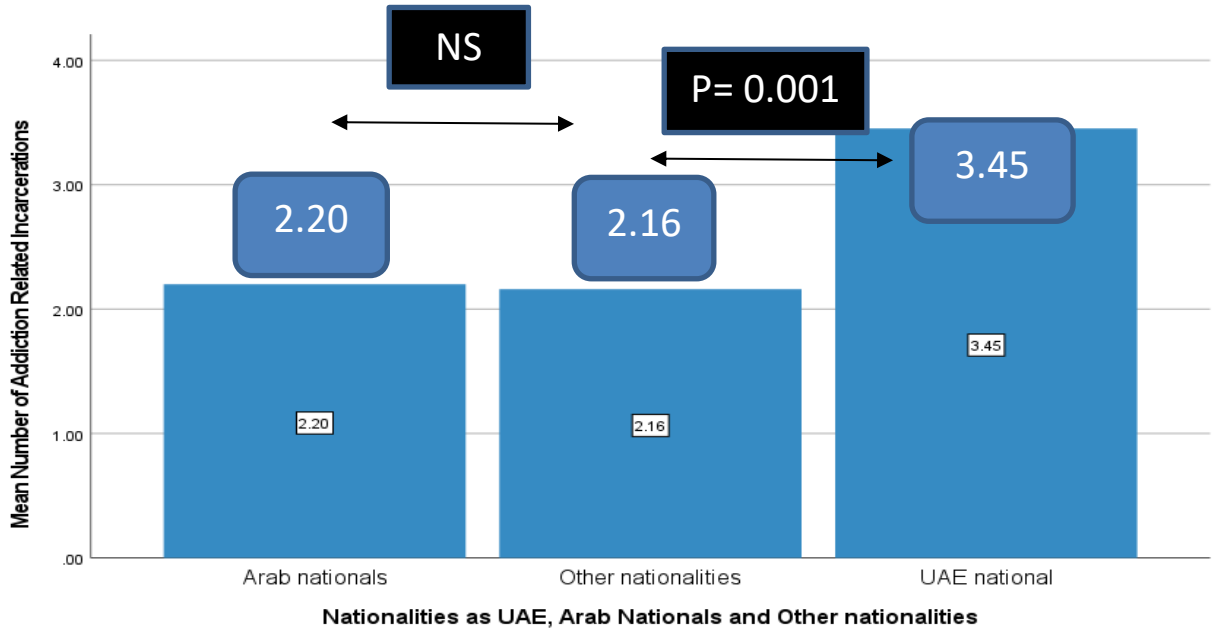
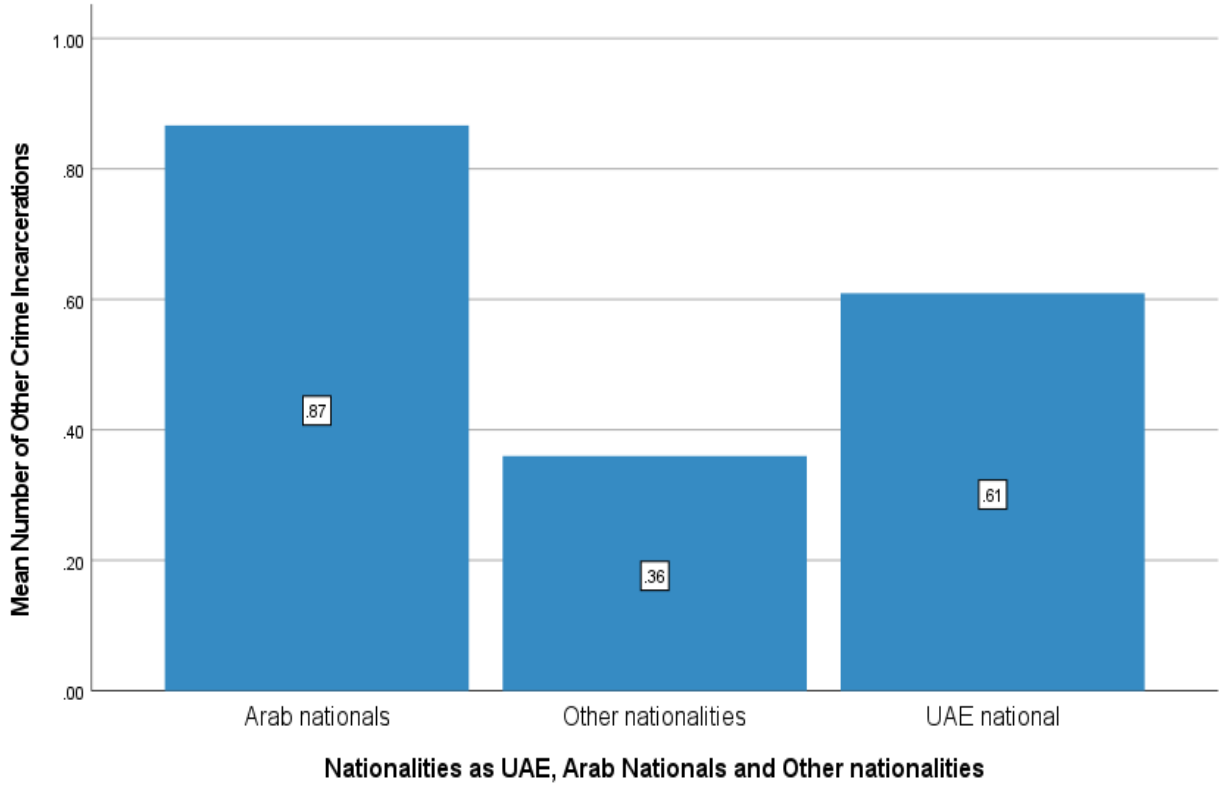


Figure 9: mean number of other crime incarceration




## 1.14 Correlation

A pearsons correlation was conducted to identify if there was an association between **age**, **addiction-related incarceration and non-addiction related incarceration**. The results of the analysis found that there was **no statistical association present** ($p > 0.05$).

### 1.14.1 Isolation of Prisoners

The initial series of chi-square testing focused on the associations between the perception of isolating addiction prisoners from other crime prisoners against gender, nationality and education level. The initial chi square found no difference with gender, (chi2= 2, n = 104) = 3.394, $p = 0.065$. This suggests that there were no differences in the belief of isolating prisoners based on the type of crime they have committed between males and females (Table 2).

Table 2: Isolating addiction prisoners from other crime prisoners vs. gender

| Isolating addiction prisoners | Male | Female | Value | P. value |
|---|---|---|---|---|
| **Yes** | 63 | 7 | 3.394 | 0.065 |
| **No** | 26 | 8 | | |
| **Total** | 89 | 15 | | |

Secondly, a further chi square was conducted investigating the difference in **nationality** and isolation beliefs. The chi square revealed **a significant difference**, (2, n = 104) = 11.211, $p$ = 0.004, which revealed that UAE nationals were more likely to say yes as a response compared to both Arab nationals and other nationals (Table 3).

Table 3: Isolating addiction prisoners from other crime prisoners vs. nationality

| Isolating addiction prisoners | UAE National | Arab National | Other National | Value | P. value |
|---|---|---|---|---|---|
| **Yes** | 49 | 11 | 10 | 11.211 | 0.004 |
| **No** | 15 | 4 | 15 | | |
| **Total** | 64 | 15 | 25 | | |

Finally, the third chi square investigated if differences persisted in **education level**, where by **no significant difference was observed**, (2, n = 104) = 1.056, $p$ = 0.590) (Table 4)

Table 4: Isolating addiction prisoners from other crime prisoners vs. education level

| Isolating addiction prisoners | Completed Secondary Education | Not Completed Secondary Education | University | Value | P. value |
|---|---|---|---|---|---|
| **Yes** | 32 | 25 | 13 | 1.056 | 0.59 |
| **No** | 12 | 15 | 7 | | |
| **Total** | 44 | 40 | 20 | | |

### 1.14.2 Imprisonment supports addiction healing

A further series of **chi square** tests were conducted exploring the differences between **imprisonment belief** and gender, nationality and education level. Firstly, the analysis revealed **no significant** difference between imprisonment belief and gender, (1, n = 104) = 0.427, $p$ = 0.513, suggesting that no gender differences were present (Table 5)

Table 5: Imprisonment support addiction healing vs. gender

| Imprisonment helps addiction healing | Male | Female | Value | P. value |
|---|---|---|---|---|
| **Yes** | 25 | 3 | 0.427 | 0.513 |
| **No** | 64 | 12 | | |
| **Total** | 89 | 15 | | |

Secondly, the chi square revealed no significant difference between imprisonment belief and nationality, (2, n = 104) =1.036, $p$ = 0.596, suggesting that there was no difference in belief between the nationalities (Table 6).

Table 6: Imprisonment support addiction healing vs. nationality

| Imprisonment helps addiction healing | UAE National | Arab National | Other National | Value | P. value |
|---|---|---|---|---|---|
| **Yes** | 15 | 5 | 8 | 1.036 | 0.596 |
| **No** | 49 | 10 | 17 | | |
| **Total** | 64 | 15 | 25 | | |

Finally, the chi square analysis further demonstrated no significant difference between imprisonment belief and education level, (2, n = 104) = 2.207, $p$ = 0.332). This suggests that no difference in the belief was present based on education level (Table 7).

Table 7: Imprisonment support addiction healing vs. education level

| Imprisonment helps addiction healing | Completed Secondary Education | Not Completed Secondary Education | University | Value | P. value |
|---|---|---|---|---|---|
| **Yes** | 10 | 10 | 8 | 2.207 | 0.332 |
| **No** | 34 | 30 | 12 | | |

| | | | | | |
|---|---|---|---|---|---|
| **Total** | 44 | 40 | 20 | | |

### 1.14.3 Return for non-addiction related Crime

A final series of **chi square** tests were conducted to explore the differences between the participants on the committing of **non-addiction related crimes** with employment **status, marital status and nationality**.

Firstly, the analysis revealed **no difference between the nationalities**, (2, n = 104) =0.511, *p* = 0.774, suggesting no difference was present between UAE, Arab and other nationals and returning to prison for a non-addiction related crime (Table 8).

Table 8: Return for nonadditional related crime vs. nationality

| Non addiction related crimes | UAE National | Arab National | Other National | Value | P. value |
|---|---|---|---|---|---|
| **Yes** | 23 | 6 | 11 | 0.511 | 0.774 |
| **No** | 41 | 9 | 14 | | |
| **Total** | 64 | 15 | 25 | | |

Secondly, the differences between returning to prison for a non-addiction related crime and marital status was assessed. The analysis revealed no significant differences were present, (2, n = 104) =0.559, *p* = 0.756 (Table 9).

Table 9: Return for nonadditional related crime vs. marital status

| Non addiction related crimes | Single | Married | Divorced | Value | P. value |
|---|---|---|---|---|---|
| **Yes** | 22 | 14 | 4 | 0.559 | 0.756 |
| **No** | 35 | 25 | 4 | | |
| **Total** | 57 | 39 | 8 | | |

Finally, the differences between returning to prison for a non-addiction related crime and employment status was analysed. The analysis revealed no significant difference was present, (2, n = 104) = 0.976, *p* = 0.323. Therefore, there was no difference in returning to prison for a non-addiction related crime between employed and unemployed participants (Table 10).

Table 10: Return for nonadditional related crime vs. employment status

| Non addiction related crimes | Employed | Unemployed | Value | P. value |
|---|---|---|---|---|
| **Yes** | 13 | 27 | 0.976 | 0.323 |

| | | | | |
|---|---|---|---|---|
| **No** | 27 | 37 | | |
| **Total** | 40 | 64 | | |

## DISCUSSION

To ensure such views are discussed in detail, the following chapter will be divided into two areas. The initial discussions will relate to the demographics, social and additional factors surrounding substance use disorders among incarcerated individuals from the current sample, which will be related to previous literature. The second discussion will relate to the findings concerning the need for treatment and rehabilitation for prison populations to reduce the potential risk of the prison population repeating crimes and being incarcerated.

By the knowledge of the researcher, most studies have concentrated on drug use problems among U.A.E. citizens alone, and ignored other citizens who make up the majority of the U.A.E. population. In addition, most studies have not examined substance use disorder in prison community, and the demand of prison-based treatment, which is the aim of this study. Moreover, due to the rapid increase of substance use disorder globally and the effect of globalization of this problem on our modern society, the urgency of exploring the field of substance use and addiction has become a necessity in recent years (Alblooshi et al. 2016).

### 1.15 The impact of Demographics on Substance Use Disorders

The current study aimed to address the key characteristics and social demographics associated with substance use disorders amongst individuals incarcerated in the Punishment and Correctional Institution Dept. in Sharjah, UAE. The findings from the current study demonstrated that while there were **not a significant number of demographics and characteristics which led to differences, one of the most prominent was nationality**. Therefore, when focusing on the initial hypothesis, it can be stated that the hypothesis can be partially accepted as while there was no evidence of an impact of education, employability, social and family factors on the problem of drug abuse and related crime commitment and incarceration, there was evidence supporting the impact of nationality. In this sense, the results showed that participants from the UAE were more likely to commit addiction-related drug crimes, which agrees with (Alsuwaidi, 2019) study which indicated that, the number of individuals with drug abuse problem in the UAE is increasing within different nationalities, and Emirati nationals experience the highest addiction rates in the recent years. However, some issues did arise surrounding this issue which is discussed in the limitations section below. Nevertheless, studies have discussed and emphasised the growing problem of drug

misuse amongst UAE subpopulations, particularly in the younger generations, whereby studies have noted that males are more likely to engage in drug use and have a greater understanding of various substances during their late teens compared to females (Al Ghaferi et al., 2017; ElKashef et al., 2019).

The primary findings relating to the demographics of prisoners with substance use disorders in the current sample were fairly unanimous across the board. In this sense, the **typical prisoner would be a single male of UAE nationality who was unemployed but had completed secondary education**. The main substance consumed was **polysubstance**, with secondary consumption of either THC or methamphetamine. However, the initial substance consumed was typically opioids (including **tramadol**) followed by THC and prescribed medications, likely to be provided by either **friends** or family and relatives. The primary reason for engaging in drug use was due to the individuals' **parents divorcing and the feeling of neglect** being evident as a primary motivator. However, the reasons for engaging in drug use were typically due to a **lack of knowledge regarding the dangers of drug use** and **curiosity** surrounding the effect of drugs.

Interestingly, previous studies (Vaughn, et al. 2016; Wright, et al. 2017) have noted that addiction and crime are associated with the presence and prevalence of substance use disorders, likely due to further findings that offenders with such disorders are more likely to be arrested as explained in the literature. This poses a key need to consider the factors which may increase the risk of engaging in risky behaviours at a young age. While the current study found that the average age of first drug use was 20, with some individuals as young as 11 and as old as 42 years, it is important to understand the range of rationales for engaging in such behaviours. In the matter of the age of initiation, this study found that, despite the U.A.E. population being a mix of many nationalities, there is no difference in the age of initiation into drug use between these different nationalities. This suggests that motivation towards initiation into drug use among different nationalities may be the same. However, one of the key findings from the current study related to the impact of friends, family, and relatives on drug use.

Another important finding in this study suggests that, parents can play an important role in SUD prevention. Strengthening family ties, communication, support and understanding were viewed as key protective factors and believed to encourage parent–teenager discussions and disclosure of issues including SUD.

Previously, Soleimani and Esfahani (2019) emphasised the association between drug use and engaging in criminal behaviours, which led to a need to enhance safety and reduce disparities in cultural, economic and family-related factors. Such views have been shared by additional studies (Chen & Gueta, 2015; Martinelli, et al. 2020; Nisar, et al. 2015), which emphasises the need to develop culturally adapted interventions that focus on drug prevention during adolescence and young adult ages, which may reduce the likelihood of individuals being incarcerated during their lifetime. Such interventions may adopt the approach suggested by Kumpfer and Magalhaes (2018). They emphasised the benefit of conducting a family-based intervention to improve behavioural health, reduce SUD and further highlight and educate family and relatives on the potential dangers surround drug use and SUD. This approach may be more effective based on the current findings suggesting that many participants initially began drug use due to a lack of knowledge surrounding the dangers of drug use. Along with this findings, other similar outcome were reported in a study that was carried out in the UAE by (Alhyas, 2015), shows that there is a lack of knowledge of the students on the risk and dangers of trying drugs in the UAE. Therefore, implementing such approaches is likely to impact the individual positively, should the intervention be effectively designed and implemented and full engagement is achieved. This may further provide an opportunity to address addiction indicators in the individual's family, further reducing the risk of drug misuse (Parsian & Nazoktabar, 2016).

Another important finding of this study, is that being educated is not a protective factor anymore as it was the last 2 decades. The majority of the sample from UAE and Arab nationals had completed their high school, which disagree with a research result conducted before 26 years in the UAE. The study by (Sarhan, 1995) mentioned that, drug addicts were mostly found uneducated and rarely own a high school diploma, which was then thought as a risk factor for being drug user. However, the findings of this study, states that most of the addicts now are in fact educated and completed their secondary education, and some a Bachelor’s in a college major. This fact highlights that, the problem in recent time is not with the completion of the education ladder as it was previously, but with the knowledge that students are exposed to, life stressor and the environment surrounding.

In terms of the impact of friends, there remains a bulk of literature about the impact of masculine norms and peer pressure, which leads to engagement in risky behaviours, including alcohol consumption and drug use (Iwamoto & Smiler, 2013; Iwamoto et al., 2011). Such impacts have previously been noted in the literature, although they are more prevalent in

younger individuals (Ghavidel et al., 2012; Damiri et al., 2018; Bassi et al., 2017). This may therefore provide an understanding regarding the impact of peers on substance use and perhaps emphasise the role of curiosity should peers be actively engaging in substance use. Such indication has been proved by additional study (Tarig et al., 2016), which stated that curiosity was the main reason for initiation of substance use, and peers were the prime source of substance use. In this sense, peers may invite the individual to try a substance and provide them with insights regarding the effects, inciting their curiosity. A number of participants in this research have mentioned in the records, that they were exposed to drugs in school were there addiction started, which means that student in school are under high exposure of peer-pressure to try drugs. Therefore, programs should be implemented to keep the children aware of what they might be exposed to someday, to teach them the importance of saying "no" the first time.

As regards of the impact of peers, the findings of this study have pointed out the primary source of addiction that is common among certain population. The sources were subdivided in majority and minority, as in friends and neighbourhood colleagues, respectively. People in certain neighbourhoods that houses Comoros's or those without identity share the same difficulties, like poverty, unemployment, and the lack of education because of their unfortunate situations. Those factors when added together and sharing a neighbourhood were found to increase the risk of addiction among them, as they lose their motivation and fall into the trap of using drugs to lose contact with life frustrations as they mentioned.

Another important finding in this study suggests that, marital status can play an important role in SUD prevention. Marriage is beneficial to mental health as suggested by (Umberson, et al. 2013), especially for men, it could have considered as a protective factor. This study reveals that the majority of participants who suffer from SUD are single. To look back at the aspect before 2 decades and compare the results, the finding of this study agrees with (Sarhan, 1995) finding, which stated that Among U.A.E. nationals, drug use is associated more with single people than with married people (Sarhan, 1995). This confirms what had been mentioned above in the literature that, marital status is an important factor to consider in mental health well-being. And that is assumed to the positive impact of the partner as he/she could be a supporter and motivator to quit substance use.

## 1.16 Need for Treatment and Rehabilitation in Prisons

The second aim of the current study was to explore the impact of current management strategies among the prison population who have committed drug abuse crimes that have supported reducing relapse, repeated crimes, and incarceration. Regarding the study's second hypothesis relating to the need for treatment and rehabilitation in prison for addiction prisoners, the analysis revealed that the key difference lay in the belief that isolating prisoners from non-addiction crime prisoners was perceived as more positive from UAE prisoners than those from Arab nationals and other nationals.

While the current study had hoped for greater differences to be identified, the sole significant difference suggests that imprisonment does not support healing from drug addiction, nor does it support reducing the risk of reoffending for non-addiction crimes. As such, the initial suggestion regarding healing during imprisonment appears to be in line with previous studies (Moazen, et al. 2018), such as Mundt, et al. (2018), who found that approximately 25% of prisoners continue to utilise illicit drugs during imprisonment. As Al-Shazly and Tinasti (2016) reported, there remains a strong focus across the Middle East and North Africa toward controlling the possession of drug use which has led to the development of several policies and legislations which place a focus on either treatment or incarceration to support healing.

Making connections with previous study done in the UAE (Alsuwaidi, 2019), the description of the patients in jail about their experience in prison stated that "prison is not an experience that makes you want to quit drugs,". However, it made their addiction problem even worse, as in prison patients were introduced to different and many types of drugs, and they were accessible and available. Moreover, patients stated that they had closer connections in prison with drug dealers and prisoners with a long history of crimes and addiction.

Relating to, a finding in this study states that, the number of return to the prison for non-addiction crime (dealing and promoting) is significant among Arab prisoners. Number of participants pointed out that, after imprisonment experience, they develop adequate understanding of the drug sources from older prisoners, and prefer to deal with drug trade rather than involve themselves in other types of crime, because drug dealing is safer and easier than committing other crimes, and the income from drug dealing is greater. Thus more easily satisfying their own needs and perhaps also the needs of their family.

Respecting, the findings from the current study would suggests that the latter would not be an effective approach and may potentially lead to further drug use or trade should the

opportunity present while incarcerated. As such, while criminalising drug use may reduce the prevalence (Maher, & Dixon, 2017), this leaves a significant gap arising in providing safe and effective support and treatment to those criminalised.

The current study identified that isolating addiction prisoners from non-addiction prisoners was viewed as beneficial to support treatment and management. Such recommendations have been offered previously to reduce the potential exposure to drugs while incarcerated and further support rehabilitation (Powis et al., 2012). Therefore, prison officers must be aware of the beneficial impact this can have on prisoner outcomes and may further potentially reduce the risk of reoffending for the same or different crime in the future.

## Study Limitations

While the current study was effective in addressing the aims and subsequent hypotheses, limitations were present. Therefore, it is important to highlight these limitations and provide recommendations for rectification in future studies.

Firstly, as the study focused on an isolated population within the PCID in Sharjah, UAE, this limits the generalisability of the study findings. The use of a single prison has a significant impact on generalising the findings from the study to the remaining population as it is not representative of the entire population. Further, using a single prison provides a lack of scientific rigour and external validity, suggesting that widespread changes in practice may not be practical, and the inclusion of such findings into guidelines would be challenging (Bellomo et al., 2009). Therefore, the findings from the current study should be adapted and utilised as a part of a larger study with multiple centres which can gain improved insights and can help to inform future practice more effectively trials (Bafeta et al., 2012; Dechartres et al., 2011; Unverzagt et al., 2013).

Secondly, due to the data collection process, there was a risk of information bias due to incorrect recording of findings. Such errors can impact both inherent validity and data reliability and therefore must be considered in greater length in the future. This may be improved by using multiple data reviewers who can engage in a vigorous quality check process to ensure no errors occur and that the data is accurate.

Thirdly, there were several discrepancies in the population characteristics, which is likely to have influenced the study's outcome. Firstly, as the study was interested in gender differences, it would have been more appropriate to collect data from an equal gender balance than a male-dominated population. That was because, the coincidence of the interview period with the days of Eid al-Adha, number of female participants obtained pardon and release, as a custom of our honourable rulers, amnesty and release of some cases are carried out in proportion to the duration of the sentence and the severity of the offense in Eids days, which impacted the study outcomes.

Further issues arose concerning nationality, whereby the majority of participants identified as UAE nationals. Such issues may have impacted the study outcomes and, therefore, may impact the recommendations provided.

Another obstacle affects the obtained information, was the creditability of some prisoners (specifically Arab and Other nationalities). After collecting and recording the data, it was discovered that the interviewees were actually drug trader or dealer not abuser, but they pretend having addiction case to try to minimize the duration of imprisonment, as trader years of punishment reaches up to 25 years, whereas the drug abuser sentence emerge from 6 months-4 years. Moreover, number of UAE male participants refused to attend the interview, due to their depressed mood and bad feeling. Due to these downsides, the duration of interviews in the prison reschedules by a further permission to re-obtain the missing data, which impacted the time frame of this research. In addition, COVID-19 pandemic was a huge hindrance and imposes very limited and restricted time and days for the interviews. According to the quarantine period, time and days which given to the researcher for interviewing prisoners, were limited and fluctuate upon the circumstances and the spread of the virus among the prison community. Future studies must be aware of such issues and strive to rectify such concerns by recruiting appropriate participants who align with the research goals.

Finally, the study utilised convenience sampling, which poses several limitations, including some of those mentioned in the current section relating to generalisability and under-representation of the target population. However, a key limitation of this approach is the potential for bias to be introduced, which impacts the understanding of the effect of interventions on subpopulations. However, the use of such sampling techniques was implemented based on time and resource restraints and therefore was suitable in the current study, but future studies must be aware of such disadvantages.

## 1.17 Study Implications

To the best of the researchers' knowledge, this is an initial study investigating the perception of prisons and the ability to support treatment and rehabilitation in prison populations in the UAE. The primary application of the findings from the study provide support for the introduction of guidance relating to the isolation of drug addicts from other crime prisoners to support rehabilitation but does not provide support for the use of imprisonment to support healing from drug addiction. Therefore, it may be suggested that implementing more specialised care for addicts may benefit in healing from addiction, which may influence reoffending in prisoners.

However, it is key that researchers understand the above limitations and are aware of such limitations when interpreting these results. While the study provides key insights into the associated demographics and social factors on substance use disorders and the need for management and treatment in prisoners in a lone prison, the effect may be lower in other populations.

## 1.18 Future Research

The current study has provided an insight into several implications regarding what may lead to an increased risk of substance use disorder and the characteristics of incarcerated prisoners, which may enhance such risks. However, this research must be developed to enhance the knowledge and understanding of how best to support treatment and management in this population. Therefore, the initial recommendation for future research relates to the need to enhance the population focus to prisons across UAE initially, but further extend this across the Middle East to gain a more population-based focus which can help to inform policy regarding the use of treatment or imprisonment to support healing from addiction.

Secondly, it would be recommended that gaining greater insights from female prisoners would be beneficial to understand gender disparities in a general manner whereby factors may differ between males and females. As highlighted above, studies have noted that males are more likely to engage in substance misuse, yet less is known regarding the main factors that lead female to substance misuse, especially in areas where social, cultural and religious beliefs are key elements of societal living.

# CONCLUSION AND RECOMMENDATIONS

The current chapter will summarise the key study findings and what this means in terms of the future directions of providing treatment and management services in prisons and how this may impact future reoffending behaviour. This will include an overview of the aims and how the study has met these. Finally, the conclusion will provide recommendations for further investigation and note any other gaps identified in the literature.

## 1.19 Conclusion

The current study aimed to address the key characteristics and social demographics associated with substance use disorders amongst individuals incarcerated in the UAE. **The findings demonstrate that while there were not a significant number of demographics and characteristics which led to differences in the population, one of the most prominent was nationality. While there was no evidence of an impact of education, employability, social and family factors on the problem of drug abuse and related crime commitment and incarceration, there was evidence supporting the impact of nationality**. Therefore, the initial hypothesis was partially accepted.

Secondly, the study further aimed to the impact of current treatment and management strategies among the prison population who have committed drug abuse crimes that have supported reducing relapse, repeated crimes and reincarceration. **The study found that prisoners identified as UAE nationals were more likely to agree that isolating addiction prisoners from other crime prisoners would support healing from drug addiction than those from Arab nationals and other nationals.** Therefore, the second hypothesis was partially accepted based on this finding.

The primary findings highlight an influence of prisoner demographics on addiction-related crimes committed, with further evidence demonstrating that **prisoners originating from an Arab country are also more likely to commit a non-drug or addiction-related crime than prisoners from other nations.** Therefore, it can be agreed that these factors should be considered and discussed when creating guidance to support the development of appropriate treatment and management services within prison services.

In my own personal reflection and knowledge that preceded the findings of this study, I have concluded some theories that required further studies and implementation to protect our society. To sum up, offenders that are incarcerated for drug abuse, and are not getting any treatment, will have no change in future actions post-release, especially that the offence that resulted in said punishment is a certain behaviour that's linked to their drug use (Al-Shazly 2016). Addiction requires treatment, just like any other chronic disease as it mentioned above. It is a chronic brain disease with genetic components that should not be ignored (NIDA 2018). The number of offenders with substance use disorder, are only increasing globally and locally through the years as mentioned, and this highlights the need to look into that and to implement a treatment plan in the criminal justice system (Maher, & Dixon, 2017). These data suggest that a substantial, targeted educational initiative is needed to increase awareness of the treatment and criminal justice benefits of MAT in the drug courts. It is an opportunity to treat the drug related-crime prisoners as they are a population that would not seek help on their own.

## 1.20 Recommendations

1- Based on the study's findings, it is recommended that a larger study that utilises a multi-centred approach should be conducted to gain a greater understanding of how to best support prisoners rehabilitation from drug addiction. This would provide an opportunity to generalise the perceptions of isolation and healing from addiction in prisoners and allow an opportunity to understand a more reliable effect on how to prevent reoffending through addiction rehabilitation.

2- Future studies must ensure that appropriately sized samples are recruited to ensure that comparison between social demographics and factors can be made while supporting a greater understanding of improving treatment and rehabilitation in prison. In this sense, the current study could not determine if additional factors affected the reoffending or rehabilitation of drug addiction due to a small population with several unbalanced subgroups such as gender and nationality present.

3- To improve the outcomes of this thesis, it is recommended to provide jail-based MAT plus psychological treatment therapies for prisoners of SUD, followed by recording the return number of each offender to the prison, severity of dependency and emotional control (anger, impulsivity, risk behaviors), then compare the results of this group with non-treated prisoners. These results will be useful study that complement this mission

and give a broader and clearer perspective regarding the benefit of treatment within incarceration for substance use disorder prisoners in the UAE.

## Personal Reflection

It has been a positive personal journey and enriching experience, completing my dissertation. The challenges and efforts so far have enhanced me both as a researcher and clinician and provided me the opportunity to develop in my career and personal level significantly.

During the research journey, I acquired and developed different manageable core skills, such as, stress management, team work, presentation and communication. Moreover, this research opened the door widely for me to delve in important research skills including critical thinking, critical searching, statistical methodologies and develop the knowledge of confidentiality and ethical procedures.

I have chosen to focus this reflection on stress and time management skills, elements which differed in its application when compared to a clinical setting and also an area of significant improvement. I have selected Gibbs' (1988) Reflective Model for use in this situation (appendix 3).

### 1.21 Experience

The completion of this project involved several processes, initial planning, gaining ethical approval, data collection, statistical analysis, and writing up. Numerous interaction with organisational bodies required to fulfil the research inquiries, as well as continual liaison with my supervisors. In addition, the daily work stressors I was handle non-stop in my work-placement. In boarding on this journey I moved from my clinical role within a highly controlled, timetabled environment, to an unstructured setting. Although having a final submission deadline, the route to that end point was self-directed, requiring full reliance on individual time management skills and stress management. Moreover, inconsistent timing of feedback, interrupted and delayed the process of writing up.

### 1.22 Feelings

From talking to patients in a cozy room to ones behind the bars, a new sense of fright that was nonexistent. Is it the guard checking on my safety every 5 minutes? Or is it the spiked fence making sure they stay behind bars. What was supposed to be a 1 week-job took way more than anticipated, which was a big blow on my self-esteem. The stress was high, and the

adrenaline of the topic was higher, and the sleepless nights were countless. But I was glad that I got the ending I anticipated.

### 1.23 Evaluation

As every other situation I had my up and downs. A huge positive was my ability to have a daily agenda to organize my work, studies, and life at home. I had a constant source of motivation from the excitement to see the result of my study, and the endless support of family members. But that was not able to cover-up my big negative, I was new to all of this, with no previous experience or exposure to research which made me take more time than I was supposed to. I was thankful for my peers to guide me pass the obstacles I faced in the organizations and in regaining my confidence. In the end by structured agenda has made the process a more tolerable one.

### 1.24 Analysis

This experience was a proof to me that having a realistic calculated schedule that fits the lifestyle that you have is critical to achieve and check off the objectives. Looking back on the past few months of working on my research, it is good to reflect on the mistakes as in them I have gained knowledge. It allowed me to power through my weakness by overcoming them, and maintain my strengths by acknowledging and putting them to good use. I can say now that I have not only finished and submitted my research, but I have grown into the academic that I always envisioned since my first day. Lastly, it is important to reflect on the qualities that I gained going through this experience, building a new tolerance for patience, never losing my focus on the anticipated ending, and to follow a structure agenda that enabled me to work in a systematic way.

### 1.25 Conclusions

Fearlessness to achieve my goals will be a value I will cherish and carry out in my future work, as I will be working in communities and circumstances where fear can taunt the rapport with my patients. The personality and knowledge shift that happened is bigger than what was mentioned above, as it affected me on a deeper level. The growth that happened, and the skills gained will be a valuable in aiding me to pursue my future goals. I can finally say that on a personal level, I am fearless to whatever comes my way, and I am much stronger and denser in knowledge than I was when I started.

## 1.26 Action plan

No matter how much knowledge you gain, or how much growth has been done, there is no end to it. Continued training is a golden opportunity to be the best version you can be. And this opportunity to continue and work on my hypothesis will be a beneficial strategy to aid in the development of making the Justice System have a deeper look on the scientific rationale of it. In the end, it is our job to use our analysis in the advantage of making the world a better place.

## References

Adolescent Substance Abuse Guide to Prevention and Treatment Edited by Jerome Baker, Richard Isralowitz, and Mark Singer 2013

Afkar, A., Rezvani, S.M. and Emami Sigaroudi, A., 2017. Measurement of factors influencing the relapse of addiction: a factor analysis. International Journal of High Risk Behaviors and Addiction, 6(3).

Akanbi, M.I., Augustina, G., Theophilus, A.B., Muritala, M. and Ajiboye, A.S., 2015. Impact of Substance Abuse on Academic Performance among Adolescent Students of Colleges of Education in Kwara State, Nigeria. Journal of education and practice, 6(28), pp.108-112.

Alblooshi, H., Hulse, G.K., El Kashef, A., Al Hashmi, H., Shawky, M., Al Ghaferi, H., Al Safar, H. and Tay, G.K., 2016. The pattern of substance use disorder in the United Arab Emirates in 2015: results of a National Rehabilitation Centre cohort study. Substance abuse treatment, prevention, and policy, 11(1), pp.1-11.

Al Ghaferi, H. A., Ali, A. Y., Gawad, T. A. & Wanigaratne, S., 2017. Developing substance misuse services in United Arab Emirates: the National Rehabilitation Centre experience. BJPsych International, 14(4), pp. 92-96.

Alhyas, L., Al Ozaibi, N., Elarabi, H., El-Kashef, A., Wanigaratne, S., Almarzouqi, A., Alhosani, A. and Al Ghaferi, H., 2015. Adolescents' perception of substance use and factors influencing its use: a qualitative study in Abu Dhabi. *Jrsm Open*, *6*(2), p.2054270414567167.

Aliiaskarov, B. and Bakiev, E., 2014. The social learning and social control determinants of alcohol use among youth in Kyrgyzstan. Drugs: education, prevention and policy, 21(3), pp.205-210.

AlMatrooshi, A.M., Gilani, S.R.S. and Mujtaba, B.G., 2021. Assessment of mandatory reporting laws to break the silence of child sexual abuse: a case study in the United Arab Emirates. SN Social Sciences, 1(8), pp.1-19.

Al-Shazly, F. & Tinasti, K., 2016. Incarceration or mandatory treatment: Drug use and the law in the Middle East and North Africa. Internatinoal Journal of Drug Policy, 31(1), pp. 172-177.

Alsuwaidi, H., 2019. Understanding the Barriers to Integration to Society, Recovering Patient From Addiction Face: Qualitative Study in UAE (Doctoral dissertation).

American Psychiatric Association 2013, Diagnostic and Statistical Manual of Mental Disorders, Attention-Deficit and Disruptive Behavior Disorders, Washington, DC, USA, 5th edition,

American Society of Addiction Medicine. (2011). Definition of Addiction. Retrieved from American Society of Addiction Medicine: http://www.asam.org/qualitypractice/definition-of-addiction

Andrade, F.H., 2014. Co-occurrences between adolescent substance use and academic performance: school context influences a multilevel-longitudinal perspective. Journal of adolescence, 37(6), pp.953-963.

Atwoli, L., Mungla, P.A., Ndung'u, M.N., Kinoti, K.C. and Ogot, E.M., 2011. Prevalence of substance use among college students in Eldoret, western Kenya. BMC psychiatry, 11(1), pp.1-9.

Baillargeon, J., Penn, J.V., Knight, K., Harzke, A.J., Baillargeon, G. and Becker, E.A., 2010. Risk of reincarceration among prisoners with co-occurring severe mental illness and substance use disorders. Administration and Policy in Mental Health and Mental Health Services Research, 37(4), pp.367-374.

Ballester, L., Valero, M., Orte, C. and Amer, J., 2020. An analysis of family dynamics: a selective substance abuse prevention programme for adolescents. European journal of social work, 23(1), pp.93-105.

Bassi, A. P. et al., 2017. Substance abuse and its prevalence among secondary school adolescents in Kagoro, Kaduna State, Nigeri. World Journal of Research Review, 5(1), pp. 11-16.

Baughman, M., Tossone, K., Singer, M.I. and Flannery, D.J., 2019. Evaluation of treatment and other factors that lead to drug court success, substance use reduction, and mental health

symptomatology reduction over time. International journal of offender therapy and comparative criminology, 63(2), pp.257-275.

Belenko, S., 2016. Research on drug courts: A critical review 2001 update.

Berridge, K.C. and Kringelbach, M.L., 2015. Pleasure systems in the brain. Neuron, 86(3), pp.646-664.

Blum, K., Liu, Y., Shriner, R. and S Gold, M., 2011. Reward circuitry dopaminergic activation regulates food and drug craving behavior. Current pharmaceutical design, 17(12), pp.1158-1167.

Chandler, R.K., Fletcher, B.W. and Volkow, N.D., 2009. Treating drug abuse and addiction in the criminal justice system: improving public health and safety. Jama, 301(2), pp.183-190.

Charach, A., Yeung, E., Climans, T. and Lillie, E., 2011. Childhood attention-deficit/hyperactivity disorder and future substance use disorders: comparative meta-analyses. Journal of the American Academy of Child & Adolescent Psychiatry, 50(1), pp.9-21.

Chen, G. & Gueta, K., 2015. Child abuse, drug addiction and mental health problems of incarcerated women in Israel. International Journal of Law and Psychiatry, 39(1), pp. 36-45.

Cheng, W.C. and Dao, K.L., 2020. Prevalence of drugs of abuse found in forensic testing of illicit drug seizures and urine samples from offenders/probationers in Hong Kong: A 3-year update. Forensic Science International, 317, p.110535.

"Child Welfare Information Gateway: Definitions of Child Abuse and Neglect [Internet]. US Department of Health & Human Services," 2011, http://www.childwelfare.gov/pubs/factsheets/whatiscan.pdf.View at: Google Scholar

Choenni, V., Hammink, A. and van de Mheen, D., 2017. Association between substance use and the perpetration of family violence in industrialized countries: A systematic review. Trauma, Violence, & Abuse, 18(1), pp.37-50.

Clark, H.K., Ringwalt, C.L. and Shamblen, S.R., 2011. Predicting adolescent substance use: The effects of depressed mood and positive expectancies. Addictive behaviors, 36(5), pp.488-493.

Clark, N., Dolan, K. and Farabee, D., 2017. Public health alternatives to incarceration for drug offenders. *Eastern Mediterranean Health Journal*, *23*(3).

Colorado Department of Public Health and Environment (US) [CDPHE], “Child Abuse and Neglect: Section 3”.View at: Google Scholar

Connolly, K. and Granfield, R., 2017. Building recovery capital: The role of faith-based communities in the reintegration of formerly incarcerated drug offenders. Journal of Drug Issues, 47(3), pp.370-382.

Damiri, B. R., Isra'A, S. & Aghbar, M. H., 2018. Pattern of substance use among schoolchildren in Palestine: a cross-sectional study. Egyptain Journal of Forensic Sciences, 8(1), pp. 1-10.

Dar Al-Ifta’a, 2021

Di Liegro, C.M., Schiera, G., Proia, P. and Di Liegro, I., 2019. Physical activity and brain health. Genes, 10(9), p.720.(di Liegro et al., 2019)

Douaihy, A. and Driscoll, H.P., 2018. Scientific Foundations for Addiction Practice. *Humanizing Addiction Practice*, pp.45-64.

Doran, C.M., 2016. Preliminary estimates of the economic implications of addiction in the United Arab Emirates. *EMHJ-Eastern Mediterranean Health Journal*, *22*(10), pp.749-755.

Drug Enforcement Department, Sharjah Police, 2020

Dlaw 40, UAE, 2016

Edition, F., 2013. Diagnostic and statistical manual of mental disorders. Am Psychiatric Assoc, 21.

Edwards, S. and Koob, G.F., 2010. Neurobiology of dysregulated motivational systems in drug addiction. Future neurology, 5(3), pp.393-410.

ElKashef, A. et al., 2019. Recommendations to improve opioid use disorder outcomes in countries of the Middle East. Journal of Susbtance Use, 24(1), pp. 4-7.

Ernst, M. and Luciana, M., 2015. Neuroimaging of the dopamine/reward system in adolescent drug use. CNS spectrums, 20(4), pp.427-441.

Espelage, D.L., Low, S., Rao, M.A., Hong, J.S. and Little, T.D., 2014. Family violence, bullying, fighting, and substance use among adolescents: A longitudinal mediational model. *Journal of Research on Adolescence*, *24*(2), pp.337-349.

Fazel, S., Bains, P. and Doll, H., 2006. Substance abuse and dependence in prisoners: a systematic review. Addiction, 101(2), pp.181-191.

Fairley, M., Humphreys, K., Joyce, V.R., Bounthavong, M., Trafton, J., Combs, A., Oliva, E.M., Goldhaber-Fiebert, J.D., Asch, S.M., Brandeau, M.L. and Owens, D.K., 2021. Cost-effectiveness of treatments for opioid use disorder. *JAMA psychiatry*.

Florek, S., Dębski, P., Piegza, M., Gorczyca, P. and Pudlo, R., 2021. Relationship between the Severity of Anxiety Symptoms, Aggression and Alcohol Consumption during the COVID-19 Pandemic Period. Medicina, 57(9), p.959.

Funmilayo, A.A., Robert, O.T., Raimi, M.O., Okoyen, E. and Tuebi, M., 2019. A study of the context of adolescent substance use and patterns of use in yenagoa local government, Bayelsa State, Nigeria. MOJ Addict Med Ther, 6(1), pp.25-32.

Gallagher, J.R., 2015. The Treatment of Substance Use Disorders in Criminal Justice Settings. Alcoholism Treatment Quarterly, 33(1), pp.3-5.

Gallagher, J.R., Nordberg, A., Deranek, M.S., Ivory, E., Carlton, J. and Miller, J.W., 2015. Predicting termination from drug court and comparing recidivism patterns: Treating substance use disorders in criminal justice settings. Alcoholism Treatment Quarterly, 33(1), pp.28-43.

Ghavidel, N. et al., 2012. Investigation of substance use prevalence and the interrelated factors involved through third-year high school students in Nazarabad city from January 2008 to June 2008. Journal of Medical Sciences.

Gallagher, J.R., 2015. The Treatment of Substance Use Disorders in Criminal Justice Settings. *Alcoholism Treatment Quarterly*, *33*(1), pp.3-5.

Görgülü, T., 2019. Substance use risk factors and the results of substance use behaviors: A qualitative study on the experiences of substance users. Addicta: The Turkish Journal on Addictions, 6, pp.511-538.

Guidali, G., Pisoni, A., Bolognini, N. and Papagno, C., 2019. Keeping order in the brain: the supramarginal gyrus and serial order in short-term memory. Cortex, 119, pp.89-99.

Hampton, W.H., Hanik, I.M. and Olson, I.R., 2019. Substance abuse and white matter: Findings, limitations, and future of diffusion tensor imaging research. Drug and alcohol dependence, 197, pp.288-298.

Heather, N., 2017. Is the concept of compulsion useful in the explanation or description of addictive behaviour and experience?. Addictive Behaviors Reports, 6, pp.15-38.

Heather, N., 2017. Q: Is addiction a brain disease or a moral failing? A: Neither. Neuroethics, 10(1), pp.115-124.

Hedin, G., Norell-Clarke, A., Hagell, P., Tønnesen, H., Westergren, A. and Garmy, P., 2020. Insomnia in relation to academic performance, self-reported health, physical activity, and substance use among adolescents. International Journal of Environmental Research and Public Health, 17(17), p.6433.

Hemovich, V., Lac, A. and Crano, W.D., 2011. Understanding early-onset drug and alcohol outcomes among youth: The role of family structure, social factors, and interpersonal perceptions of use. Psychology, health & medicine, 16(3), pp.249-267.

Ho, S.B., Bräu, N., Cheung, R., Liu, L., Sanchez, C., Sklar, M., Phelps, T.E., Marcus, S.G., Wasil, M.M., Tisi, A. and Huynh, L., 2015. Integrated care increases treatment and improves outcomes of patients with chronic hepatitis C virus infection and psychiatric illness or substance abuse. *Clinical Gastroenterology and Hepatology*, *13*(11), pp.2005-2014.

Horn, B.P., Li, X., McCrady, B., Guerin, P. and French, M.T., 2020. Cost-effectiveness analysis of a large jail-based methadone maintenance treatment continuation program in New Mexico. Journal of substance abuse treatment, 115, p.108042.

https://www.drugabuse.gov/publications/drugfacts/understanding-drug-use-addiction. June 6, 2018 Accessed June 22, 2021.

Isralowitz, R. and Singer, M., 1983. Adolescent substance abuse: A guide to prevention and treatment. Psychology Press.

Iwamoto, D. K. & Smiler, A. P., 2013. Alcohol makes you macho and helps you make friends: The role of masculine norms and peer pressure in adolescent boys' and girls' alcohol use. Substance use & misuse, 48(5), pp. 371-378.

Iwamoto, D. K. et al., 2011. "Man-ing" up and getting drunk: The role of masculine norms, alcohol intoxication and alcohol-related problems among college men. Addictive behaviords, 36(9), pp. 906-911.

Kohno, M., Ghahremani, D.G., Morales, A.M., Robertson, C.L., Ishibashi, K., Morgan, A.T., Mandelkern, M.A. and London, E.D., 2015. Risk-taking behavior: dopamine D2/D3 receptors, feedback, and frontolimbic activity. Cerebral cortex, 25(1), pp.236-245.

Karila, L., M Carroll, K. and Reynaud, M., 2011. Editorial [Hot Topic: Pharmacological Treatments of Alcohol and Drug Addiction: What's New?(Executive Guest Editor: Laurent Karila)]. *Current pharmaceutical design*, *17*(14), pp.1320-1320.

Karimi, S. et al., 2010. Boolean versus ranked querying for biomedical systematic reviews. *BMC medical iforamtics and decision making*, pp. 1-20.

Koob, G.F. and Le Moal, M., 2005. Plasticity of reward neurocircuitry and the'dark side'of drug addiction. Nature neuroscience, 8(11), pp.1442-1444.

Koob, G.F. and Volkow, N.D., Neurobiology of addiction: a neurocircuitry analysis. Lancet Psychiatry. 2016; 3 (8): 760–73.

Koob, G.F., 2011. Neurobiology of addiction. *Focus*, *9*(1), pp.55-65.

Kort-Butler, L.A., 2009. Coping styles and sex differences in depressive symptoms and delinquent behavior. Journal of Youth and Adolescence, 38(1), pp.122-136.

Kumpfer, K. L. & Magalhaes, C., 2018. Strengthening Families Program: an evidence-based family intervention for parents of high-risk children and adolescents. Journal of Child & Adolescent Substance Abuse, 27(3), pp. 174-179.

Lipari, R.N. and Van Horn, S.L., 2013. Children living with parents who have a substance use disorder. The CBHSQ report.

McGowan, J., Sampson, M., Salzwedel, D.M., Cogo, E., Foerster, V. and Lefebvre, C., 2016. PRESS peer review of electronic search strategies: 2015 guideline statement. *Journal of clinical epidemiology*, *75*, pp.40-46.

McDonough, M.H., Jose, P.E. and Stuart, J., 2016. Bi-directional effects of peer relationships and adolescent substance use: A longitudinal study. *Journal of youth and adolescence*, *45*(8), pp.1652-1663.

Maher, L. & Dixon, T. C., 2017. Collateral damage and the criminalisation of drug use. The Lancet HIV, 4(8), pp. E326-E327.

Martinelli, T. F. et al., 2020. Comparing three stages of addiction recovery: long-term recovery and its relation to housing problems, crime, occupation situation, and substance use. Drugs: Education, Prevention and Policy, 27(5), pp. 387-396.

Marks, D.F., 2018. *A general theory of behaviour*. Sage.

Matusow, H., Dickman, S.L., Rich, J.D., Fong, C., Dumont, D.M., Hardin, C., Marlowe, D. and Rosenblum, A., 2013. Medication assisted treatment in US drug courts: Results from a nationwide survey of availability, barriers and attitudes. *Journal of substance abuse treatment*, *44*(5), pp.473-480.

McMurran, M., 2013. Individual-level interventions for alcohol-related violence: Expanding targets for inclusion in treatment programs. Journal of Criminal Justice, 41(2), pp.72-80.

Melemis, S.M., 2015. Focus: addiction: relapse prevention and the five rules of recovery. The Yale journal of biology and medicine, 88(3), p.325.

Merz, F., 2018. United Nations Office on Drugs and Crime: World Drug Report 2017. 2017. SIRIUS-Zeitschrift für Strategische Analysen, 2(1), pp.85-86.

Miech, R., Patrick, M.E., Keyes, K., O'Malley, P.M. and Johnston, L., 2021. Adolescent drug use before and during US national COVID-19 social distancing policies. Drug and alcohol dependence, 226, p.108822.

Miech, R.A., Patrick, M.E., O'Malley, P.M., Johnston, L.D. and Bachman, J.G., 2020. Trends in reported marijuana vaping among US adolescents, 2017-2019. Jama, 323(5), pp.475-476.

Miller, P.M., 2013. *Principles of addiction: Comprehensive addictive behaviors and disorders, Volume 1* (Vol. 1). Academic Press.

Moazen, B. et al., 2018. Prevalence of drug injection, sexual activity, tattooing, and piercing among prison inmates. Epidemiologic Reviews, 40(1), pp. 58-69.

Müller, D.J., Likhodi, O. and Heinz, A., 2010. Neural markers of genetic vulnerability to drug addiction. Behavioral neuroscience of drug addiction, pp.277-299.

Mundt, A. P., Baranyi, G., Gabrysch, C. & Fazel, S., 2018. Substance use during imprisonment in low-and middle-income countries. Epidemiological Reviews, 40(1), pp. 70-81.

National Institue on Drug Abuse. (2016). Understanding Drug Use and Addiction. Retrieved from National Institue on Drug Abuse: Advancing Addiction Science: https://www.drugabuse.gov/publications/drugfacts/understanding-drug-useaddiction

Ng, T.H., Alloy, L.B. and Smith, D.V., 2019. Meta-analysis of reward processing in major depressive disorder reveals distinct abnormalities within the reward circuit. Translational psychiatry, 9(1), pp.1-10.

NIDA. 2019, September 13. Marijuana use at historic highs among college-age adults. Retrieved from https://www.drugabuse.gov/news-events/news-releases/2019/09/marijuana-use-at-historic-highs-among-college-age-adults on 2021, September 8

NIDA. 2021, June 24. Adolescent marijuana, alcohol use held steady during COVID-19 pandemic. Retrieved from https://www.drugabuse.gov/news-events/news-releases/2021/06/adolescent-marijuana-alcohol-use-held-steady-during-covid-19-pandemic on 2021, September 8

NIDA. 2018 Understanding Drug Use and Addiction DrugFacts. National Institute on Drug Abuse website. https://www.drugabuse.gov/publications/drugfacts/understanding-drug-use-addiction. June 6, 2018 Accessed June 22, 2021.

Nisar, ,., Ullah, S., Ali, M. & Alam, S., 2015. Juvenile delinquency: The Influence of family, peer and economic factors on juvenile delinquents. Applied Science Reports, 9(1), pp. 37-48.

Noël, X., Brevers, D. and Bechara, A., 2013. A neurocognitive approach to understanding the neurobiology of addiction. Current opinion in neurobiology, 23(4), pp.632-638.

Osman, T., Victor, C., Abdulmoneim, A., Mohammed, H., Abdalla, F., Ahmed, A., Ali, E. and Mohammed, W., 2016. Epidemiology of substance use among university students in Sudan. Journal of addiction, 2016.

Parsian, M. & Nazoktabar, H., 2016. The role of friends in the tendency towards addiction between the youths of Sari. Scientific Research Center, 1(2), pp. 176-182.

Pastor, V., Antonelli, M.C. and Pallarés, M.E., 2017. Unravelling the link between prenatal stress, dopamine and substance use disorder. Neurotoxicity research, 31(1), pp.169-186.

Peele, S., 2016. People control their addictions: No matter how much the “chronic” brain disease model of addiction indicates otherwise, we know that people can quit addictions–with

special reference to harm reduction and mindfulness. Addictive behaviors reports, 4, pp.97-101.

Penney, J., Dargan, P.I., Padmore, J., Wood, D.M. and Norman, I.J., 2016. Epidemiology of adolescent substance use in London schools. QJM: An International Journal of Medicine, 109(6), pp.405-409.

Peters, R.H., Young, M.S., Rojas, E.C. and Gorey, C.M., 2017. Evidence-based treatment and supervision practices for co-occurring mental and substance use disorders in the criminal justice system. The American journal of drug and alcohol abuse, 43(4), pp.475-488.

Pickard, H., Ahmed, S.H. and Foddy, B., 2015. Alternative models of addiction. Frontiers in psychiatry, 6, p.20.

Piko, B.F. and Balázs, M.Á., 2012. Authoritative parenting style and adolescent smoking and drinking. Addictive behaviors, 37(3), pp.353-356.

Poudel, A. and Gautam, S., 2017. Age of onset of substance use and psychosocial problems among individuals with substance use disorders. BMC psychiatry, 17(1), pp.1-7.

Powis, B., Wlaton, C. & Randhawa, K., 2012. Exploring the Treatment Integrity of Custodial Addiction Therapeutic Communities, London: Ministry of Justice.

“PubMed Health: Depression [Internet]. U.S. National Library of Medicine,” 2019, http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0003697/.View at: Google Scholar

Punishment and Correctional Institution Dept. 2021.

Prendergast, M.L., Pearson, F.S., Podus, D., Hamilton, Z.K. and Greenwell, L., 2013. The Andrews’ principles of risk, needs, and responsivity as applied in drug treatment programs: Meta-analysis of crime and drug use outcomes. Journal of experimental criminology, 9(3), pp.275-300.

Rathinabalan, I. and Naaraayan, S.A., 2017. Effect of family factors on juvenile delinquency. International Journal of Contemporary Pediatrics, 4(6), pp.2079-2082.

Rich, J.D., McKenzie, M., Larney, S., Wong, J.B., Tran, L., Clarke, J., Noska, A., Reddy, M. and Zaller, N., 2015. Methadone continuation versus forced withdrawal on incarceration in a combined US prison and jail: a randomised, open-label trial. The Lancet, 386(9991), pp.350-359.

Romano, S.J., Halmi, K.A., Sarkar, N.P., Koke, S.C. and Lee, J.S., 2002. A placebo-controlled study of fluoxetine in continued treatment of bulimia nervosa after successful acute fluoxetine treatment. American Journal of Psychiatry, 159(1), pp.96-102.

Roberts, N.P., Roberts, P.A., Jones, N. and Bisson, J.I., 2015. Psychological interventions for post-traumatic stress disorder and comorbid substance use disorder: A systematic review and meta-analysis. *Clinical psychology review*, *38*, pp.25-38.

Richard, Y. and Moustafa, A.A., 2020. Impulsive behavior in drug addiction: Clinical, cognitive, and neural correlates. *Cognitive, Clinical, and Neural Aspects of Drug Addiction*, p.21.

Salas-Wright, C. P., Vaughn, M. G. & Gonzalez, J. M., 2017. Drug abuse and antisocial behavior: A biosocial life course approach. Champaign, IL: Springer.

Sarhan, H.A.S., 1995. *Drugs abuse in the United Arab Emirates* (Doctoral dissertation, Newcastle University).

Sanmartin, M.X., Ali, M.M., Lynch, S. and Aktas, A., 2020. Association between state-level criminal justice–focused prenatal substance use policies in the US and substance use–related foster care admissions and family reunification. JAMA pediatrics, 174(8), pp.782-788.

Schulenberg, J.E., Johnston, L.D., O'Malley, P.M., Bachman, J.G., Miech, R.A. and Patrick, M.E., 2017. Monitoring the Future national survey results on drug use, 1975-2016: Volume II, college students and adults ages 19-55.

Shader, M., 2001. Risk factors for delinquency: An overview. Washington, DC: US Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Sharjah Police, 2020

Sher, K.J. ed., 2016. *The Oxford Handbook of Substance Use and Substance Use Disorders: Volume 2*. Oxford University Press.

Siegel, Zachary. 2015. Is addiction a habit or a disease? Retrieved from http://www.thedailybeast.com/articles/2015/07/19/neuroscientist-addiction-is-not-a-disease.html

Spiker, R.L., 2014. Mental health and marital status. *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society*, pp.1485-1489.

Silberg, J., Rutter, M., D'Onofrio, B. and Eaves, L., 2003. Genetic and environmental risk factors in adolescent substance use. Journal of Child Psychology and Psychiatry, 44(5), pp.664-676.

Soleimani, M. & Esfahani, M., 2019. The impact of network of social relationships effective in drug addiction and crime in connection with the it.. Journal of Social Sciences and Humanities Research, 7(3).

Somani, S. and Meghani, S., 2016. Substance abuse among youth: A harsh reality. Emerg Med (Los Angel), 6(330), p.2.

Suckling, J. and Nestor, L.J., 2017. The neurobiology of addiction: the perspective from magnetic resonance imaging present and future. Addiction.

Sweileh, W.M., Sa'ed, H.Z., Al-Jabi, S.W. and Sawalha, A.F., 2014. Substance use disorders in Arab countries: research activity and bibliometric analysis. Substance abuse treatment, prevention, and policy, 9(1), pp.1-9.

Tai, B. and Volkow, N.D., 2013. Treatment for substance use disorder: opportunities and challenges under the affordable care act. *Social work in public health*, *28*(3-4), pp.165-174.

Taxman, F.S., 2014. Building effective service delivery mechanisms for justice-involved individuals: An under-researched area. Health & Justice, 2(1), pp.1-12.

Taylor, O.D., 2011. Adolescent depression as a contributing factor to the development of substance use disorders. Journal of Human Behavior in the Social Environment, 21(6), pp.696-710.

Trucco, E.M., Colder, C.R., Bowker, J.C. and Wieczorek, W.F., 2011. Interpersonal goals and susceptibility to peer influence: Risk factors for intentions to initiate substance use during early adolescence. The Journal of early adolescence, 31(4), pp.526-547.

Tucker, J.S., Green Jr, H.D., Zhou, A.J., Miles, J.N., Shih, R.A. and D'Amico, E.J., 2011. Substance use among middle school students: Associations with self-rated and peer-nominated popularity. Journal of adolescence, 34(3), pp.513-519.

United Nations Office on Drugs and Crime (UNODC), 2020, World Drug Report.

United Nations Office on Drugs Crime (2015) World drug report, Vienna.

Umberson, D., Thomeer, M.B. and Williams, K., 2013. Family status and mental health: Recent advances and future directions. *Handbook of the sociology of mental health*, pp.405-431.

Vasilenko, S.A., Evans-Polce, R.J. and Lanza, S.T., 2017. Age trends in rates of substance use disorders across ages 18–90: Differences by gender and race/ethnicity. Drug and alcohol dependence, 180, pp.260-264.

Vaughn, M. G., Salas-Wright, C. P. & Reingle-Gonzalez, J. M., 2016. Addiction and crime: The importance of asymmetry in offending and the life-course. Journal of Addictive Diseases, 35(4), pp. 213-217.

Volkow, N.D. and Morales, M., 2015. The brain on drugs: from reward to addiction. Cell, 162(4), pp.712-725.

Volkow, N.D., Han, B., Einstein, E.B. and Compton, W.M., 2021. Prevalence of substance use disorders by time since first substance use among young people in the US. JAMA pediatrics.

Volkow, N.D., Wang, G.J., Fowler, J.S. and Tomasi, D., 2012. Addiction circuitry in the human brain. Annual review of pharmacology and toxicology, 52, pp.321-336.

Volkow, N.D. and Boyle, M., 2018. Neuroscience of addiction: relevance to prevention and treatment. *American Journal of Psychiatry*, *175*(8), pp.729-740.

Wall, A.E. and Kohl, P.L., 2007. Substance use in maltreated youth: Findings from the national survey of child and adolescent well-being. Child maltreatment, 12(1), pp.20-30.

Wakeman, S.E. and Rich, J.D., 2015. Addiction treatment within US correctional facilities: bridging the gap between current practice and evidence-based care. *Journal of addictive diseases*, *34*(2-3), pp.220-225.

Welty, L., Harrison, A., Abram, K., Olson, N., Aaby, D. and McCoy, K., 2019. Substance Abuse and Mental Health Services Administration.(2017). Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality. *Substance Abuse and Mental Health Services Administration. Retrieved. College of Health Sciences*, *106*(5), p.128.

Welsh, J.W., Shentu, Y. and Sarvey, D.B., 2019. Substance use among college students. FOCUS, A Journal of the American Psychiatric Association, 17(2), pp.117-127.

Whitesell, M., Bachand, A., Peel, J. and Brown, M., 2013. Familial, social, and individual factors contributing to risk for adolescent substance use. Journal of addiction, 2013.

Willoughby, J.F., Hust, S.J., Li, J. and Couto, L., 2021. Measurement Invariance of the Sex-Related Cannabis Expectancies Scale across Age and Gender. The Journal of Sex Research, pp.1-9.

Wise, R.A. and Koob, G.F., 2014. The development and maintenance of drug addiction. Neuropsychopharmacology, 39(2), pp.254-262.

Wu, P., Hoven, C.W., Okezie, N., Fuller, C.J. and Cohen, P., 2008. Alcohol abuse and depression in children and adolescents. Journal of Child & Adolescent Substance Abuse, 17(2), pp.51-69.

Zhong, S., Senior, M., Yu, R., Perry, A., Hawton, K., Shaw, J. and Fazel, S., 2021. Risk factors for suicide in prisons: a systematic review and meta-analysis. The Lancet Public Health.

# Appendix

## Appendix 1

**Dubai Medical College**

**MSc Addiction Science**

Title

The prisoners of drug use (addiction) related crimes in UAE: Demographic characteristics and the need for treatment and rehabilitation.

*Please answer the following questions that will enable us to serve you and other users in the future in a better way. It is not obligatory to do, but it will be helpful to do.

**Personal History and Demographics:**

1- Gender: Male/Female
2- Age (Years at last birthday): ……
3- Nationality: UAE - Arab - other nationality……
4- What is your current marital status? Single / Divorced / Married
5- Employment status: Employed / Unemployed
6- Educational level: Not completed education / completed Secondary School / bachelor

**Drug and Criminal History:**

1- Have you return to the prison for the same crime? Yes/ No
2- If Yes, How many times?1,2,3,4,5,6,7,8,9,10
3- Have you been in prison because of different crime? Yes/ No
4- If Yes, How many times?1,2,3,4,5,6,7,8,9,10
5- What is the major substance you have used? THC, Polysubstance, Opioids, Amphetamine/methamphetamine, prescribed medication
6- At what age have you started using drugs? ……

What was the first substance you have abused? THC, Polysubstance, Opioids, Amphetamine/methamphetamine, prescribed medication

## III. Main factors for drug abuse

1- What were the circumstances that lead into you becoming a drug addict?

(you can choose more than an answer)?

- **social environment**: parents and relatives, friends, schoolmates, neighbourhood

- **family problems**: divorce parents and neglects, addiction among family members, death of parent

Other factors: - **curiosity** - **lack of knowledge about the dangers of drugs**

- **psychological problems**

**Present History:**

1- Do you think Isolating addiction prisoners from other crimes prisoners would be beneficial? Yes/ No
2- Do you think imprisonment helped you heal from addiction problems? Yes/ No
3- Do you recommend initiating specialized unit for addiction treatment? Yes/ No

End of questions, thank you

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---|---|---|---|---|---|
| Pearson Chi-Square | 3.394[a] | 1 | .065 | | |
| Continuity Correction[b] | 2.386 | 1 | .122 | | |
| Likelihood Ratio | 3.202 | 1 | .074 | | |
| Fisher's Exact Test | | | | .079 | .064 |
| Linear-by-Linear Association | 3.361 | 1 | .067 | | |
| N of Valid Cases | 104 | | | | |

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.90.

b. Computed only for a 2x2 table

**Crosstab**

| | | | Nationality | | | |
|---|---|---|---|---|---|---|
| | | | UAE National | Arab National | Other National | Total |
| Isolating_addiction_prisoners | Yes | Count | 49 | 11 | 10 | 70 |
| | | Expected Count | 43.1 | 10.1 | 16.8 | 70.0 |
| | | Standardized Residual | .9 | .3 | -1.7 | |
| | No | Count | 15 | 4 | 15 | 34 |
| | | Expected Count | 20.9 | 4.9 | 8.2 | 34.0 |
| | | Standardized Residual | -1.3 | -.4 | 2.4 | |
| Total | | Count | 64 | 15 | 25 | 104 |
| | | Expected Count | 64.0 | 15.0 | 25.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 11.211[a] | 2 | .004 |
| Likelihood Ratio | 10.706 | 2 | .005 |
| Linear-by-Linear Association | 9.838 | 1 | .002 |
| N of Valid Cases | 104 | | |

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.90.

**Crosstab**

| | | | Education | | | |
|---|---|---|---|---|---|---|
| | | | Completed Secondary Education | Not Completed Secondary Education | University | Total |
| Isolating_addiction_prisoners | Yes | Count | 32 | 25 | 13 | 70 |
| | | Expected Count | 29.6 | 26.9 | 13.5 | 70.0 |
| | | Standardized Residual | .4 | -.4 | -.1 | |
| | No | Count | 12 | 15 | 7 | 34 |
| | | Expected Count | 14.4 | 13.1 | 6.5 | 34.0 |
| | | Standardized Residual | -.6 | .5 | .2 | |
| Total | | Count | 44 | 40 | 20 | 104 |
| | | Expected Count | 44.0 | 40.0 | 20.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 1.056[a] | 2 | .590 |
| Likelihood Ratio | 1.065 | 2 | .587 |
| Linear-by-Linear Association | .624 | 1 | .430 |
| N of Valid Cases | 104 | | |

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.54.

**Crosstab**

| | | | Gender | | |
|---|---|---|---|---|---|
| | | | Male | Female | Total |
| Imprisonment_helps_addiction_healing | Yes | Count | 25 | 3 | 28 |
| | | Expected Count | 24.0 | 4.0 | 28.0 |
| | | Standardized Residual | .2 | -.5 | |
| | No | Count | 64 | 12 | 76 |
| | | Expected Count | 65.0 | 11.0 | 76.0 |
| | | Standardized Residual | -.1 | .3 | |
| Total | | Count | 89 | 15 | 104 |
| | | Expected Count | 89.0 | 15.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---|---|---|---|---|---|
| Pearson Chi-Square | .427[a] | 1 | .513 | | |
| Continuity Correction[b] | .115 | 1 | .735 | | |
| Likelihood Ratio | .450 | 1 | .502 | | |
| Fisher's Exact Test | | | | .754 | .380 |
| Linear-by-Linear Association | .423 | 1 | .515 | | |
| N of Valid Cases | 104 | | | | |

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.04.

b. Computed only for a 2x2 table

**Crosstab**

| | | | Nationality | | | |
|---|---|---|---|---|---|---|
| | | | UAE National | Arab National | Other National | Total |
| Imprisonment_helps_addiction_healing | Yes | Count | 15 | 5 | 8 | 28 |
| | | Expected Count | 17.2 | 4.0 | 6.7 | 28.0 |
| | | Standardized Residual | -.5 | .5 | .5 | |
| | No | Count | 49 | 10 | 17 | 76 |
| | | Expected Count | 46.8 | 11.0 | 18.3 | 76.0 |
| | | Standardized Residual | .3 | -.3 | -.3 | |
| Total | | Count | 64 | 15 | 25 | 104 |
| | | Expected Count | 64.0 | 15.0 | 25.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 1.036[a] | 2 | .596 |
| Likelihood Ratio | 1.022 | 2 | .600 |
| Linear-by-Linear Association | .829 | 1 | .363 |
| N of Valid Cases | 104 | | |

**Crosstab**

| | | | Education | | | |
|---|---|---|---|---|---|---|
| | | | Completed Secondary Education | Not Completed Secondary Education | University | Total |
| Imprisonment_helps_addiction_healing | Yes | Count | 10 | 10 | 8 | 28 |
| | | Expected Count | 11.8 | 10.8 | 5.4 | 28.0 |
| | | Standardized Residual | -.5 | -.2 | 1.1 | |
| | No | Count | 34 | 30 | 12 | 76 |
| | | Expected Count | 32.2 | 29.2 | 14.6 | 76.0 |
| | | Standardized Residual | .3 | .1 | -.7 | |
| Total | | Count | 44 | 40 | 20 | 104 |
| | | Expected Count | 44.0 | 40.0 | 20.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 2.207[a] | 2 | .332 |
| Likelihood Ratio | 2.087 | 2 | .352 |
| Linear-by-Linear Association | 1.714 | 1 | .190 |
| N of Valid Cases | 104 | | |

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.38.

**Crosstab**

| | | | Nationality | | | |
|---|---|---|---|---|---|---|
| | | | UAE National | Arab National | Other National | Total |
| Non_addictionrelated_crimes | Yes | Count | 23 | 6 | 11 | 40 |
| | | Expected Count | 24.6 | 5.8 | 9.6 | 40.0 |
| | | Standardized Residual | -.3 | .1 | .4 | |
| | No | Count | 41 | 9 | 14 | 64 |
| | | Expected Count | 39.4 | 9.2 | 15.4 | 64.0 |
| | | Standardized Residual | .3 | -.1 | -.4 | |
| Total | | Count | 64 | 15 | 25 | 104 |
| | | Expected Count | 64.0 | 15.0 | 25.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | .511[a] | 2 | .774 |
| Likelihood Ratio | .508 | 2 | .776 |
| Linear-by-Linear Association | .506 | 1 | .477 |
| N of Valid Cases | 104 | | |

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.77.

**Crosstab**

| | | | Marital_Status | | | |
|---|---|---|---|---|---|---|
| | | | Single | Married | Divorced | Total |
| Non_addictionrelated_crimes | Yes | Count | 22 | 14 | 4 | 40 |
| | | Expected Count | 21.9 | 15.0 | 3.1 | 40.0 |
| | | Standardized Residual | .0 | -.3 | .5 | |
| | No | Count | 35 | 25 | 4 | 64 |
| | | Expected Count | 35.1 | 24.0 | 4.9 | 64.0 |
| | | Standardized Residual | .0 | .2 | -.4 | |
| Total | | Count | 57 | 39 | 8 | 104 |
| | | Expected Count | 57.0 | 39.0 | 8.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | .559[a] | 2 | .756 |
| Likelihood Ratio | .548 | 2 | .761 |
| Linear-by-Linear Association | .071 | 1 | .789 |
| N of Valid Cases | 104 | | |

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.08.

**Crosstab**

| | | | Employment_Status | | |
|---|---|---|---|---|---|
| | | | Employed | Unemployed | Total |
| Non_addictionrelated_crimes | Yes | Count | 13 | 27 | 40 |
| | | Expected Count | 15.4 | 24.6 | 40.0 |
| | | Standardized Residual | -.6 | .5 | |
| | No | Count | 27 | 37 | 64 |
| | | Expected Count | 24.6 | 39.4 | 64.0 |
| | | Standardized Residual | .5 | -.4 | |
| Total | | Count | 40 | 64 | 104 |
| | | Expected Count | 40.0 | 64.0 | 104.0 |

**Chi-Square Tests**

| | Value | df | Asymptotic Significance (2-sided) | Exact Sig. (2-sided) | Exact Sig. (1-sided) |
|---|---|---|---|---|---|
| Pearson Chi-Square | .976[a] | 1 | .323 | | |
| Continuity Correction[b] | .610 | 1 | .435 | | |
| Likelihood Ratio | .986 | 1 | .321 | | |
| Fisher's Exact Test | | | | .408 | .218 |
| Linear-by-Linear Association | .967 | 1 | .326 | | |
| N of Valid Cases | 104 | | | | |

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.38.

b. Computed only for a 2x2 table

**Correlations**

| | | Age | Addiction_related_incarceration | Other_crimes_incarceration |
|---|---|---|---|---|
| Age | Pearson Correlation | 1 | .036 | .100 |
| | Sig. (2-tailed) | | .714 | .311 |
| | N | 104 | 104 | 104 |
| Addiction_related_incarceration | Pearson Correlation | .036 | 1 | .044 |
| | Sig. (2-tailed) | .714 | | .657 |
| | N | 104 | 104 | 104 |
| Other_crimes_incarceration | Pearson Correlation | .100 | .044 | 1 |
| | Sig. (2-tailed) | .311 | .657 | |
| | N | 104 | 104 | 104 |

**Gender**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 89 | 85.6 | 85.6 | 85.6 |
| | Female | 15 | 14.4 | 14.4 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Nationality**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | UAE National | 64 | 61.5 | 61.5 | 61.5 |
| | Arab National | 15 | 14.4 | 14.4 | 76.0 |
| | Other National | 25 | 24.0 | 24.0 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Marital_Status**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Single | 57 | 54.8 | 54.8 | 54.8 |
| | Married | 39 | 37.5 | 37.5 | 92.3 |
| | Divorced | 8 | 7.7 | 7.7 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Employment_Status**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Employed | 40 | 38.5 | 38.5 | 38.5 |
| | Unemployed | 64 | 61.5 | 61.5 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Education**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Completed Secondary Education | 44 | 42.3 | 42.3 | 42.3 |
| | Not Completed Secondary Education | 40 | 38.5 | 38.5 | 80.8 |
| | University | 20 | 19.2 | 19.2 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Major_substance_of_use**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Opioid | 10 | 9.6 | 9.6 | 9.6 |
| | Polysubstance | 61 | 58.7 | 58.7 | 68.3 |
| | Amphetamine/Methamphetamine | 15 | 14.4 | 14.4 | 82.7 |
| | Prescribed Medication | 3 | 2.9 | 2.9 | 85.6 |
| | THC | 15 | 14.4 | 14.4 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**First_substance_abused**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Opioid | 32 | 30.8 | 30.8 | 30.8 |
| | Amphetamine/Methamphetamine | 17 | 16.3 | 16.3 | 47.1 |

**Primary_source**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Parents and Relatives | 20 | 19.2 | 22.0 | 22.0 |
| | Friends | 52 | 50.0 | 57.1 | 79.1 |
| | Schoolmates | 10 | 9.6 | 11.0 | 90.1 |
| | Neighbourhood | 8 | 7.7 | 8.8 | 98.9 |
| | Prison | 1 | 1.0 | 1.1 | 100.0 |
| | Total | 91 | 87.5 | 100.0 | |
| Missing | System | 13 | 12.5 | | |
| Total | | 104 | 100.0 | | |

**Family_Problems**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Divorce parents and neglect | 58 | 55.8 | 86.6 | 86.6 |
| | Death of parent | 5 | 4.8 | 7.5 | 94.0 |
| | Addiction among family members | 4 | 3.8 | 6.0 | 100.0 |
| | Total | 67 | 64.4 | 100.0 | |
| Missing | System | 37 | 35.6 | | |
| Total | | 104 | 100.0 | | |

**Other**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Lack of knowledge of the dangers of drugs | 26 | 25.0 | 54.2 | 54.2 |
| | Curiosity | 19 | 18.3 | 39.6 | 93.8 |
| | Psychological Problems | 3 | 2.9 | 6.3 | 100.0 |
| | Total | 48 | 46.2 | 100.0 | |
| Missing | System | 56 | 53.8 | | |
| Total | | 104 | 100.0 | | |

**Isolating_addiction_prisoners**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 70 | 67.3 | 67.3 | 67.3 |
| | No | 34 | 32.7 | 32.7 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Imprisonment_helps_addiction_healing**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 28 | 26.9 | 26.9 | 26.9 |
| | No | 76 | 73.1 | 73.1 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Recommend_SU_addiction_management**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 89 | 85.6 | 85.6 | 85.6 |
| | No | 15 | 14.4 | 14.4 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Return_for_same_crime**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 65 | 62.5 | 62.5 | 62.5 |
| | No | 39 | 37.5 | 37.5 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Non_addictionrelated_crimes**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 40 | 38.5 | 38.5 | 38.5 |
| | No | 64 | 61.5 | 61.5 | 100.0 |
| | Total | 104 | 100.0 | 100.0 | |

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 104 | 18 | 50 | 30.17 | 7.095 |
| Addiction_related_incarceration | 104 | 1 | 10 | 2.96 | 1.683 |
| Other_crimes_incarceration | 104 | 0 | 10 | .59 | 1.355 |
| Starting_age_of_drug_use | 104 | 11 | 42 | 20.30 | 6.445 |
| Valid N (listwise) | 104 | | | | |

**Group Statistics**

| | Nationality | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Gender | UAE National | 64 | 1.09 | .294 | .037 |
| | Arab National | 15 | 1.33 | .488 | .126 |
| Age | UAE National | 64 | 28.78 | 6.465 | .808 |
| | Arab National | 15 | 29.47 | 8.535 | 2.204 |
| Education | UAE National | 64 | 1.63 | .678 | .085 |
| | Arab National | 15 | 1.93 | .961 | .248 |
| Addiction_related_incarceration | UAE National | 64 | 3.45 | 1.927 | .241 |
| | Arab National | 15 | 2.20 | .561 | .145 |
| Other_crimes_incarceration | UAE National | 64 | .61 | 1.508 | .188 |
| | Arab National | 15 | .87 | 1.642 | .424 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Gender | Equal variances assumed | 17.807 | .000 | -2.475 | 77 | .016 | -.240 | .097 | -.432 | -.047 |
| | Equal variances not assumed | | | -1.826 | 16.454 | .086 | -.240 | .131 | -.517 | .038 |
| Age | Equal variances assumed | 1.046 | .310 | -.347 | 77 | .730 | -.685 | 1.976 | -4.620 | 9 |

**Group Statistics**

| | Nationality | N | Mean | Std. Deviation | Std. Error Mea |
|---|---|---|---|---|---|
| Gender | UAE National | 64 | 1.09 | .294 | .037 |
| | Other National | 25 | 1.16 | .374 | .075 |
| Age | UAE National | 64 | 28.78 | 6.465 | .808 |
| | Other National | 25 | 34.16 | 6.466 | 1.293 |
| Education | UAE National | 64 | 1.63 | .678 | .085 |
| | Other National | 25 | 2.04 | .735 | .147 |
| Addiction_related_incarceration | UAE National | 64 | 3.45 | 1.927 | .241 |
| | Other National | 25 | 2.16 | .746 | .149 |
| Other_crimes_incarceration | UAE National | 64 | .61 | 1.508 | .188 |
| | Other National | 25 | .36 | .490 | .098 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Gender | Equal variances assumed | 2.973 | .088 | -.883 | 87 | .379 | -.066 | .075 | -.215 | .083 |
| | Equal variances not assumed | | | -.795 | 36.152 | .432 | -.066 | .083 | -.235 | .103 |
| Age | Equal variances assumed | .012 | .912 | -3.528 | 87 | .001 | -5.379 | 1.525 | -8.409 | -2.348 |
| | Equal variances not assumed | | | -3.527 | 43.856 | .001 | -5.379 | 1.525 | -8.452 | -2.305 |
| Education | Equal variances assumed | .639 | .426 | -2.534 | 87 | .013 | -.415 | .164 | -.741 | -.089 |
| | Equal variances not assumed | | | -2.446 | 40.916 | .019 | -.415 | .170 | -.758 | -.072 |
| Addiction_related_incarceration | Equal variances assumed | 17.846 | .000 | 3.253 | 87 | .002 | 1.293 | .398 | .503 | 2.083 |
| | Equal variances not assumed | | | 4.564 | 86.999 | .000 | 1.293 | .283 | .730 | 1.856 |
| Other_crimes_incarceration | Equal variances assumed | 2.851 | .095 | .808 | 87 | .421 | .249 | .309 | -.364 | .863 |
| | Equal variances not assumed | | | 1.174 | 85.299 | .244 | .249 | .212 | -.173 | .672 |

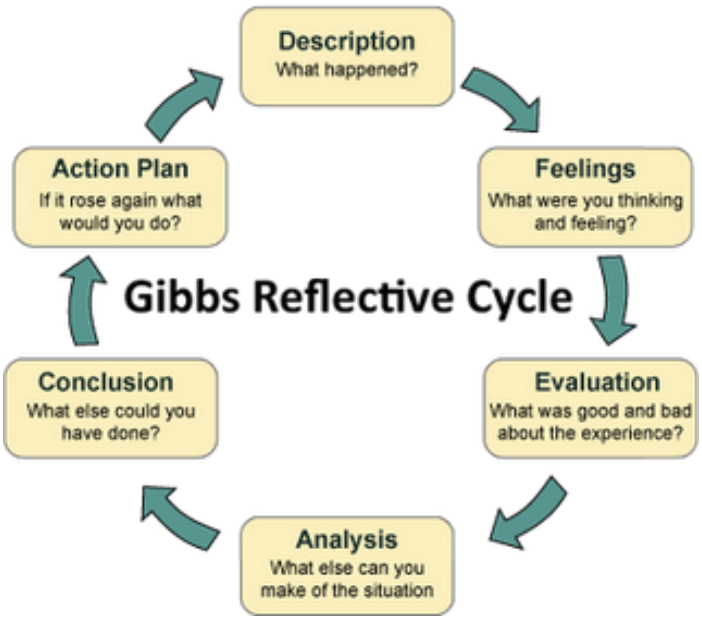
**Group Statistics**

| | Nationality | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Gender | Arab National | 15 | 1.33 | .488 | .126 |
| | Other National | 25 | 1.16 | .374 | .075 |
| Age | Arab National | 15 | 29.47 | 8.535 | 2.204 |
| | Other National | 25 | 34.16 | 6.466 | 1.293 |
| Education | Arab National | 15 | 1.93 | .961 | .248 |
| | Other National | 25 | 2.04 | .735 | .147 |
| Addiction_related_incarceration | Arab National | 15 | 2.20 | .561 | .145 |
| | Other National | 25 | 2.16 | .746 | .149 |
| Other_crimes_incarceration | Arab National | 15 | .87 | 1.642 | .424 |
| | Other National | 25 | .36 | .490 | .098 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference Lower | Upp |
| Gender | Equal variances assumed | 5.712 | .022 | 1.265 | 38 | .214 | .173 | .137 | -.104 | .451 |
| | Equal variances not assumed | | | 1.183 | 23.887 | .249 | .173 | .147 | -.129 | .476 |
| Age | Equal variances assumed | .625 | .434 | -1.969 | 38 | .056 | -4.693 | 2.383 | -9.518 | .131 |
| | Equal variances not assumed | | | -1.837 | 23.666 | .079 | -4.693 | 2.555 | -9.971 | .584 |

Appendix 3


Description
What happened?
Feelings
What were you thinking and feeling?
Evaluation
What was good and bad about the experience?
Analysis
What else can you make of the situation
Conclusion
What else could you have done?
Action Plan
If it rose again what would you do?
Gibbs Reflective Cycle