PARADIGMS OF ADDICTION
Analysis of Models and Recommendations for Harm Reduction

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The Paradigms of ‘Addiction’ & Harm Reduction:
An analysis of models and recommendations

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This report is dedicated to Nikolay Ulendeev, a dear friend who passed away due to unsafe drug use. Losing you will always inspire me to continue fighting for the rights of people who use drugs.
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# TABLE OF CONTENTS

Acknowledgements...........................................................................................................i
Abstract..............................................................................................................................iii
Explanation of the Academic Internship..............................................................................1

1. Introduction.....................................................................................................................1
   1.1. Overview..................................................................................................................1
   1.2. Harm Reduction....................................................................................................2
   1.3. Paradigms of Addiction.........................................................................................5
   1.4 Scope of the Literature Research...........................................................................5

2. Method............................................................................................................................6

3. Literature Review..........................................................................................................7
   3.1. Definitions..............................................................................................................7
       3.1.1. Drug Addiction...............................................................................................7
       3.1.2. Overview.......................................................................................................11
   3.2. Paradigms and Models..........................................................................................12
       3.2.1. The Moral Model.........................................................................................12
       3.2.2. The Brain Disease Model............................................................................16
       3.2.3. The Biopsychosocial Model......................................................................22
       3.2.4. Overview.......................................................................................................25

4. Recommendations for Harm Reduction......................................................................26
   4.1. The Moral Model...................................................................................................26
   4.2. The Brain Disease Model....................................................................................27
   4.3 The Biopsychosocial Model..................................................................................29

5. Conclusion.......................................................................................................................31

6. References......................................................................................................................31
Abstract

This research report reviews three paradigms that attempt to define and explain drug addiction, additionally making suggestions on how to promote the concept of harm reduction through the scope of the discussed paradigms. The following paradigms that were selected: the moral model, the brain disease model and the biopsychosocial model. In the literature review, a total of 52 sources were used, in order to explain the variation in the definition of addiction, to discuss the concept of harm reduction, to describe the 3 paradigms of addiction and to discuss how harm reduction can be promoted vis a vis those paradigms. Results from the literature indicated that the concept of addiction has yet to have a singular definition, as the definition largely depends on what paradigm addiction is being viewed from. All three paradigms have completely different conceptualizations of what addiction is and how it occurs and develops. However, it was found that harm reduction can be successfully encouraged and justified through all three paradigms. Therefore, it is suggested that, based on the evidence-based effectiveness of harm reduction, as well as its flexibility in fitting multiple paradigms of addiction, harm reduction strategies should continue to be implemented and promoted in order to effectively support people who use drugs.

Key Words: addiction, harm reduction, paradigms of addiction, addiction treatment
Explanations of the Academic Internship

Introduction

The organization that this internship and report were conducted at and for was Mainline, which is located in Amsterdam, in the Netherlands. Mainline focuses on promoting and enforcing the human rights of people who use drugs, placing an important emphasis on respecting every drug user’s freedom of choice and capabilities. Essentially, the organization works from the ‘harm reduction’ standpoint. My personal motivation to have this internship at Mainline was that I am very passionate about harm reduction, and have already been working in this field since 2013. Since coming to UCR I did not have as many opportunities to continue the work I was doing before starting university, and therefore this internship gave me the perfect opportunity to continue working in a field that I am extremely passionate about and hope to continue with after my university studies. The relevance of this work is that drug use is a very relevant and important subject manner to focus on, as it a universal issue that needs to be addressed in an effective way, order to avoid the spread of related diseases, such as HIV, to prevent people becoming addicted and others from dying as result of unsafe drug use.

Purpose and Objective

There are several goals to this internship:

1) Become involved in the harm reduction community in the Netherlands, in order to build up contacts and working relationships with individuals who work in this field, which in turn may help to continue my pursuit of a career in this field;

2) Work with people and in an environment which inspire me and motivates me to work as hard as I can, understanding how a more policy oriented harm reduction organization functions;

3) Create a comprehensive report which successfully explains how complicated the topic of ‘addiction’ can be and why harm reduction is such an important and necessary model to be using when working with people who use drugs

Methodology and Techniques

A literature review was conducted in order to obtain the necessary information about the three models of addiction that were chosen to be explained in this report. For a more
detailed explanation of the methodology of this literature review, please consult the methods section of this report (p. 8)

Analysis

The literature selected to be used for this report was analysed, complied and discussed in several subsections within the report, which were divided by each model that was chosen to be focused on. Based on the explanation of each model, recommendations were made in terms of how harm reduction could be promoted through the viewpoint of each model.

Conclusion

I believe the extent of the purpose of the internship from the UCR perspective has been met. While the report, as it is now, is good start to giving an overview of some of the models which explain addiction, there are still many more models which could have been discussed. Naturally, due to time constraints, this was simply not possible and this is why three prominent models were selected for the discussion. However, the plan is to continue to work on this report with Mainline over the summer in order to build up on what has been completed as of now. The biggest lesson I have learnt is that addiction is an exceedingly complicated and debated topic, and it is therefore incredibly difficult to adequately cover the entire subject, especially in the time frame of one semester. The biggest uncertainty for me remains what is the best and more accurate way of viewing an explaining addiction. For a more detailed insight into the results and discussion of the models reviewed, please complete the reading of the report.
Introduction

Overview

The United Nations Office on Drug and Crime (UNODC, 2012) estimated that in 2012, approximately 243 million people or 5.2% of the world’s population used drugs at least once. The number of deaths related to drug use, in 2014, was at least 47,000 (Drug Policy Alliance, 2017), which should be noted as being a lower amount than in previous years. Nevertheless, this number is still far too high. The main cause of drug-related deaths are overdoses, with opioids being the most frequent culprit in these deaths (UNODC, 2012). Furthermore, 10% of all Human Immunodeficiency Virus - HIV transmission cases alone, in the United States of America, are a result of unsafe drug using behaviours (Substance Abuse/Use, 2017). Due to the amount of people across the globe who use drugs, as well as the amount of people who contract diseases or die as a result of unsafe drug use, it is important to implement models and strategies which will successfully combat the potentially negative consequences that can come with unsafe drug use practices.

While abstinence based treatment has long been seen as one of the only methods that is effective in successfully eradicating drug use behaviours, this may not the case for everyone, as relapse is a common occurrence (Hubbard, Craddock & Anderson, 2003). Relapse, in itself, can be a normal part of the process that people who use drugs – PWUD – go through, when attempting to reduce or eliminate drug use (Yang, Mamy, Gao & Xiao, 2015), however abstinence based treatment programs oftentimes do not provide the necessary education needed to understand how to use drugs safely, in order to reduce the risk of overdoses or contracting blood borne viruses, such as HIV or Hepatitis C. Therefore, those who relapse after taking part in or completing an abstinence based treatment program, are still at risk of going back to unsafe drug use practices. Furthermore, abstinence based programs
often label relapse as a failure or weakness on the part of the user, rather than a frequent occurrence in someone’s process of attempting to stop consumption of drugs, and that can negatively impact the client/health service provider relationship and eventually create feelings of guilt and shame in clients (Mancini, Linhorst, Borderick & Bayliff, 2008).

**Harm Reduction**

Harm Reduction can be seen as a viable alternative to the classical abstinence based treatment programs (Henwood, Padgett, & Tiderington, 2014). The concept of harm reduction was originally created as an attempt to prevent the spread of HIV amongst people who inject drugs – PWID. From its beginnings, harm reduction programs have developed into a public health approach, aiming to reduce the potential harms of psychoactive drug use, as well as other risk-behaviours (Lee, Engstrom & Petersen, 2011). The Drug Policy Alliance (2017) has defined harm reduction as “a public health philosophy and intervention that seeks to reduce the harms associated with drug use and ineffective drug policies. A basic tenet of harm reduction is that there has never been, and will never be, a drug-free society.” (The Drug Policy Alliance, 2017, p. 1). Harm Reduction International (2017) has described harm reduction programs and policies as aiming “primarily to reduce the adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs without necessarily reducing drug use” (Harm Reduction International, 2017, p. 1).

Unlike the abstinence approach, the harm reduction model recognizes that complete abstinence from drug use may be an unrealistic outcome for all PWUD (Khantzian, 2006). Thus, more emphasis is placed on educating PWUD about how to be as safe as possible when using drugs, in order to prevent overdoses or the spread of blood borne viruses. The World Health Organizations’ (WHO) comprehensive package for the prevention, treatment and care of HIV among PWID is based on the harm reduction model, including, but not being limited
to: needle and syringe exchange programs, HIV testing and counseling, prevention and treatment of sexually transmitted diseases, condom programs for that population and their partners and the prevention/vaccination/diagnosis/treatment of viral Hepatitis (World Health Organization, 2012).

As an example, syringe exchange programs allow PWID to bring back used syringes and receive new and sterilized ones in return. This has two benefits: it reduces the amount of hazardous waste (i.e. used syringes) being left in public places and it reduces the chances of PWID reusing or sharing syringes. It is important to note that sharing syringes is extremely risky, as it can lead to the spread of HIV and Hepatitis C (World Health Organization, 2012). Similarly, supervised injection facilities – SIFs – as well as syringe exchange programs, provide sterilized equipment for safe drug use and, allow PWID to inject drugs in a safe and monitored environment, reducing the risk of sharing or reusing syringes, as well as reducing the risks of death by overdose due to being monitored (Drug Policy Alliance, 2017).

Australia is a prime example of how effective the harm reduction model can be applied in reducing harm related to unsafe drug use. The harm reduction model was introduced in Australia in the 1980s, and between the years of 1988 and 2006 the number of PWID who contracted HIV, as a result of unsafe drug use, has decreased by 53%. It is argued that this decline in the spreading of HIV is directly linked to the introduction of harm reduction strategies (UNODC, 2008). This argument is further strengthened by research conducted by the Commonwealth Department of Health and Ageing (2002), which found, through quantitative statistical research on HIV infection rates throughout Australia, that there was an annual average decrease of HIV prevalence of 8.1% in cities without harm reduction programs, compared to an annual average decrease of 18.6% in cities with harm reduction programs.
Another benefit of the harm reduction model is that due to the non-judgmental and non-stigmatizing approach that it proposes towards PWUD, it is argued that these individuals are more likely to seek out harm reduction services rather than abstinence based ones. A qualitative study on the struggles of implementing the harm reduction approach, conducted by Mancini, Linhorst, Borderick and Bayliff (2008), based their findings on interviews with community mental health workers in a city in Missouri, U.S.A. Participants in that study indicated that the abstinence based approach placed them in a “paternalistic role” (p. 398), which in turn contributed to an unstable relationship between the client and health service provider. Clients would lie about or hide their drug use in their contact with the health service provider, to avoid feeling ashamed or guilty, what could “reinforce a sense of worthlessness already existing in clients” because “the abstinence model adds to that sense of failure and shame” (p. 398). Participants indicated that the harm reduction model helped to create a more open and honest relationship between health service provider and client, due to the non-judgmental and non-stigmatizing nature of the harm reduction model.

However, there are also strong critiques against the implementation of the harm reduction model as a means to aid PWUD. The most widespread criticism is that this model enables people to continue to use drugs, possibly taking away their motivation for sobriety (Mancini, Linhorst, Borderick & Bayliff, 2008). Nevertheless, this argument largely stems from the belief that every PWUDs should ultimately completely eradicate their drug use, which goes against one of the core principles of the harm reduction model, namely that sobriety is not necessarily an obtainable or achievable goal for all PWUDs (Khantzian, 2006). This could indicate that rather than the harm reduction model needing to be altered, in order to focus more on achieving sobriety, the way in which many people, both health care providers as well as laymen, view drug use and PWUD, needs to include more emphasis on the fact that abstinence may be a goal, but not the only positive or acceptable outcome.
Paradigms of Addiction

What is deemed as an acceptable treatment outcome for PWUD can oftentimes be linked to the paradigm and model of addiction as related to drug use an individual believes to be true. There are many models which attempt to explain the origins of addiction, and depending on which one is followed, this can drastically alter attitudes, beliefs and expectations in relation to PWUD an individual has, in terms of how s/he became addicted to drugs, why this has happened and what needs to be done in order to improve the individual’s health and the drug addiction related risks. It is important to note, however, that not all PWUD become dependent or addicted to the drug they are using (SAMHSA, 2006). Therefore, when discussing PWUD in this research, it is only referring to PWUD who have developed an addiction.

Scope of the Literature Research

This literature research aims to investigate some widespread paradigms and intervention models related to drug addiction, discussing different approaches applied to explain dependency on psychoactive substances and its public interventions. Additionally, based on the literature collected, the harm reduction model, through the lens of the paradigms discussed, will be investigated. In order to do this, the definition of drug addiction will also be examined and discussed. Literature on three different paradigms - the morality model, the brain-disease model and biopsychosocial model - will be reviewed, in order to gain understanding into the main models currently being used across the globe. Next, the harm reduction approach will be outlined. Finally, the addiction models that have been reviewed above will be compared with key elements of the harm reduction approach, in a way that falls in line with the 3 models reviewed, presenting and discussing the viability of the application of the harm reduction approach to drug addiction.
Method

A literature review was conducted using the online scholarly catalogues Google Scholar, Scopus, PubMed, PsycINFO and Web of Science. The search terms which were used included: ‘harm reduction,’ ‘moral model of drug addiction,’ ‘brain disease model of drug addiction,’ ‘biopsychosocial model of drug addiction,’ and ‘drug addiction treatment.’ Combined, these search terms yielded approximately 1,819,100 results. Abstracts were reviewed in order to assess their functionality and relevance in terms of the scope of this research. As this report is solely focusing on drug addiction, many articles were excluded based on the fact that they were related to other forms of addiction, such as gambling or sex. While, initially, there was a criterion of excluding any articles published prior to 2000, it became apparent that several models being investigated were introduced in the 1970s and 1980s. Thus, this exclusion criterion may have omitted important research which was published earlier than 2000. Therefore, this initial criterion was disbanded halfway through the research process.

Sources which are well versed in the field of harm reduction to drug addiction, such as the organizations Harm Reduction International and the Drug Policy Alliance were also included. A total of 51 sources were used for the purposes of this research, with the majority of them being articles which were published in academic journals. However, a select amount of books, news articles, NGO websites and statistical reports were used as well. The literature surrounding three of the models currently used to explain ‘addiction’ which were reviewed was then used in order to formulate and shape recommendations on how to promote harm reduction.
Definitions

Drug Addiction

Before the 4 paradigms of drug addiction are discussed, it is important to understand what is meant when discussing ‘addiction.’ It is relevant to note that the term *addiction* can be used to describe a wide variety of dependency related behaviours not only associated with drugs, but other behaviours such as gambling, sex and videogames (Padwa & Cunningham, 2010). It must therefore be specified that for the purposes of this research, the focus is solely on psychoactive drugs.

Robert West conducted research for the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), in 2013, to investigate different models of addiction. He reviewed a variety of definitions, concluding that “definitions serve a purpose, so different definitions may be needed for different purposes. The key purpose of the definition used in this report is to provide a basis for describing and explaining repeated occurrence of behaviours that appear to be purposeful and not aimed at causing harm but from which harm typically ensues and where ignorance of this, or lack of concern about it, is not an adequate explanation” (EMCDDA, 2013, p. 25). Thus, depending on the scope of the research or the paradigm being implemented, it will most likely impact which definition of *addiction* is used. West also indicated that a key feature of *addiction*, which is often ignored in other definitions, is the “engaging in addictive behaviour. Thus, enacting the behaviour and experiencing the consequences of the behaviour are essential to the development of addiction” (EMCDDA, 2013, p. 26).

Based on the review of other definitions of *addiction*, as well as research input, West (EMCDDA, 2013) defined *addiction* as “a repeated powerful motivation to engage in a
purposeful behaviour that has no survival value, acquired as a result of engaging in that behaviour, with significant potential for unintended harm” (EMCDDA, 2013, p. 27). West explained that specific terms often mentioned in other definitions, such as withdrawal symptoms, need and impaired control are not mentioned in his definition because he is trying to “avoid prejudging the underlying mechanisms, which may vary from case to case …. accumulated evidence indicates that impaired control, conflict, craving and so on are not necessary features of addiction even though they are frequently observed” (EMCDDA, 2013, p. 28).

Many organizations, such as the National Institute on Drug Abuse (NIDA), which are directly involved in the discussion around drugs’ use and abuse, continue to use addiction as the term of choice. NIDA defines drug addiction as “a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences. It is considered a brain disease because drugs change the brain; they change its structure and how it works. These brain changes can be long lasting and can lead to many harmful, often self-destructive, behaviors” (NIDA, 2016, p. 1). Additionally, NIDA explains that they use the term drug addiction “to describe compulsive drug seeking despite negative consequences” (NIDA, 2016, p. 3).

Similarly, to how individuals will deem what an acceptable goal or outcome for PWUD should be dependent on what paradigm is being used, the definitions of drug addiction can also vary depending on the paradigm. NIDA has classified drug addiction as a brain disease, which is in fact a paradigm that will be discussed later on in this investigation. Corresponding to this definition and paradigm is the definition provided by the American Society of Addiction Medicine (ASAM), which defines addiction as “a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations.
This is reflected in the individual pursuing reward and/or relief by substance use and other behaviours. Addiction is characterized by impairment in behavioural control, craving, diminished recognition of significant problems with one’s behaviours and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death” (ASAM, 2011, p. 1). Both the definitions provided by NIDA and ASAM do not take into consideration other factors that may influence addiction, such as environmental and social factors.

The World Health Organization Lexicon of Alcohol and Drug Terms (World Health Organization, 1994) has defined drug or alcohol addiction, as the “repeated use of a psychoactive substance or substances, to the extent that the user (referred to as an addict) is periodically or chronically intoxicated, shows a compulsion to take the preferred substance (or substances), has great difficulty in voluntarily ceasing or modifying substance use, and exhibits determination to obtain psychoactive substances by almost any means. Typically, tolerance is prominent and a withdrawal syndrome frequently occurs when substance use is interrupted. The life of the addict may be dominated by substance use to the virtual exclusion of all other activities and responsibilities. The term addiction also conveys the sense that such substance use has a detrimental effect on society, as well as on the individual; when applied to the use of alcohol, it is equivalent to alcoholism. Addiction is a term of long-standing and variable usage. It is regarded by many as a discrete disease entity, a debilitating disorder rooted in the pharmacological effects of the drug, which is remorselessly progressive” (WHO, 1994, p. 6).

It must also be noted that in the Diagnostic and Statistical Manual of Mental Disorders - DSM-5, of the American Psychiatric Association (APA, 2013), addiction is not labelled as a specific diagnosis. In previous versions of the DSM, the two categories that
were used to describe behaviours related to drug addiction were “substance abuse and substance dependence” (APA, 2013, p. xlii). However, revisions made for the DSM-5 included the elimination of these two categories and the creation of an overarching one, named Substance-Related and Addictive Disorders (APA, 2013). The main reasoning for this change was due to the fact that the terms *dependence* and *addiction* were easily confused in previous versions. Furthermore, the levels of tolerance and withdrawal that were used to describe the definition of dependence were determined as being normal responses to prescription medication, and this cannot be generalized as indicating the presence of an addiction (APA, 2013).

The DSM-5 (APA, 2013) has created two subcategories within the category Substance-Related Disorders, namely “Substance Use disorders and Substance-Induced Disorders” (p. 481), with Substance Use Disorders referring to “a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems …. An important characteristic of substance use disorders is an underlying change in brain circuits that may persist beyond detoxification, particularly in individuals with severe disorders. The behavioral effects of these brain changes may be exhibited in the repeated relapses and intense drug craving when the individuals are exposed to drug-related stimuli” (p. 483) and that “the diagnosis of a substance use disorder is based on a pathological pattern of behaviors related to use of the substance” (p. 483).

The DSM-5 (APA, 2013) proposes 11 criteria of symptoms an individual may express, which help to diagnose a ‘substance use disorder. An example of this are criterion 8 and 9, which outline “risky use of the substance …. This may take the form of recurrent substance use in situations in which it is physically hazardous (Criterion 8)…. The individual may continue substance use despite knowledge of having a persistent or recurrent physical or
psychological problem that is likely to have been caused or exacerbated by the substance (Criterion 9)” (p. 484). However, DSM-5 also states that the severity of Substance Use Disorders varies from person to person, and therefore the number of criteria an individual can meet may determine the severity of the disorder, being the severity categories classified in *mild, moderate, and severe* (p. 484).

The other DSM-5 (APA, 2013) subcategory, Substance-Induced Disorders, refers to potential effects as result of drug use, including “intoxication, withdrawal, and other substance/medication-induced mental disorders (e.g., substance-induced psychotic disorder, substance-induced depressive disorder)” (p. 485).

**Overview**

As it can be seen above, there is a variety of definitions which attempt to explain *addiction*, or the general concept of what is believed to encompass an *addiction*, without using this specific term anymore. Naturally, it is impossible to include every single definition ever written, however the selected few, which have been presented above, give indications as to how varied the definitions of *addiction* are, and how these variances are largely based on what paradigm is being applied. This highlights the importance of understanding the most important paradigms of *addiction*, more specifically *drug addiction*, as different paradigms will determine definitions, and thus potentially different theories, on how to best aid people having an addiction.
Paradigms and Models

The Moral Model. While the use of drugs is something human beings have been taking part in since prehistoric times (Guerra-Doce, 2014), the addiction, that may follow excessive drug use, has not always been viewed as a complex phenomenon. Berridge (1979) explained that, in Britain, during the eighteenth and early nineteenth century, drug addicts were seen as “victims of over-indulgence, the possessors of a bad habit rather than a medical condition” (p. 68). Peele (1987) argued that “addiction is a party of a panoply of self-destructive behaviors some people regularly engage in” (p. 45) and that drug use should be understood as an immoral choice in order to “establish bedrock moral principles for our society” (p. 86). Later, when President Bush was asked during a televised debate, in 1988, how he would solve the drug problem currently being faced in the U.S.A., his answer was that he would instil values (Schaler, 1991). These three cases are good examples of what the overarching concept behind the moral model of addiction, indicating that addiction would be more the consequence of the negative and immoral actions of an individual who has lower or no values, rather than related to biological or social factors which may have contributed to its development. This model can also be seen as the first model used to explain addiction, as it came before the development of models focused on biological or social/environmental factors.

Wilbanks (1989) theorized that the moral model was influenced by religion, as well by the respect given to theologians and clergymen as being knowledgeable about human behaviour at the time. He explained that the moral model rationalizes addiction as the result of drug taking behaviour by individuals who are lacking moral standards and values. The addict would be described through the moral model as being innately bad, and therefore the immoral act of using drugs would be a reflection of his/her immoral values (Wilbanks, 1989).
Pargament (1997), who supported the moral model, stated that drug use would be one of the sins that people would face and that finding religion could help in avoiding these sins, as it “encourage people to avoid these paths. The encouragement comes, in part from strong injunctions against the many forms of wickedness” (p. 175).

Much later, Chambers (2015) indicated, through the result of her research on the Religious Society of Friends (also known as Quakers) in the UK, that religion could be a deterrence factor for partaking in drug using behaviours and could explain the low rates of any form of substance use amongst that community. However, the fundamental argument behind the moral model of addiction would not be that religion might act as deterrence, but that those who use drugs and become addicts would be fundamentally immoral and bad human beings.

Wilbanks (1989) explained that the moral model began to become less relevant once doctors and physicians started to be seen as the most knowledgeable individuals in society concerning human behaviour and the human body, rather than clergymen and theologians. Doctor’s and physicians supported other, more biologically based models, such as the brain disease model, which placed more emphasis on biological causes of addiction and pushed aside any moral judgement or factors as a means to explain it. Both Wilbanks (1989) and Schaler (1991) argued that not using the moral model as a means to explain addiction would make addicts feel that they should not be held responsible for their actions and make them believe that they would be victims. Wilbanks (1989) also explained that understanding addicts as being victims could help to induce a pattern of learned helplessness. Essentially, if an addict believes that s/he would be a victim of her/his biology, it could lead her/him to not attempt to become sober, eventually providing a convenient excuse to continue to use drugs.

While the moral model is presently largely seen as an inaccurate explanation of why an addiction occurs by the medical and scientific community, there are existing addiction
treatment programs that use the fundamental ideology of the moral model as basis for the treatment process. One such treatment program is known as the Minnesota Model of addiction treatment, which is more commonly known as the abstinence model. The fundamental principle behind the Minnesota Model’s procedure combines professional and trained nonprofessional (drug *addicts* who are sober) staff, working applying the principles of the Alcoholics Anonymous (AA) (Anderson, McGovern & DuPont, 1999).

Alcoholics Anonymous (AA), also known as the 12-step procedure intervention program for alcohol addiction treatment, was developed in Ohio, in 1935, by a New York stockbroker, Bill W., and a surgeon from Ohio, named Dr. Bob S. Both were self-proclaimed alcoholics. Bill W. claimed to have achieved and maintained sobriety through the aid of a group known as the Oxford Group, run by an Episcopal clergyman. When Dr. Bob S. met Bill W., he was inspired to also maintain sobriety and together they began working with other alcoholics in order to help them achieve sobriety. In 1939, Bill W. wrote and published a textbook called Alcoholics Anonymous, which explained the philosophy and methods behind AA, which is now known as the Twelve Steps of recovery (“Historical Data: The Birth of A.A. and Its Growth in the U.S./Canada, 2017).

The Twelve Steps of recovery (Twelve steps and twelve traditions, 1989) explained that, in their approach, in order to recover from an *addiction*, in the case of AA specifically focusing on alcohol addiction, one must admit to be “powerless over alcohol” (Step One, p. 21), must make a “fearless moral inventory” (Step Four, p. 42) of oneself, must admit “to God, to ourselves, and to another human being the exact nature of our wrongs” (Step 5, p. 55), be “ready to have God remove all these defects of character” (Step 6, p. 63) and ask God to “remove our shortcomings” (Step 7, p. 70). The Twelve Steps indicated that maintaining sobriety would be achievable though “prayer and meditation to improve our conscious contact with God *as we understood Him*, praying only for knowledge of His will for use and
the power to carry that out” (Step 11, p. 96) and that these steps would result in “a spiritual awakening” (Step 12, p. 106).

The ideology of the moral model of addiction can clearly be seen as present in the wording of the Twelve Steps, as addiction is explained as being a “defect of character” (p. 63) and based on personal “shortcomings” (p. 70) for which a “moral inventory” (p. 42) should be taken and that only God would be able to help them achieve the sobriety they seek. Despite the fact that this recovery procedure is based on the moral model, that is now largely considered to be lacking in providing an accurate definition of addiction, the Alcoholics Anonymous organization has over 2 million members worldwide (Glaser, 2015). Another example of how the moral model is still being applied in modern society is the continuation of the war on drugs, which seeks to punish PWUD with jail sentences rather than attempting to help them cope with their addiction (“Drug Law Convictions and Punishment”, 2017).

However, as mentioned previously, abstinence based models such as AA and the Minnesota Model, are argued to have negative impacts on PWUD (Hubbard, Craddock & Anderson, 2003), due to the fact that although relapse is common, it is often considered by these interventions to be a failure. This in turn can make PWUD feel shame and guilt (Mancini et al, 2008). Furthermore, Dodes (2014) investigated retention rates of AA, as well as research on sobriety and involvement of AA members, and based on that research placed AA’s success rate between 5-8%. However, it must be noted that due to the anonymous nature of AA, it is very difficult to effectively study trends and success rates.
The Brain Disease Model. The brain disease model of addiction (BDMA) was introduced in 1997, by Alan Leshner, who was the director of NIDA. Leshner published a report in the journal *Science*, arguing that *addiction* should be seen as a relapsing and chronic brain disease (Leshner, 1997). In his reasoning he recognized that initially drug use is predominantly a decision made by the individual, however, once drugs were used, due to the result of neurochemical changes, it becomes very difficult for PWUD to stop using them. Since the introduction of that theory, a large proportion of research, which has been done surrounding alcohol and drug addiction in the United States of America, has been based on the BDMA (Hall, Carter & Forlini, 2015). Those who support the BDMA claim that the acceptance of that model as the accurate depiction of addiction will aid in reducing stigma surrounding drug users, as the label will be shifted from drug users being weak or immoral (i.e. the moral model of ‘addiction’), to PWUD suffering from a brain disease that can be treated by the medical system. Moreover, it is claimed that the BDMA supports that the medical treatment for PWUD, who suffer from addiction, become more accessible and that costs should be covered by medical insurance (Hall, Carter & Forlini, 2015).

A main component to the advance of the BDMA over the years have been studies conducted on animals, in order to investigate how continuous drug use can impact neurological processes. These studies have shown that animals, such as rats, will continue to self-administer psychoactive drugs if given the opportunity to, even when there are negative stimuli (i.e. electrical shocks) associated with the drugs (Hall, Carter & Forlini, 2015). Furthermore, when animals were allowed to self-administer psychoactive drugs as much as they wanted to, researchers indicated that the animals would increase the dosage and frequency of which they would give themselves drugs, which was argued as being similar to increased tolerance levels in PWUD (Hall, Carter & Forlini, 2015).
Results from researches using neuroimaging technology, which were reviewed by Volkow, Fowler, Wang, Baler and Telang (2009), have suggested that physiological dopamine cell firing, which occurs naturally in the brain, is imitated by high levels of extracellular dopamine, which is introduced into the brain at a rapid rate through the use of psychoactive drugs. This, in turn, can increase the natural dopamine threshold in a person’s brain, making it harder to activate dopamine. Studies have indicated that PWUD tend to have lower levels of dopamine receptors and dopamine release (Volkow and co-authors, 2009). Volkow and colleagues (2009) argued that the decreased levels of dopamine in the brains of PWUD may lead to compulsive drug use and a lack of control.

Volkow, Koob and McLellan (2016) argued that the drug addiction process can be better understood when broken down into three cyclical stages, in which each stage is linked to particular neurobiological circuits, that in turn have resulting behavioural and clinical outcomes. The first stage is known as “Binge and Intoxication” (p. 364), that the authors described focusing on how the use of psychoactive drugs will activate the reward systems of the brain, through the increased levels of dopamine being released. This process will lead to the feelings of reward, i.e. the increased release of dopamine due to psychoactive drug use. These feelings will then be paired with the environment that the drugs were taken in, making the two associated with one another. Volkow and colleagues (2016) suggested that the pairing of an environment where drugs were used to the neurobiological effects of drug use, can cause dopamine receptors to fire when a person is in an environment related to previous drug use, and this will then trigger feelings of cravings for the drug. This, in turn, can then lead to the over use of drugs or motivating the individual to try to access drugs.

Volkow and co-worker’s (2016) second stage of addiction, according to the BDMA, is “Withdrawal and Negative Affect” (p. 366). In this stage, the researchers argued that PWUDs have lower dopamine levels than those who do not use drugs, and this in turn
desensitizes the reward systems in the brain of PWUDs to stimulation that would normally cause the release of dopamine, both for drug and non-drug related stimuli. Essentially, this causes PWUDs to experience less euphoria. This stage also describes how overexposure to drugs can increase the frequency of feeling and expressing negative emotions. Therefore, there is the presence of the need to use drugs, in order to fire the dopamine needed to feel euphoric, as well as the need to find a release from the developing negative emotions.

Volkow and co-researchers (2016) argued that at this stage of the BDMA, PWUDs experiences a transition from taking drugs as a means to get high, to taking drugs in order to escape negative feelings.

The final stage of this explanation of Volkow and co-worker’s (2016) about the BDMA, “Preoccupation and Anticipation” (Volkow et al., 2016, p. 367), explains that the processes which occur in stage 2 directly affect executive processes in the brain, such as “the capacities for self-regulation, decision making, flexibility in the selection and initiation of action, attribution of salience (the assignment of relative value), and the monitoring of error” (Volkow et al., 2016, p. 367). Other changes in the brain’s prefrontal region impairs the ability for PWUDs to combat strong cravings for drugs.

Berridge (2016) asserted that if changes in areas of the brain on a neurobiological level, linked to drug use, are determined as being pathological, then the term brain disease as a means to explain addiction can be applied. She explained that “addiction is a brain disease of temptation and of choice itself. Addiction doesn’t replace choice, it distorts choice” (p. 2), due to the fact that heightened levels of wanting occur as a result of the sensitization of dopamine mechanisms in the brains of PWUDs. These heightened levels of wanting, more commonly known as craving, will in turn heighten the temptation felt by PWUDs to seek out and use drugs.
Berridge (2016) argued that the main cause of addiction is the “mesolimbic hyper-reactivity to drug cues and drug-imagery” (p. 3), which is produced through a history of drug use in vulnerable PWUDs, and triggered by thinking about drugs or encountering other triggers which remind an individual about drugs. Similarly to what is described by Volkow, Koob and McLellan (2016) in stage 2 of their interpretation of the BDMA, Berridge (2016) explained that drug-cues that occur before drugs themselves are even administered could trigger brain mesolimbic dopamine systems, due to the sensitization of this area of the brain as a result of chronic drug use. This is suggested as being the explanation as to why PWUDs experience urges to take drugs. It is important to note that these sensitized systems are “not hyper-active all the time, but rather momentarily hyper-RE-active to particular events and stimuli” (Berridge, 2016, p. 3), such as excitement, stress or taking a single hit of a drug. Berridge (2016) rationalized that the sensitization of the dopamine systems could explain why stressful or happy situations experienced by PWUD can oftentimes lead to vulnerability to continue to or relapse into taking drugs.

Berridge (2016) described that while neural sensitization may occur in the same areas of the brain which are impacted by tolerance levels of drugs being used, such as dopamine neurons, the distinct difference when comparing neural sensitization to drug tolerance and withdrawal is that the latter will fade away over time. On the other hand, neural sensitization increases over time, which can make former PWUDs vulnerable to relapse even months or years after experiencing withdrawal symptoms and completely ceasing to use drugs, especially in situations that include stimuli which could trigger the brain mesolimbic dopamine systems. However, it is important to mention that Berridge (2016) acknowledged that the sensitization that occurs in the brain is not more powerful than a person’s freewill, and therefore addiction simply “distorts choice” (p. 2) rather than leaving PWUD with no choice.
Based on these findings, several medical treatment methods have been recommended as aiding in the process of decreasing the physiological impacts of a drug addiction. For specific types of drugs an individual wants to stop using, medications have been developed which aim to help achieve this goal. For example, drugs like methadone and buprenorphine can help in limiting feelings of craving and lessening withdrawal symptoms experienced when stopping or decreasing the use of opioids (Bell, 2014). Similar medication also exists for alcohol and nicotine (Müller, Geisel, Banas & Heniz, 2014). The BDMA has also inspired behavioural treatment methods, such as learning how to regulate stress reactivity and negative emotions. Having more control over undesirable emotions, which could potentially lead to feeling urges to take drugs, could in turn decrease the chances of an individual acting on or even feeling those urges. Furthermore, as this involves implementing strategies of self-regulation, it may allow PWUD to plan ahead in order to avoid situations where they may increase their chances of having access to or wanting to take drugs (Volkow, Koob & McLellan, 2016).

Keane and Hamil (2010) highlighted the contradictions between the analysis of symptoms experienced by those who have received prescribed pain medication versus those who have received psychoactive drugs illegally. They argued that while symptoms of dependency and drug-seeking behaviours which people taking prescribed pain medication experienced are seen as normal side-effects of the medication, whereas the neuro-adaptation in those who have acquired drugs illegally, is “regarded as pathological, their behaviour criminal, and their compunction ‘hijacked’” (Hammer, Dingel, Ostergren, Partridge, McCormick & Koenig, 2013, p. 6). There are many criticisms that the brain disease model faces, and while it is impossible to include all of them, a select few are presented below.

Dingel, Hammer, Ostergren, McCormick and Koenig (2012) argued that labelling addiction
as an uncontrollable neurological process could remove feelings of self-responsibility for an individual’s current situation and apply therefore the label of disease as a “crutch” (p. 3).

Hammer et al. (2013) also argued that using the term disease could cause problems, as the metaphorical association with that word describes “evil, plague, contamination, scourge, affliction, curse, blight, and bane” (p. 6). Scientist that were interviewed by Hammer et al. (2013) expressed their dissatisfaction with the term disease as it may lead laypeople away from the underlying concepts of the BDMA model, namely that addiction is an altered form of natural biological process. They argued that using more neutral terms could aid in helping people understand the true theory behind the brain disease model, rather than focusing on the negatively charged word disease. However, neither the scientists interviewed by Hammer et al. (2013) nor the researchers themselves provided any suggestions as to what terminology could replace the term disease.
The Biopsychosocial Model. The biopsychosocial model was first introduced by George Engel, in 1977. He argued that there was a need for a new model which could describe and explain illness or disease, as the dominant model at the time, the biomedical model, did not take certain factors which Engel believed to be vital in explaining and understanding these phenomena into consideration. This problem arose when there was a split between the school of thought of psychiatrists, with many of them wishing to remain faithful to a biomedical model as a means of explanation of certain diseases or illnesses that they dealt with within their profession (Engel, 1977). The biomedical model was explained as holding the assumption that a disease should “be fully accounted for by deviations from the norm of measurable biological (somatic) variables. It leaves no room within its framework for the social, psychological, and behavioural dimensions of illness … it also demands that behavioural aberrations be explained on the basis of disordered somatic (biochemical or neurophysiological) processes” (p. 130).

Essentially, Engel (1977) argued that the biomedical model was not sufficient in explaining and describing illness or disease, as it ignored the potential influences of social, behavioural and psychological aspects. Based on this assertion, he proposed the implementation of a new model, namely the biopsychosocial model. Engel argued, using as examples diabetes mellitus and schizophrenia, that understanding a disease and formulating treatment options required a medical model which should take “into account the patient, the social context in which he lives, and the complementary system devised by society to deal with the disruptive effects of illness, that is, the physician role and the health care system” (p. 132).

Since its introduction, the biopsychosocial model, has been used as a means to explain addiction, in the sense that addiction would be the result of multiple factors as described above, namely biological, social and psychological factors. In 1980, Ewing proposed that
alcoholism should be approached from the biopsychosocial perspective. Based on the definition of what the biopsychosocial model entails, Ewing devised four risk factors associated with developing a substance abuse problem. The four perspectives included “availability (such as cost of the substance, etc.), social factors, psychological factors and constitutional factors (including genetic and biomedical variables)” (Galizio & Maisto, 1985, p. 426).

Galizio and Maisto (1985) explained, similarly to the arguments of Engel (1977), that previous theories surrounding addiction were often established based on one perspective, for example one that would focus solely on biological factors, which would in turn completely contradict findings based on a perspective focused only on environmental factors as being the cause for addictions. Based on these stark contradictions, Galizio and Maisto (1985) called for a more theoretically integrated approach as being necessary in order to fully understand addiction. They explained that while the biopsychosocial model had already been proposed as a method of analysis of alcoholism, its application should be broadened and the model could be used in the analysis of all forms “substance abuse problems” (p. 426).

In 1988, Donovan and Marlatt explained that while the biopsychosocial model as an explanation for addiction had begun to gain traction, it was still not considered to be one of the more prominent models which used at that time to explain addiction. Similar to what had been explained by other researchers (Engel, 1977; Galizio and Maisto, 1985), Donovan and Marlatt expressed their restriction with the use of “singe-factor models that promoted a particular theoretical orientation or clinical approach, often with little or no collaboration or interaction across disciplines or across proponents of differing models” (Donovan & Marlatt, 2013, p. 1). Based on this concern, they explained that “biopsychosocial model, an integrative model, which posits that addictive behaviours are complex disorders multiply
determined through biological, cognitive, psychological, and sociocultural processes, can provide such needed clarity to the field” (Donovan & Marlatt, 2013, p. 2).

Crowe and Reeves (1997) also argued that the biopsychosocial approach should be used when determining treatment options for people who are addicted to alcohol or other drugs, as it takes a multitude of factors into consideration when attempting to understand the origin of the addiction being experienced by an individual. While this model accepts that biological factors may also play a role, as asserted in the brain disease model, the biopsychosocial model indicates that other social issues; such as unemployment, poverty and racism, may also contribute to the development of an addiction. Furthermore, Crow and Reeves (1997) explained that the biopsychosocial model takes into account the belief that social situations and interactions may help in reinforcing substance use behaviours, which is another aspect which could explain the origin of an addiction.

Crow and Reeves (1997) asserted that the biopsychosocial model accepts that there is no single treatment approach that can work for every individual who is experiencing an addiction. Therefore, it is important that biological, social and psychological factors are evaluated on a case-by-case basis, and taking these assessments into consideration, a comprehensive treatment plan can be designed to fit an individual’s needs. This will often involve “multidisciplinary teams of treatment professionals to provide the array of treatment and case management services needed. A continuum of treatment and supportive services is needed for adequately meeting the extent of needs presented by addicted persons” (p. 35).

However, more modern research into the theory behind the biopsychosocial model has indicated that this model still needs to be expanded upon. Hyman and Malenka (2001) argued that the biopsychosocial model does not take into account the potential impacts neurobiological and psychological factors can have on each other, as well as how certain behaviours can impact biological and psychological functioning. DiClemente (2003) argued
that while the biopsychosocial model is definite progress from previous single-factor models, it still falls short on explaining how the psychological, biological, social and behavioural factors integrate when explaining addictive behaviour. While the biopsychosocial model describes a relationship between multiple factors, it does not specifically explain how the various factors interact with each other and how these interactions play a role in the development of an addiction (Ghaemi, 2009). Hunt (2014) expanded upon that argument, stating that the biopsychosocial model “does not offer a comprehensive conceptualization of all of the relationships between these factors that contribute to active addiction and compulsive behaviors” (Hunt, 2014, p. 60).

Overview

As it can be seen from the sections above, addiction is a complex concept which has yet to be defined and explained in a universally agreed upon manner. It must be noted that the three models discussed are by no means the only models that have been designed with the aim of clarifying addiction, and therefore this report should not be examined on its own when attempting to understand the complexities of the definitions and explanations of addiction.
Recommendations for Harm Reduction

The Moral Model

It is difficult to justify why harm reduction is an effective way to aid PWUD from the perspective of the moral model, as the moral model believes that PWUD are fundamentally bad human beings, who should be held accountable for their actions through punishment rather than being helped. Therefore, any rights based or compassion based arguments will most likely be ineffective when discussing the benefits of harm reduction to anyone who views addiction from the perspective of the moral model. However, a very pragmatic argument, which is in favour of the harm reduction model, can be made when focusing on the economy. As reviewed previously, the initial purpose of the creation of the harm reduction model was to reduce the spread of HIV that was being experienced by PWUD unsafely (Lee, Engstrom & Petersen, 2011), via the sharing of drug use equipment, such as syringes and cookers (World Health Organization, 2012). Injecting drug use is estimated to be the cause of approximately 10% of all HIV infections across the world. This is the primary reason for why syringe exchange programs – SEPs – were introduced, as they provide sterile equipment for people who use drugs, which in turn decreases the chances of PWUD becoming infected with blood borne diseases such as HIV (UNAIDS, 2012).

Wilson and Fraser-Hurt (2013) found that the cost per person per year for SEP provision is between US$23 and US$71, which have made SEPs become recognized as one of the most cost-effective public health interventions currently existing. When comparing the lifetime costs of HIV/AIDS antiretroviral treatment with the costs of implementing and maintaining an SEP, it has been shown that the SEP is far more cost effective (Jones, Pickering, Sumnall, McVeigh & Bellis, 2008). As an example, Kwon et al. (2012) found that SEPs in Australia reduced the incidences of HIV by 74% over a 10-year period, and that the
government had a return on their investment into SEPs of between $1.3 and $5.5 for every $1 which was invested.

To put it simply, even if an individual views PWUD as immoral members of society who should not be helped, the harm reduction model can still be seen as a beneficial policy implementation as it reduces the amount of spending that goes into the treatment of HIV/AIDS. Also, implementing safer injection facilities – SIFs – can reduce the amount of drug paraphernalia left in public spaces as well as the amount of people who will use drugs in public, which can be argues as being beneficial for anyone who view PWUD as being negative and immoral members of society, and therefore do not want to be exposed to their drug using behaviours.

The Brain Disease Model

As was discussed in the section focusing on the BDM, recommendations for treatment methods based on the BDM for PWID, often include the replacement of opioids with medication such as methadone or buprenorphine (Bell, 2014), which is commonly known as opioid substitution therapy or OST. It has also been shown that PWUD are more likely to seek services from harm reduction organizations due to the fact that there is a non-stigmatizing, non-judgemental environment in these settings as opposed to ones which promote abstinence (Mancini and colleagues, 2008). Thus, it can be argued that harm reduction organizations can act as an effective connection for PWUD who may be contemplating seeking OST. Harm reduction organizations can provide clients with information about and referrals to an OST program. It is important to note, however, that based on the principles of the harm reduction model, there would nevertheless always be an emphasis on the fact that the client should begin an OST program if s/he decides to do so him or herself. Nevertheless, considering the fact that PWUD are more likely to seek the services
of harm reduction organizations than others, it can still be argued as being an effective link between PWUD and treatment facilities that provide OST programs, which falls in line with the recommendations for treatment options provided by those who follow the BDM.

Another argument that can be used as a promotion of harm reduction practices for people who follow the BDM of addiction is, again, the enormous impact it has on reducing the spread of HIV and Hepatitis C amongst people who use drugs. While this argument is not directly related to the explanation of addiction from the BDM perspective nor with the treatment recommendations it provides, those who agree with the BDM will, most likely, acknowledge the extensive research which has shown how effective harm reduction is at reducing blood borne diseases. Therefore, while harm reduction model does not follow the BDM, nor does it actively push treatment methods suggested by the BDM onto their clients, they are still reducing the chances of PWUD becoming infected with other diseases, which is a valid argument as to why harm reduction policies should be implemented.

Szott (2015), through the use of semi-structured qualitative interviews, investigated how harm reduction and the BDM could be effectively incorporated with one another. Szott (2015) interviewed 13 health care practitioners who provide primary care, with 6 of them providing OST, to PWID. Results from the interviews showed that while these health care individuals primarily see addiction from the BDM perspective and implement treatment based on this model, they also implemented harm reduction into their medical practice by educating clients on how to use drugs safely, as well as accepting that their clients had autonomy in terms of their decision to continue to take drugs. Therefore, Szott (2015) concluded that “the stitching together of the two approaches allowed the health care practitioners to provide care that was practical in terms of risk avoidance and continuity of care, and compassionate and understanding toward their patients’ continued drug use” (p.
This is an indication that harm reduction practices can successfully be incorporated into the BDM when treating PWUD.

The Biopsychosocial Model

The biopsychosocial model of addiction takes biological, psychological and social factors into account when attempting to explain addiction. This model can be argued as being a much more multifaceted and open-minded approach to understanding addiction, as it takes multiple factors into account rather than solely focusing on one. Similarly, harm reduction can also be argued as being a very open-minded approach to how to work with PWUD, as there is an understanding that every drug user is different on multiple levels. Each individual will have different needs in terms of services, different ideas of how they want to proceed with their drug use behaviours (i.e. either wanting to continue, reduce or completely stop) and so on.

Indeed, it has been argued that the harm reduction model views the concept of addiction from a biopsychosocial perspective (Little, Hodari, Lavender & Berg, 2008). This in of itself is a fantastic point to be made when discussing the benefits of harm reduction initiatives to those who understand addiction from the biopsychosocial perspective, as the harm reduction model acknowledges that addiction should be viewed as a complex concept which needs to take biological, psychological and social/environmental factors into account, not only as a means to explain the development of the addiction but also in terms of how to effectively manage it. Additionally, the concept of harm reduction therapy has been developed over the past decade, and is described as being “an integrated biopsychosocial, rather than a sequential, model of treatment. In other words, clients are treated simultaneously for their drug, psychiatric/emotional, and social issues” (Little, 2006, p. 70). In the beginning, harm reduction therapy encourages individuals to see themselves where
they are currently and determine what goals are realistically achievable in terms of reducing individual as well as community harm. Harm reduction therapy also addresses issues that would in theory result in an individual seeking therapy, namely relationships, emotional pain, psychiatric problems, social problems and work problems. Psychological approaches are used as a means to determine long-term goals of whether the individual wants to change, reduce or completely cease their drug using behaviours. Strategies are implemented in order to aid PWUD in changing their behaviour to achieve the goals they have set for themselves, while working with a therapist to also determine how to improve PWUD overall psychological wellbeing (Denning & Little, 2001).

In order for harm reduction therapy to be effective, “The relationship between emotional and psychiatric disorders and drug use and abuse must be explored with each individual and, as long as a person’s relationship with alcohol and other drugs is attended to along with the many other concerns that bring a person into therapy, then the work of addiction treatment is being done. What the harm reduction therapist is looking for is to develop and sustain a therapeutic relationship in which the user can understand her own relationship with drugs, tell her own story, and discover and work toward her own goals” (Little, 2006, p. 71). This is an example of how the concept of harm reduction can be successfully incorporated with the biopsychosocial model of addiction.
Conclusion

It can clearly be seen that the concept of addiction is incredibly complicated and still needs to be investigated and researched, in order to attempt to determine what an accurate and evidence-based explanation of an addiction is and how it develops. This, in turn, will provide a sharper and more precise awareness as to how an addiction can best be treated.

While harm reduction may face skepticism based on the fact that the ideology places an emphasis on not forcing anyone into reducing or completely ceasing their drug use behaviors, research has clearly shown that harm reduction practices can be very effective in reducing the harms that may come with the using of drugs, both on individual and community levels. Additionally, the practices and outcomes of harm reduction has been shown to be linked to multiple paradigms of addiction, which is an indication to how flexible, practical and implementable it is, no matter what an individual’s views on addiction are. Harm reduction practices can be used effectively with people who do not wish to stop their drug use but want to avoid the potential risks associated with drug use, in combination or not with other treatment methods, as seen in the research of Little (2006) and Szott (2015). Therefore, it can be suggested that, no matter what paradigm addiction is being viewed from, harm reduction is an important and effective way of working with PWUD.

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