A Scoping Review on Problematic Internet Use and Substance Use Disorder among Men

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by

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ABSTRACT

Problematic Internet Use (PIU) and Substance Use Disorder (SUD) interact in complex ways that influence the current mental health landscape. Concurrently, the advent of the digital era has presented new difficulties, one of which is the emergence of problematic internet use as a significant issue that negatively impacts mental health. The increasing popularity of internet use has led to an increasing number of reports highlighting the potential negative consequences of overuse, such as substance use. Thus, the study aimed to synthesise literature on problematic internet use and substance use disorder, including the way in which they affect men, given that prior research has predominantly focused on women. The methods employed follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) which is largely based on a PRISMA statement and checklist, the JBI methodological guidance, and other approaches for undertaking scoping reviews. A total of 16 studies were eligible for final review, and the themes identified from the reviewed studies were obtained using Braun and Clarke's thematic analysis. An analysis of the articles showed a large focus on gender differences in addiction patterns, vulnerability to problematic internet use across age groups, associations between substance use and behavioural addictions, problematic internet use and mental health disorders, the psychological consequences of problematic internet use and substance use disorders, and the various risk factors associated with the development of problematic internet use and substance use disorder. A clear understanding and conceptualisation of this behavioural addiction is vital, including the development and utilisation of appropriate and validated diagnostic and screening tools to measure its presence and, in turn, address it as an emerging mental health disorder. Focus should be given to the assessment of problematic internet use by distinguishing the two different forms, namely the generalised and specific forms of problematic internet use. Additionally, given that there were very few to no qualitative studies conducted on the topic of problematic internet use, much less addressing the possible association with substance use disorder, an assessment of the individual's experience, especially that of men, is lacking. Future research could therefore aim to incorporate more qualitative studies to address the above. Further research is also needed to clarify the nature of the relationship between problematic internet use and substance use disorder for the purpose of establishing possible causality, including the neurobiological substrates involved.

Keywords: addiction, men, mental health, problematic internet use, substance use disorder

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DEFINITION OF CONCEPTS

- **Addiction:** Addiction, as defined by the DSM-5, involves impaired control, large-scale intake, failure to reduce, avoidance of activities, risky use, tolerance, and withdrawal (5th ed., DSM-5, American Psychiatric Association, 2013).
- **Problematic Internet Use (PIU):** Different scholars have defined PIU as the use of the Internet that creates psychological, social, school, and or work difficulties in a person's life (Beard & Wolf, 2001), a use of the Internet that leads to various difficulties (Kożybska et al., 2023), and an inability to control one's use of the Internet that leads to negative consequences in daily life (Spada, 2014). For this study, the terms Internet Addiction (IA) and problematic internet use are used interchangeably due to the variance in terminology within the literature (Young & De Abreu, 2010).
- **Substance Use Disorder (SUD):** According to the DSM-5, a substance use disorder (SUD) is a diagnostic term used to describe a problematic pattern of substance use that leads to significant impairment or distress. The term substance use disorder is used to describe the wide range of the disorder, from a mild form to a more severe state. The substance related disorders section of the DSM-5 encompass ten separate classes of drugs (alcohol, caffeine, cannabis, hallucinogens, inhalants, opioids, sedatives, hypnotics or anxiolytics, stimulants, tobacco and other/unknown substances), allowing for the diagnosis of a substance use disorder to be applied to either one of the classes except for caffeine. It encompasses a range of symptoms, including cravings, tolerance, withdrawal, and an inability to control or cut down on substance use which can lead to clinically significant impairment or distress occurring within a 12-month period (5th ed., DSM-5, American Psychiatric Association, 2013).

CHAPTER 1

INTRODUCTION

1.1.Introduction

This chapter contextualises this scoping review by focusing on problematic internet use (PIU) and substance use disorders (SUD) in men. It establishes an important foundation for understanding the prevalence and historical context of problematic internet use and substance use disorders. In addition, this chapter presents the aim, objectives, problem statement, and rationale for this scoping review. The outline of the thesis is presented in closing.

1.2.Background of the Study

Young's (1998) study, *"Internet Addiction: The Emergence of a New Clinical Disorder,"* explored the potential of the internet as an addictive disorder. She found that online users are becoming addicted to the internet, similar to those who use alcohol and drugs, with withdrawal symptoms and a loss of control. In addition, her study showed that Internet Addiction (IA) is a problematic behaviour leading to negative consequences such as social isolation, academic decline, and impaired relationships. Pathological gaming was considered a form of mental disorder in the Diagnostic and Statistical Manual of Mental Disorders most alike to the pathological nature of internet use. (4th ed., DSM-IV, American Psychiatric Association, 1994). As a result, Young (1998) used pathological gambling to define addictive internet use as an impulse-control problem unrelated to substance use. Further developing a brief eight-item questionnaire known as a Diagnostic Questionnaire (DQ), which modified criteria for pathological gambling to provide a screening tool for the classification of participants with internet addiction (Young, 1998). Internet Gaming Disorder (IGD) was previously not officially diagnosed but has recently been added to the International Classification of Diseases (ICD-11) (Deutrom et al., 2022). Research has added to the body of knowledge surrounding this phenomenon, as evidenced by IGD being recognised as an official diagnosis under the ICD-11, emphasising the seriousness of the problem and the need for further investigation (Deutrom et al., 2022; 5th ed., DSM-5, American Psychiatric Association, 2023) . Furthermore, although it's acknowledged in the Diagnostic and Statistical Manual of Mental Disorders (5th ed., DSM-5, American Psychiatric Association, 2023) for further study, it is not currently considered a mental health disorder.

Griffiths et al. (2016), pioneers in the study of internet addiction within the European context, criticised Young (2015) for overlooking significant European research and failing to consider key international evidence in understanding the conceptualisation, epidemiology, aetiology, and course of internet-related disorders. They emphasised the importance of distinguishing between internet addiction as a whole and using it to fuel other addictions. For example, the American Psychological Association's (APA) use of the term 'Internet Gaming Disorder' rather than 'Internet Addiction' conveys the dominant view that a gaming addict is not addicted to the internet per se but simply uses it as a medium to engage in the chosen behaviour (Griffiths et al., 2016). In response to the debate about addictions on the internet versus addictions to the internet, Davis' (2001) model of pathological internet use was the first to differentiate between specific and generalised pathological internet use. Thus, it is important to distinguish between the two types of PIU: the generalised form, which includes a wide range of internet-based activities, and the specific form, which focuses on specific activities such as gambling, pornography, gaming, or social networking sites, particularly when considering gender differences (Baloğlu et al., 2020; Su et al., 2020). A key criticism in developing research on internet addiction is the continued lack of international consensus regarding the conceptualisation and diagnosis of internet-related disorders (Griffiths et al., 2016). Despite the attention that has been paid to the issue of internet addiction, developing a universal standard of care and assessment has been challenging due to the field's cultural diversity and variance regarding the terminology used in academic literature, ranging from internet addiction to PIU to pathological internet use, as well as the use of different inventories for their assessment (Young & De Abreu, 2010).

Different scholars have defined PIU as the use of the internet that creates psychological, social, school, and/or work difficulties in a person's life (Beard & Wolf, 2001), a use of the internet that leads to various difficulties (Kożybska et al., 2023), and an inability to control one's use of the internet that leads to negative consequences in daily life (Spada, 2014). According to Fineberg et al. (2018), problematic internet use is an umbrella term for excessive and compulsive internet use that results in a noticeable functional impairment. Examples of such use include gaming, gambling, online shopping, cybersex and pornography, social media use, cyberchondria, cyberhoarding, cyberstalking, and online streaming (Brand et al., 2020). A study by Shadzi et al. (2020) estimating the prevalence of PIU, mental health problems, and sleep quality amongst a sample of medical students in Iran found that higher rates of poor sleep quality, depression, anxiety, and stress were documented in those with PIU. The study reported

a statistically significant higher prevalence of depression and stress among the single students (Shadzi et al., 2020). Furthermore, it has been suggested that modern age technologies may contribute to increasing loneliness due the superficial nature of online communication as opposed to face-to-face interactions (Moretta & Buodo, 2020). A study by Vila et al. (2018) analysing the differences in academic and cognitive performance between adolescents with and without PIU found that the PIU users group obtained poorer academic results that the non PIU group. These definitions highlight the various aspects of internet addiction, including its impact on mental health, social relationships, academic or professional performance, and overall well-being. They also emphasise the inability to regulate or limit internet use, which ultimately leads to detrimental effects on daily life. Previous research has shown that individuals with problematic internet use are more prone to engaging in risky behaviours, such as substance abuse (Samara et al., 2021). Similarly, according to a study by Boniel-Nissim et al. (2022), intense and especially problematic users were more likely to engage in substance use. The nature of excessive internet use, characterised by compulsive and uncontrolled behaviours, creates a vulnerability that extends beyond the digital realm. Individuals grappling with problematic internet use resort to substance abuse as a coping mechanism or a means to alleviate the psychological distress associated with their problematic online habits. Conversely, individuals who already struggle with substance abuse may be more prone to developing problematic internet use to escape or distract themselves from their addiction. This bidirectional relationship between excessive internet use and substance abuse highlights the complex interplay between these two issues and the need for comprehensive interventions that address both simultaneously.

1.2.1. Problematic Internet Use and Substance Use Disorder among Men

Men and women alike are struggling with both PIU and SUD. The criteria that constitutes PIU and SUD are similar, with one main difference being that PIU is not reliant on an intoxicant in the way a SUD is. Both phenomena share a common maladaptive pattern response, which ultimately leads to impairment in various different areas of an individual's life. Problematic internet use and substance use disorders interact in complex ways that influence the current mental health landscape. It has long been acknowledged that substance use disorders are a serious public health issue that affects people all over the world. Men have received special attention because it is recognised that distinct sociocultural factors influence their mental health practices. Because problematic internet use and substance use disorders are interrelated and share psychosocial characteristics, it makes sense to examine both at the same

time. Concurrently, the digital era has presented new challenges, one of which is the emergence of problematic internet use as a significant issue with negative consequences for mental health. Due to the availability of new escape channels and coping mechanisms, the digital age has brought problematic internet use and substance use disorders together. Understanding this connection is necessary to develop comprehensive treatment strategies and targeted therapies.

A cross-sectional study by Sayeed et al. (2021) found that from a sample of 404 internet users over the age of 18 years, problematic internet use was significantly higher in males than female respondents. Notably, Su et al. (2020) found that men are more likely to present with IGD and women with overuse of social networking sites, such as Facebook and Instagram. Differences exist within the literature, whereby some studies agree that PIU is more prevalent among women, although some studies contradict this notion, showing that men are more vulnerable and show higher levels of problematic internet use (Baloğlu et al., 2020). Furthermore, Su et al. (2020) stated that males have often reported experiencing higher levels of internet addiction in comparison to women, but this may differ in terms of the specific types of internet use. Additionally, a study by Locani et al. (2018) found from a sample of 5593 internet users (2129 men and 3464 women), with individuals aged between 18 and 87 years old, that problematic internet use was more prevalent among women, with notable differences in the type of internet use. These findings suggest that while men exhibit higher levels of overall internet addiction, women engage in different types of internet use that contribute to their vulnerability to problematic internet use. This highlights the importance of considering gender differences when studying and addressing internet addiction. Moreover, this outcome emphasises that contrary results do exist (Baloğlu et al., 2020; Su et al., 2020). Thus, this study aimed to explore problematic internet use and substance use disorder among men, which is not clearly demonstrated in the literature.

Problematic internet use is often associated with various risk behaviours, such as substance use, and a host of other related negative consequences. It is estimated that alcohol misuse contributes to over 3 million deaths each year, making it a leading risk factor for premature mortality, especially among individuals between the ages of 20 and 39 (WHO, 2022). In 2019, alcohol use accounted for 2.07 million deaths of males and 374,000 deaths of females globally (National Institute on Alcohol Abuse and Alcoholism, 2023). An estimate of 129-190 million people globally use cannabis, followed by amphetamine type stimulants, cocaine, and opioids (WHO, 2023). In their lifetime, 13.3% of South Africans take at least one

substance (Kaswa & de Villiers, 2020). While there is a dearth of demographic data on substance use in South Africa, it is estimated that 10.3% of adults (15 years and older) drink alcohol excessively (16.5% of males and 4.6% of women), and 8.6% (13.3% of men and 4.1% of women) use illegal drugs nationally (Pengpid et al., 2021). A substantial proportion (13,3%) of South Africans meet the diagnostic criteria for a SUD (Herman et al., 2009), with alcohol use disorder being the most common type of SUD (Burnhams et al., 2019). These statistics suggest that there is a gender disparity in alcohol misuse and substance use disorders in South Africa, with higher rates observed among males compared to females. However, it is important to note that these figures are estimates, and more research is needed to fully understand the extent of the problem and the underlying factors contributing to these gender differences.

Dib et al. (2021) conducted a cross-sectional study assessing the extent to which young adolescent students (963 females and 844 males) in Lebanon are affected by problematic internet use and the factors associated with it. The study found that alcohol use was prevalent among students and associated with problematic internet use. Additionally, a longitudinal study by Lee and Lee (2016), as cited in Dib et al. (2021), showed that adolescents with PIU who did not smoke, or drink later developed heavy drinking and cigarette smoking problems in early adulthood. Moreover, the study further emphasised smoking as the main factor associated with problematic internet use, highlighting the significant relationship between smoking and problematic internet use more than with alcohol abuse among adolescents. These findings are consistent with a Japanese cross-sectional study conducted by Morioka et al. (2017) that looked at the association between alcohol use and problematic internet use among adolescents. In another study conducted by Giotakos et al. (2016), with most respondents being male military personnel with a mean age of 32, it was found that the overuse of the internet was associated with the development of an addiction to online gambling, followed by substance use in general, and particularly the use of illicit drugs such as heroin and cocaine. Other than substance use, other related negative consequences were highlighted in a qualitative study by Li et al. (2015), with the use of focus groups, which identified that depression, boredom, and stress were found to be common triggers resulting in the overuse of the internet among male and female university students ranging in age from 18 to 36 years. The subsequent consequences of intensive use of the internet compromise physical and mental health challenges, psychosocial functioning, and work productivity (Li et al., 2015), which will be further explored in subsequent chapters. Therefore, it can be postulated that men are prone to developing a substance use disorder, making them a vulnerable population that seems to have been

understudied given the little research on adult men, indicating a need for further research. Although there seems to be a commonality across the literature that both alcohol and smoking are significantly associated with problematic internet use, most of these studies have mainly focused on adolescents and university students, so the association cannot be generalised to older age groups. As a result, the studies indicate a gap in the current literature where more focus should be given to young adults, especially men, instead of focusing mainly on wide or young age ranges. Thus, this study aimed to synthesise the broad literature on the link between problematic internet use and substance use disorder among adult men, since little is known about gendered differences.

1.3.Problem Statement

Men and women present differently in their use of the internet. More studies have focused on women with inconsistent results in comparison to men, leaving a gap in the literature related to studying adult men. Additionally, many studies draw on adolescents when studying PIU, as seen from the literature above, indicating a further gap in the research in relation to this understudied population. Thus, taking this into account, this study aimed to further explore PIU, with the focus being on adult men. Moreover, the use of the internet has been linked to various conditions and symptoms that can affect a person's psychological well-being. Some of these include loneliness, depression, and substance use (Kittinger et al., 2012). From a clinical standpoint, the effects of the internet on an individual's psychological health are important because of the potential detrimental effects on the individual and society, thus warranting further study. Through further research, health professionals can gain a deeper understanding of how people develop their compulsive behaviour, which has the potential to inform prevention and interventions.

1.4.Rationale

Even though a great deal of research has consistently shown that alcohol use, smoking, and PIU have a strong association, most of this research has focused on adolescents and university students (Cannizzaro et al., 2022; Coeffec, et al., 2015; Gallimberti et al., 2016; Myers & Kelly, 2006; Tomczyk, Ł & Wąsiński, 2020; Van Rooij et al., 2014). As a result, there are relatively few studies looking at this association in older age groups, specifically men. Understanding the link between substance use and PIU in adult men is crucial due to their increased use of technology and internet access and their unique socioeconomic and health-related traits. Studying this association in elderly males can yield significant knowledge about the possible

influence of substance use on PIU in a demographic that might be more susceptible to its negative consequences. Although not currently clearly demonstrated within the literature, research suggests a bidirectional relationship between PIU and SUD. Further research is needed to determine causality, however studying the connection between substance abuse and PIU in adult males can assist in developing prevention and intervention plans that are specifically aimed at this group of people. Thus, this scoping review sought to advance a more thorough understanding of the complex dynamics between problematic internet use and substance use disorders to highlight the need for intervention to prevent subsequent mental health problems and well-being complications.

1.5.Aim of the Study

The increasing popularity of internet use has led to an increasing number of reports highlighting the potential negative consequences of overuse, such as substance use. Thus, the study aimed to synthesise the literature on PIU and SUD, including the way in which they affect men (18-35 years), given that prior research has predominantly focused on women.

1.6.Objectives of the Study

The following were the objectives of the study:

- To explore what type of research has been conducted on PIU and SUD among men.
- To synthesise research on the most common SUDs among men with PIU.
- To synthesise literature on PIU and SUD to determine its effect on men.
- To explore the association between PIU and SUD in adult men.

1.7.Research Question

According to the Joanna Briggs Institute's (JBI) (2020) scoping review manual, the PCC mnemonic is recommended as a guide to systematically construct a research question when conducting a scoping review, which stands for Population, Concept and Context.

Population: The identified population includes studies with adult men as their main participants.

Concept: The concepts of interest are PIU and SUD, both separately, and the possible association between the two.

Context: The context of the scoping review and the studies selected for the review are embedded on the internet. The study will include both local and international research.

Thus, the following research question was formulated based on the above PCC framework.

What does existing literature reveal about problematic internet use and substance use disorder among adult men?

1.8.Significance of the Study

This scoping review focused on the critical investigation of the co-occurrence of PIU and SUD in men, recognising the combined consequences on mental health that these intertwined phenomena frequently cause. Delving into the underlying reasons for the simultaneous engagement in PIU and SUD, the scoping review aimed to synthesise literature on PIU and SUD to determine the manner in which they affect adult men. It highlighted how important it is to comprehend that PIU and SUD coexist to create successful intervention plans, acknowledge the importance of these behaviours for public health, and investigate shared psychosocial elements that underlie both behaviours. In the end, it aimed to offer thorough understandings of the intricate dynamics affecting men's relationships, mental health, and perhaps coping mechanisms in the contemporary digital era.

1.9.Overview of the Research Methods

A scoping review was used in this study, which was suitable because it allowed knowledge on PIU and SUD among men to be recorded and assessed in a comprehensive manner and in a concise and unbiased summary of the evidence. This methodology has a systematic way of gathering data; as such the Population, Concept, and Context (PCC) framework that was used to systematically construct the research question will also guide the inclusion and exclusion criteria. The methodology consists of five sections, namely, identifying the research question, identifying the relevant studies, study selection, presenting the data, collating the results, and ensuring quality and rigour.

1.10. Outline of the Thesis

Chapter 1: This chapter provides an introduction and background to the research topic. This chapter further presents the study's basic concepts or keywords, the problem statement, research question, goals of the study, and an overview of the research methods used in this scoping review.

Chapter 2: This is the literature review chapter that explores existing literature on PIU and SUD among men. Furthermore, this chapter explores the risk factors and mental health consequences of both PIU and SUD.

Chapter 3: This chapter describes the theoretical framework, which is the social constructionism theory that underpins this study.

Chapter 4: This chapter explains the methodology and provides an in-depth description of the methodological procedures followed to conduct this scoping review.

Chapter 5: The interpretation of the findings is covered in this chapter, which focuses on the dominant themes.

Chapter 6: This is the final chapter that discusses the implications of the findings as well as a critical review of the results.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter presents available literature on problematic internet use and substance use disorder among men and the way they are affected. This section covers various discussions on (1) behavioural and substance-related addictions, (2) problematic internet use, (3) substance use disorder, (4) the co-occurrence of problematic internet use and substance use among men, (5) risk factors associated with problematic internet use, and (6) associations and the mental health consequences associated with problematic internet use, such as substance use disorder.

2.2. Behavioural and Substance-Related Addictions

Addiction has been used to refer to disorders of substance use (Smith, 2012). However, there is a growing interest in considering other conditions that are similar, such as behavioural addiction, characterised by preoccupation with and diminished control over rewarding behaviours with adverse consequences other than substance use (Sinclair et al., 2016). Although there have been various arguments presented supporting the diagnostic validity of this concept and its clinical utility, there is currently a lack of consensus regarding the diagnosis and treatment of excessive reward-seeking behaviours (Albrecht et al., 2006; Sinclair et al., 2016). Its classification is uncertain. Thus, a clear conceptualisation of these behavioural addictions is vital, including the utilisation of appropriate diagnostic tools to address this issue (Albrecht et al., 2006). Additionally, the lack of consensus on diagnosis and treatment has led to inconsistent approaches to addressing excessive reward-seeking behaviours, potentially hindering effective interventions (Albrecht et al., 2006).

Based on neurobiological principles, behavioural strategies that are only indirectly involved in the brain's neurotransmitter systems can act as effective substitutes for pharmacological substances (Albrecht et al., 2006). Recent studies have shown that there are common mechanisms underlying both substance-related and behavioural addictions (Albrecht et al., 2006; Sinclair et al., 2016). Considerable phenomenological parallels are shared between behavioural addictions and substance addictions, which include impaired control and the persistence of a behaviour despite its negative effects (Sinclair et al., 2016). This suggests that behavioural strategies that are excessively carried out, such as those that involve gambling or excessive shopping, also have an addictive potential to trigger a specific reward response in

the body's biochemical processes. According to Albrecht et al. (2007), numerous scientific studies and clinical procedures support this assumption, and several authors state that the criteria for behavioural addiction are like those for substance addiction. For example, individuals with a gambling addiction experience cravings and withdrawal symptoms similar to those seen in individuals with a substance addiction. Additionally, both types of addiction can lead to negative consequences such as financial problems, relationship difficulties, and impaired functioning in daily life (Beard & Wolf, 2001; Fineberg et al., 2018; Kożybska et al., 2023).

The DSM-5 has added gambling disorder as a new category of addictive disorders to its list of substance-related conditions, with internet gaming disorder included as a condition for further study. The lack of consensus regarding what exactly constitutes behavioural addiction is the reason why only one disorder has been identified and added to this category, as evidenced by the lack of peer-reviewed evidence on its aetiology and progression (Kardefelt-Winther et al., 2017). Defining behavioural addiction is crucial for future studies and classification frameworks. Excessive internet gaming and gambling disorders are now considered behavioural addictions with similar symptoms to impulse control disorders, according to recent studies (Mann et al., 2017). Gambling disorder involves preoccupation with behaviour, diminished control, and adverse consequences. It's comorbid with substance use disorders, with first degree relatives more prone to addiction. Addiction refers to the use of psychoactive substances like alcohol, cocaine, and nicotine, which significantly impact the brain's reward systems (Chamberlain et al., 2016). For instance, they can trigger the development of the opioid and dopaminergic systems. According to the DSM-5, addiction is defined as impaired control, large-scale intake, failure to reduce, avoidance of activities, risky use, tolerance, and withdrawal. Repetitive habits in certain psychiatric disorders are similar to substance addiction. Therefore, the study of these conditions could aid in identifying the neural mechanisms underlying addictive behaviour without the influence of substances (Chamberlain et al., 2016).

Concerns have been raised about pathologizing common behaviours and adjusting diagnostic categories based on substance use disorder criteria, as this could neglect the context and the individual's desire to engage with them (Gomez et al., 2022). Some believe that addictive behaviours are independent syndromes or constructs with distinct networks of symptoms (Gomez et al., 2022). There is a debate about whether conditions related to behavioural addiction should be considered disorders instead of lifestyle choices. However, it

is suggested that different dimensions of addiction, including behavioural, technological, and substance use, should be included under the broader addiction umbrella (Gomez et al., 2022). This has important implications for the treatment and prevention of various disorders, as it helps researchers determine if these behaviours are part of the same family or category of disorders. Additionally, information about the sub-groups and associations of certain addictive behaviours should be included in the development of effective intervention and prevention programs. For example, if one addictive behaviour is related to another substance use disorder, this information could help individuals develop effective treatment strategies. Thus, this review looked at the link between problematic internet use and substance use disorder among adult men to understand the potential connections and improve treatment outcomes.

2.3. Risk Factors and Consequences of Problematic Internet Use

The 1990s were a crucial time in the development of our understanding of maladaptive technology use, with particular attention paid to the internet and its excessive usage (Moreno et al., 2022). During this period, researchers began to explore the psychological and social implications of excessive internet use, leading to the identification of problematic behaviours such as internet addiction. Additionally, studies during the 1990s shed light on the negative consequences of maladaptive technology use, including social isolation and impaired academic or occupational performance (Greenfield, 1999; Orzack, 1999; Young, 1998). From these two early conceptualisations, three further conceptualisations of the problem were identified (Moreno et al., 2022). The first approach was broader and referred to internet overuse as a type of behavioural addiction. The second approach proposed a more distinct classification of the disorder, which involved identifying it as an impulse control disorder, with criteria defined as "(1) maladaptive preoccupation with internet use characterised by either irresistible use or use that is excessive and longer than planned, (2) clinically significant distress or impairment, and (3) an absence of other explaining Axis 1 disorders (Moreno et al., 2022, p. 2)." A third approach involved a cognitive behavioural model that focused on the link between an individual's thoughts and their development of problematic behaviours. This third approach also separated internet overuse from another multidimensional overuse or generalised overuse. These different categorisations highlight the complexity of understanding and defining problematic internet use. While the DSM-IV criteria provided a starting point, researchers have since expanded their understanding to include various psychological and behavioural models (Chamberlain et al., 2016; Griffiths et al., 2016; Moreno et al., 2022; Sinclair et al., 2016). This multidimensional approach allows for a more comprehensive examination of the effects of

problematic internet use on individuals and society. Young (2004) defined internet addiction as an impulse control disorder that does not require an intoxicant, which makes it a behavioural addiction similar to gambling addiction but different from alcoholism. The widespread issue of problematic internet use has led to significant psychological health issues among affected individuals worldwide. Numerous studies have been conducted to further understand the causes, risk factors, and consequences of problematic internet use (Alhammad et al., 2022; Diotaiuti et al., 2022; Ersche et al., 2010; Kuss et al., 2014; Lee et al., 2012; Mazhari, 2012).

2.3.1. Risk Factors of Problematic Internet Use

Problematic internet use (PIU) has also been associated with sociodemographic characteristics such as age and sex (Kuss et al., 2014). In their study, Kovačić Petrović et al. (2023) found that younger individuals were more likely to engage in PIU compared to older individuals. The demographics of problematic internet users in South Africa were found to be similar to those of other international studies. Thatcher and Goolam (2005) found that young males spend a considerable amount of time online, using interactive internet applications. According to Akinloye et al. (2020), men in South Africa suffer from composite stress, depression, and internet addiction. These findings suggest that the prevalence of problematic internet use among young males in South Africa contributes to their increased vulnerability to mental health issues.

Literature also consistently supports the link between internet addiction and impulsivity among young adults (Mazhari, 2012; Lee et al., 2012; Diotaiuti et al., 2022). For instance, a study conducted by Salehi et al. (2023) among medical students in North Iran found that impulsivity rises in conjunction with the intensity of internet addiction, and gender has no bearing on this relationship. In another study by Zhang et al. (2021), it was reported that impulsivity and depression increased with internet addiction severity levels, whereas social support was inversely related to the severity of internet addiction. In addition, male freshmen with high impulsivity, low social support, and high depression were more likely to be included in the high internet addiction group. They were also more likely to experience negative consequences in various areas of their lives (Zhang et al., 2021). These findings suggest that there are multiple factors at play when it comes to internet addiction and its associated consequences. In South Africa, impulsive and compulsive symptoms and traits, pandemic stress, and age were related to problematic internet use (Lochner et al., 2022).

In an Australian study by Albertella et al. (2021), psychological distress and exposure to COVID-19 related stressors were associated with greater problems across all addictive and compulsive behaviours, as was the severity of pre-COVID-19 problems. Similarly, according to Kovačić Petrović et al. (2023), problematic social media use was more frequent among Croatian young adults reporting pandemic stress than among those without perceived stress. Apart from adolescents, literature has indicated that males show higher levels of problematic internet use than females (Germani, 2023). This is supported by a study done by Su et al. (2019), which states that internet addiction is prevalent and associated with negative measures of health functioning, with males appearing more vulnerable than females.

Research has shown an association between personality traits and internet addiction. For example, a study conducted by Jojo and Sundaramoorthy (2022) aimed to find the difference in personality traits among people who are addicted and non-addicted to the internet among college students in South India. The study found that neuroticism was positively correlated with internet addiction, whereas openness to experience, agreeableness, and conscientiousness were negatively correlated. Furthermore, the study observed that neuroticism, extraversion, agreeableness, and conscientiousness can predict Internet addiction, and it was found to be more prevalent among males than females (Jojo & Sundaramoorthy, 2022). Similarly, a study by Günaydın (2021), which explored the associations between personality traits including extroversion, neuroticism, conscientiousness, agreeableness, openness to experience, gender, frequency of internet use, and teenagers' internet addiction, found that frequency of internet use, neuroticism, conscientiousness, and agreeableness explained 29.8% of the variance in adolescent internet addiction. Neuroticism was the most significant variable linked to teenagers' internet addiction. However, gender, extroversion, and openness to experience were not significant predictors of teenagers' internet addiction. Another South African study by Maepa and Wheeler (2022) among adolescents found a substantial inverse correlation between Facebook addiction and neuroticism and psychoticism. These research findings suggest that personality traits, such as conscientiousness, and demographic factors, such as gender, play a significant role in predicting internet addiction.

Adolescents who experience emotional detachment and loneliness from their parents exhibit higher levels of problematic internet use (Musetti et al., 2020). This suggests that problematic internet use is influenced by the quality of parent-child relationships and can have negative consequences for adolescents on their emotional well-being. Co-dependency is another concept that has been linked to the phenomenon of addiction, primarily substance

addiction (Diotaiuti et al., 2022). Additionally, the impact of the COVID-19 pandemic on mental health and stress levels seems to exacerbate problematic internet usage and addictive behaviours. The COVID-19-related burdens can lead vulnerable healthcare workers to engage in more problematic online behaviours because they can resort to problematic internet use (such as gaming, gambling, and pornography viewing) to escape stress, anxiety, and mental health issues (Buneviciene & Bunevicius, 2021; Gjoneska et al., 2022). This increase in problematic internet usage can further contribute to the deterioration of mental health and exacerbate existing addictive behaviours. The availability and accessibility of online platforms provide temporary relief from the overwhelming emotions caused by the pandemic, but they can also create a vicious cycle where individuals become more reliant on these behaviours as a coping mechanism.

2.3.2. Mental Health Consequences of Problematic Internet Use

Problematic internet use's effects on mental health can include elevated stress, anxiety, and depressive symptoms. Overindulgence in online activities can exacerbate feelings of loneliness and social disengagement, which can have a detrimental effect on interpersonal relationships. In addition to the possibility of cyberbullying or online abuse, constant connectivity can also exacerbate mental health issues. Problematic internet use can also cause sleep patterns to be disturbed, which can result in exhaustion and mood swings. The relationship between problematic internet use and mental health is complex since the virtual world can serve as both an escape and a stressor. Problematic internet use is significantly associated with a variety of psychological problems among young people (Faghani et al., 2020; Pettorruso et al., 2020). For example, in a study by Cai et al. (2023) on the relationships between students' PIU and mental health outcomes, problematic internet use was moderately and positively associated with depressive symptoms, anxiety, loneliness, and other mental health outcomes and negatively related to subjective well-being. Their findings suggest that excessive internet use has detrimental effects on students' overall well-being and mental health. Another study by Kożybska et al. (2023) found that Polish medical school students with problematic internet use lead an unhealthy lifestyle and more often show symptoms of depression and eating disorders than students without it. This highlights the potential impact of problematic internet use on various aspects of students' lives, including their physical health and eating habits. Additionally, a study conducted by Wu et al. (2019) revealed that individuals with higher levels of anxiety and stress are more likely to engage in problematic internet use as a coping mechanism. In opposition to the idea that a mental illness causes the problematic

internet use, research by Dong et al. (2011) reported that higher scores for depression, anxiety, hostility, interpersonal sensitivity, and psychoticism were consequences of internet addiction disorder (IAD). This indicates that there is a bidirectional relationship between mental health issues and problematic internet use, where one can exacerbate the other. In other words, mental health issues can worsen problematic internet use, and vice versa.

According to Shinde and Patel (2014), excessive internet use has substantial negative effects on psychological, emotional, and social aspects of an individual's well-being and mental health. Moreover, problematic internet use, like other addictions, disrupts studies, school life, and other daily activities and can lead to loneliness, insufficient sleep, anxiety disorders, and low self-esteem (Upadhyay et al., 2017). However, although problematic internet use has been noted to have adverse health outcomes, it is a clinically established phenomenon that is not formally diagnosable yet (Chatterjee & Rai, 2023). Despite it not being officially recognised as a diagnosable disorder, problematic internet use has gained significant attention due to its impact on individuals' mental and physical well-being. Problematic use of the internet can include multiple disorders (Morretta et al., 2022). Research has shown that individuals with problematic internet use are more likely to experience symptoms of depression and have a higher risk of developing other mental health disorders such as attention deficit hyperactivity disorder (ADHD) and substance abuse disorders (Kuss et al., 2014). Additionally, problematic internet use has been associated with impaired cognitive functioning, including difficulties in concentration, memory, and decision-making abilities (Yen et al., 2008).

Internet addiction can occur at any age and in any social situation, but most research attention is mostly focused on adolescents because adolescence appears to be a critical period of addiction vulnerability (Grant et al., 2010; Kuss & Griffiths, 2012; Lin et al., 2011; Pallanti et al., 2006). However, recent studies have shown that internet addiction is not limited to adolescents and can also affect adults, including men (Diotaiuti et al., 2022; Hassan et al., 2020; Zhang et al., 2015). This gap in research highlights the need for further investigation into the factors contributing to internet addiction vulnerability among adult populations, particularly men, in order to develop effective prevention and intervention strategies. Thus, this review aimed to understand the prevalence and impact of internet addiction among men and identify potential risk factors. Furthermore, explore the association between problematic internet addiction and substance use disorders among adult men.

2.4. Risk Factors and Consequences of Substance Use Disorder

SUDs, are a major global public health concern that affects people, families, and communities. SUDs are common worldwide and are among the leading causes of morbidity and mortality (World Health Statistics, 2022). Substance use disorders account for substantial global morbidity, mortality, and financial and social burden, yet most of those suffering from substance use disorders in both low-and middle-income and high-income countries never receive SUD treatment (Connery et al., 2020). This treatment gap is often attributed to various factors, such as limited access to healthcare services, stigma surrounding substance use disorders, and inadequate resources for addiction treatment. Alcohol is the most widely used substance of abuse in the world, with significant social and health consequences (WHO, 2022).

Substance use disorders affect men and women differently, although the prevalence has been reported to be higher in men (Compton et al., 2007; Fonseca et al., 2021; McHugh et al., 2018). Research has shown that men are more likely to engage in heavy and binge drinking compared to women, which contributes to the higher prevalence of substance use disorders in men (Grant et al., 2015; Keyes et al., 2011). Additionally, societal, and cultural factors play a role in shaping gender differences in alcohol misuse and substance use disorders (Cotto et al., 2010; Greenfield et al., 2010).

2.4.1. Risk Factors of Substance Use Disorder

A review by Alhammad et al. (2022) revealed that there are a wide range of risk factors for substance abuse, including a history of abuse in childhood, a family history of substance abuse, individual risk factors, peer risk factors, environmental risk factors in childhood and adolescence, and co-occurring disorders. Stressors such as parental divorce, parental substance abuse, depression of a family member, or feelings of inadequacy can lead to feelings of sadness, which some adolescents have reported to be a motivator for them in deciding to begin substance use (Taylor, 2011). Furthermore, certain personality traits, such as impulsivity and sensation-seeking, also contribute to an individual's susceptibility to substance abuse (Ersche et al., 2010). Additionally, exposure to substance use within one's social circle and easy access to drugs or alcohol were identified as significant environmental risk factors that can influence an adolescent's decision to engage in substance use (McLellan, 2017; Whitesell et al., 2013).

2.4.2. Mental Health Consequences of Substance Use Disorder

Excessive substance use can lead to a range of health issues, such as liver disease, cardiovascular problems, and mental health disorders. High levels of anxiety, depression, or other mood disorders are experienced by people with substance use disorders (Davis et al., 2023). In addition, a study that assessed anxiety and depression among substance use disorder patients found that substance use disorders are associated with high levels of anxiety and depression (Mohamed et al., 2020). Substance abuse can worsen problems with attention, memory, and decision-making by interfering with cognitive function (Koob et al., 2023; Redzepagic & Ladas, 2023). Furthermore, there is a higher chance of suicidal thoughts and actions when substance use disorder coexists (Lynch et al., 2020; Onaemo et al., 2022). A decline in general mental health can be attributed to the cycle of dependency and withdrawal, which can result in a complex interaction between substance misuse and mental health issues. In addition to depression and anxiety, excessive substance use has also been linked to more severe mental health disorders, such as schizophrenia and bipolar disorder (Lagerberg et al., 2010). Studies have reported a higher prevalence of substance use disorders in individuals with mental illness compared to the general population (Peltzer et al., 2018). A study by Richert et al. (2020) on young people in Sweden demonstrated significant associations between the severity of drug use problems and anxiety, concentration difficulties, aggression, hallucinations, and mental stress caused by experiences of trauma.

Similarly, substance use and depressive as well as anxiety symptoms were found among out-of-school adolescent girls and young women in Cape Town, South Africa (Bonner et al., 2021). In another South African study, students who reported substance use at university reported higher depression and anxiety scores than those who did not (Blows & Isaacs, 2022). Cigarette smoking among individuals aged at least 15 was significantly associated with incidents of depression among men in South Africa (Tomita & Manuel, 2020). Substance abuse has major negative social and health impacts in South Africa. According to Tindimwebwa et al. (2021), lifetime tobacco use was more prevalent amongst individuals with schizophrenia and cannabis-induced disorders and lower in those with major depressive disorders and bipolar and related disorders. These findings suggest that there is a clear link between substance abuse and mental health disorders in South Africa, with certain disorders being more prevalent among individuals who use tobacco. It is important for healthcare professionals to address substance use as a contributing factor to mental health in order to develop interventions and treatment

plans. Additionally, further research is needed to better understand the underlying reasons behind the correlation between tobacco use and certain mental health disorders in South Africa. A review conducted by Angarita et al. (2016) noted that sleep abnormalities are associated with the acute and chronic use of addictive substances. These findings suggest that addressing sleep disturbances is crucial in the treatment of individuals struggling with substance abuse. Healthcare professionals must address both issues simultaneously to provide effective treatment and support for individuals experiencing co-occurring disorders.

2.5. The Relationship between Problematic Internet Use and Substance Use Disorder

Previous research has shown that individuals with problematic internet use are more prone to engaging in risky behaviours, such as substance abuse (Samara et al., 2021). Most studies discovered a positive association between problematic internet use and alcohol use, some specifically between problematic internet use and cannabis use (Gámez-Guadix et al., 2015; Kuss et al., 2016; Qeadan et al. 2022; Wartberg & Kammerl, 2020). Problematic internet use has a potential positive association with alcohol and cannabis use among youth around the world. Several studies have shown a positive association between problematic internet use and substance use among adolescents (Chang et al., 2015; Rial et al., 2018). For instance, Rücker et al. (2015) conducted a study in Switzerland that examined whether problematic internet use was associated with substance use among young adolescents. They found significant associations between problematic internet users and substances, such as tobacco, alcohol, cannabis, and other drugs. Moreover, their study showed that problematic internet users were more likely to be female, who come from non-intact families, report poor emotional well-being, and are below-average students. Similar results were found in a study conducted by Qeadan et al. (2022) among United States college students, which found that problematic internet use increased their risk of substance misuse behaviours. In addition, a survey of high school students in the United States conducted by Liu et al. (2011) showed an overall prevalence of problematic internet use of 4%, with no gender differences. It was found to be significantly associated with substance use, depression, and aggression. Samara et al.'s (2021) study among adolescents in the United Kingdom found a positive correlation between problematic internet use and substance abuse, which was also mediated by traditional and cyber bullying and victimisation.

Building on the body of knowledge that shows a link between teenage substance addiction and problematic internet use, it is crucial to extend the understanding of this

relationship to the adult male population. The documented link between problematic internet use and substance uses among youth globally, particularly involving alcohol and cannabis, emphasises the need to investigate whether a similar association persists into adulthood. This review posited that the dynamics between problematic internet use and substance abuse identified in adolescent studies can persist or evolve among adult men, potentially influencing patterns of substance abuse on alcohol and cannabis consumption as well as other substances. Thus, this review aimed to explore nuanced aspects of the interplay between problematic internet use and substance abuse by focusing on adult males, which allows for further exploration of men that might be at risk of developing harmful addictive behaviours. Understanding the relationship between problematic internet use and substance use disorders among adult men was crucial, as it could provide insights into potential risk factors and interventions.

2.6. Conclusion

In summary, research on the relationship between problematic internet use and substance use in young adults has dominated the body of literature currently in publication, leaving a clear gap in our knowledge of these phenomena, especially regarding adult males. This study aimed to fill this gap by reviewing the body of research on problematic internet use and substance use disorders, particularly in men. This was done to provide important new insights into the distinct dynamics and relationships within this population, revealing elements that may differ from those seen in general research on young adults. This research aimed to improve the understanding of the intricate interplay between problematic internet use and substance use by focusing on this underrepresented subgroup, laying the groundwork for future studies and interventions tailored to the needs of men facing these dual challenges. The next chapter describes the theoretical framework, which is the social constructionism theory that underpins this study.

CHAPTER 3

THEORETICAL FRAMEWORK

3.1. Introduction

This scoping review draws on social constructionism as the theory underpinning the entire study of problematic internet use and substance use disorder among men. Social constructionism is a theoretical framework that emphasises the role of social interactions and language in shaping individuals' perceptions of reality. Therefore, social constructionism is relevant to the study of problematic internet use (PIU) and substance use disorder (SUD) among men because it involves understanding how these issues are constructed, perceived, and addressed within society.

This study, which focused on problematic internet use and substance use disorder, used the social constructionism theory as a framework to explore how societal norms, beliefs, and language contribute to the development and maintenance of problematic internet use and substance use disorder among men. The researcher hoped that by applying social constructionism, they would be able to uncover the complex interplay between individual experiences and broader social influences in shaping behaviours related to problematic internet use and substance use disorder. Looking beyond individual pathology and DSM-5 criteria, social construction theory recognises the realities in which both problematic internet use and substance use disorder are embedded. Social constructionism suggests that both problematic internet use and substance use disorder are not solely biological or individual phenomena but are constructed within social contexts (Baym, 2015; Benvenuti et al., 2023; Dahl & Bergmark, 2020; Daley, 2013). This chapter will be split into two parts, namely, the key concepts related to social constructionism and the motivation and relevance of this theory within the study.

3.2. Social Constructionism

Social constructionism is both a philosophical and sociological perspective that emerged in the late 1900s. It originated in sociology as a post-modern qualitative research method that essentially strived to understand the nature of our reality, knowledge, and truth. The use of social constructionism is relatively new within the areas of PIU and SUD, and as such, diving into its key concepts is of great importance in forming one's understanding of how to accurately assess and make use of this theoretical framework.

Social constructionism has many roots and is often mistaken for social constructivism (Andrews, 2012). According to Alexandra Galbin (2014), social constructivism takes on an objective approach that states that an individual's reality and understanding of the world to a large degree are directly linked to their day-to-day experiences, suggesting that the individual's mind is a mirrored representation of their reality. Furthermore, Galbin (2014) makes an illustration of this using world maps as a metaphor, stating that everyone's map of the world differs as we all experience and view the same world differently. Thus, with each experience and interaction one goes through, new routes and details are added, removed, or replaced, resulting in a unique mapped experience for all individuals. Social constructionism, on the other hand, challenges the idea of an objective reality, arguing that reality is socially constructed, focusing on the interactive process between society and the individual and how this in turn shapes our perspectives and beliefs (Galbin, 2014). Social constructionists believe that at the core of this interactive process are key concepts such as social constructs, language, and culture, which are paramount to our cognisance of ourselves and the world around us.

The work of Berger and Luckmann (1991), *"The Social Construction of Reality"*, is widely recognised as being foundational to the development of social constructionism. In this regard, it is important to note that they acknowledge the influence of interpretivism on their thinking. In common with the interpretivist way of thinking, constructionists share their approach concerning the process through which meanings are constructed, maintained, or modified within society. For instance, understanding society's reality by studying the lived experiences of those in it (Andrews, 2012). Reality is a social construct that is independent of our free will, and knowledge should be viewed as the characteristics that solidify that which is real (Berger & Luckmann, 1991). Despite the aforementioned, Berger and Luckmann (1991) agree with interpretivism that what is considered real and what constitutes knowledge differs depending on the social context and should therefore be considered (i.e., what is real to an atheist might not be real to a priest). In relation, social constructionists believe that it is the shared realities and experiences of individuals within a group that, on a larger scale, constructs the realities of that group. As a result, how we relate to ourselves and the world around us cannot solely be attributed to inherent, pre-existing factors such as gender, race, and genetics (Galbin, 2014). This social phenomenon can be understood through the lens of Berger and Luckmann (1991). For instance, they believed that when an individual has an idea or concept and brings that idea into existence by telling a story, posting a tweet, or painting a picture, it is seen as a form of externalisation (i.e., the idea that men should not cut their hair). Once the idea

has been externalised it now enters the social realm, where it is shared by various people. It is through this process of social interaction that the idea becomes a part of the people's objective consciousness, taking on a sense of reality within their social sphere and being seen as a form of objectivation. Now that the idea has become a part of the collective's belief system, the process of internalisation takes place. This is when future generations who are born into that society or environment internalise such social constructs as a part of their nature and existence, i.e., they grow up with the belief that men should not cut their hair (Galbin, 2014). Thus, understanding the fundamental role of social constructs, language, and culture within the framework of social constructionism is important, as these constructs are the shared understandings, norms, and ideas created by societies that influence how people perceive and interpret the world around them.

Central to social constructionism is the concept that reality is not an objective truth but is instead constructed through social interactions and language. Social constructs, such as gender, race, class, and institutions like marriage or money, are not inherent or fixed but are developed and maintained by society's collective beliefs and behaviours (Galbin, 2014). These constructs significantly influence people's perceptions, behaviours, and interactions. For instance, the construct of gender determines societal expectations, roles, and behaviours deemed appropriate for males and females (Berger & Luckmann, 1991). Social constructionism also highlights the power dynamics involved in the creation and maintenance of social constructs. Dominant groups within society such as religious institutions, and universities, often have the authority to define and enforce certain constructs, influencing societal norms and marginalizing those who do not conform. Moreover, social constructs are not static but fluid in nature and evolve with time. Changes in societal beliefs, values, and power structures can lead to shifts in these constructs, challenging existing norms and creating new understandings of reality (Gusfield, 1996).

Social constructionism sees social interaction, which is essentially the exchange of language, as the primary method by which we create social constructs. Within this framework, language serves as the primary tool for constructing and conveying meaning within a society, influencing the way individuals perceive, interpret, and interact with the world (Andrews, 2012). Firstly, language enables the creation and transmission of shared meanings and symbols within a community. Through language, individuals assign significance to concepts, objects, and experiences, contributing to the formation of collective understandings. For instance, words like 'freedom,' 'justice,' or 'gender' hold distinct meanings shaped by cultural,

historical, and social contexts (Berger & Luckmann, 1991). Moreover, language constructs perpetuate social norms, values, and identities. It shapes our understanding of societal roles, expectations, and power dynamics. Linguistic terms encapsulate societal beliefs about gender, race, class, and more, shaping the boundaries and expectations of these categories. For instance, gendered pronouns reinforce societal norms about masculinity and femininity (Berger & Luckmann, 1991). Additionally, language influences perception by framing and shaping how individuals comprehend reality. Different linguistic frameworks or vocabularies may lead to varied interpretations of events or phenomena. The choice of words can either reinforce or challenge established norms and power structures. For instance, using the phrase 'undocumented immigrant' versus 'illegal alien' presents different perspectives on immigration (Berger & Luckmann, 1991). Furthermore, language within social constructionism is not merely a tool for communication but an active agent in creating social realities. Language shapes our thoughts, actions, and interactions; through discourse, individuals negotiate meaning, engage in social practices, and create shared realities (Andrews, 2012).

According to Berger and Luckmann (1991), culture is one such shared reality, and it plays a pivotal role in social constructionism. In social constructionism, culture is an active agent in shaping individual and collective perceptions of reality. At its core, social constructionism suggests that individuals make sense of their reality through socially constructed meanings that are deeply rooted in cultural contexts. Culture encompasses the shared beliefs, norms, and symbols of a society and provides them with the lens through which individuals interpret and assign meaning to their experiences. It influences the creation and maintenance of social categories, identities, and institutions. Cultural practices and rituals contribute to the construction of reality by reinforcing and perpetuating specific social norms (Berger & Luckmann, 1991). Language, a key factor in culture, not only serves as a tool for communication but also shapes thought patterns and constructs the social world. The meanings attached to words and concepts are not universal but are negotiated and agreed upon within specific cultural contexts (Andrews, 2012). Moreover, social constructionism acknowledges the role of power dynamics within culture. Different groups and individuals possess varying degrees of influence in defining and shaping social realities (Gusfield, 1996). Cultural hegemony, where the dominant culture imposes its values and norms on others, is a central concept in understanding how certain perspectives become more widely accepted and institutionalized. Understanding the interplay between culture and social constructionism is

crucial for comprehending how individuals navigate their world and how societies perpetuate, and challenge established norms and realities (Berger & Luckmann, 1991).

However, in addition, social constructionism is most notably critiqued for its relativistic stance and has been labelled as 'anti-realist' and ‘non-theoretical’. This is because social constructionists take on both an objective and subjective approach to reality in the sense that they believe the reality of nature to be objective but that the reality of humanity is subjective, i.e., multiple realities exist within the realm of humans, and they are all seen as meaningful (Galbin, 2014). According to Andrews (2012), it was argued that if the subjective accounts of all individuals are legitimate and useful to the research at hand, then their claims are valid and need to be treated as such. It is due to this fact that Berger and Luckmann (1991) were confined to epistemological claims only. The problem that arises with this is that since social constructionists do not produce findings that are objective in nature, their findings might end up being discredited unless they are presented in a well-constructed, thought-provoking argument that promotes change (Andrews, 2012).

3.3. Relevance of Social Constructionism in the Study

Concerning PIU and SUD, understanding the role of social constructs, language, and culture within social constructionism is central in critically analysing how societies shape perceptions, behaviours, and identities. It encourages one to question and deconstruct established belief systems, acknowledging that what is considered ‘normal’ or ‘natural’ is often socially constructed rather than inherently true. This in turn opens avenues for exploring diverse perspectives, challenging biases, and promoting social change by re-evaluating and reconstructing existing constructs to create more inclusive and equitable societies (Galbin, 2014). As a result, the use of the social constructionist method concerning the modern experience of PIU and SUD during COVID-19 could find one questioning the social constructions of each phenomenon and to what extent they are influenced by cultural and societal factors. Furthermore, one might find that the definition and understanding of each phenomenon may vary across cultures, emphasizing the role of social context. For instance, in the case of SUD, one could look at the approach of Gusfield (1996), who looked at the construction of alcoholism within various societies, emphasizing the role of cultural practices and public policies in shaping our understanding of alcohol addiction. Here he delved into how and why certain conditions came about being defined as social problems, the history and development of the problem, the various regulations that were put into place to prevent these

social problems from occurring, as well as the measures used to reinforce the adherence of these regulations. He also examined the ways in which various cultural practices and norms influenced people's actions and beliefs concerning these social problems on an individual and communal level (Gusfield, 1996). As a result, recognising the social construction of these phenomena can lead to more nuanced and empathetic approaches to addressing them, considering the complex interplay of individual experiences and the societal influences at hand. The researcher further motivates the use and relevance of this theory in this study by considering the following:

This study recognises by virtue of studying men, that the concept of masculinity is a social construct influenced by cultural norms and expectations rather than innate biological traits. This means that all the behaviour that men exhibit is a result of societal influences and expectations rather than being predetermined by their biology. Men from early childhood are socialised to embody certain traits that are considered acceptable by society and that define who and what it is to be a man. In various societies, these traits include attributes such as strength, independence, and emotional stoicism (Neilson et al., 2020; Schlichthorst et al., 2019). This socialisation process can lead to toxic masculinity, where men feel pressure to conform to harmful stereotypes to fit in with societal expectations. Men who have substance use disorders and problematic internet use might use drugs, or alcohol, or internet (i.e., social media) as a coping mechanism to conform to societal expectations of masculinity, since substance use is often associated with traits like toughness and emotional suppression (Kuper et al., 2010; Mohajerin et al., 2013; Schick et al., 2020). Another study by Sun et al. (2020) in China found that three coping behaviours (internet, alcohol, and smoking) during the COVID-19-related crisis appeared to have increased the risk for substance use disorders and internet addiction. Furthermore, the onset of excessive internet and gaming usage may function as a means of avoiding other life challenges or setbacks (Ballabio et al., 2017; Kardefelt-Winther, 2014). Since addiction is often stigmatised (Hinshaw, 2023), for men, it can be seen as a sign of weakness. Gender-based expectations for what constitutes "masculine" behaviour can put men at an added risk of substance abuse (Reidy et al., 2016). Many men are socialised to believe that seeking help shows weakness rather than strength (McKenzie et al., 2018). This can then lead to feelings of shame and isolation, making it difficult for men to seek help for their substance use or internet use challenges. Thus, gender significantly influences the development, maintenance, and treatment of substance abuse and problematic internet use. The

social constructs surrounding masculinity are inseparable from the addictions experienced by men.

The constructs of problematic internet use and substance use disorder are complex social constructs rather than fixed medical diagnoses. These constructs encompass a range of actions and experiences that are shaped by societal expectations, cultural norms, and personal circumstances. Understanding PIU and SUD as social constructs highlights the importance of nuanced approaches that consider multiple perspectives, contextual factors, and the dynamic nature of human behaviour, in this case, men. Social constructionism highlights the role of social interactions in categorising problematic behaviours. This study considered how these behaviours are labelled, stigmatised, or normalised within various societies and how these labels influence self-perception and behaviour. Certain narratives or stereotypes about gender, masculinity, and technology influence the perception and treatment of problematic internet use and substance use disorder (Klingemann & Klingemann, 2023; Santoniccolo et al., 2023). Societal norms around masculinity, such as expectations of emotional stoicism or risk-taking behaviour, influence men's engagement in both internet use and substance use (Amin et al., 2018; Ezeugwu& Ojedokun, 2020; Parent et al., 2019). Similarly, structural factors such as access to resources, socioeconomic status, and cultural values can also shape patterns of PIU and SUD among men. Lai and Kwan (2017) discovered, using a Hong Kong sample, that having a higher educated father and a high-income family was associated with problematic internet use, whereas having a higher educated mother appeared to be protective. Families, peers, and communities thus contribute to the construction of problematic internet use and substance abuse. Furthermore, if these behaviours are normalised or encouraged within social circles, individuals are more likely to engage in excessive internet use and substance use without recognising them as problematic. The use of the internet and substances has been widely "accepted" in societies across the world. Being technologically savvy is most desirable among societies, and those who are not knowledgeable or doesn't use social media, for example, are considered outdated or out of touch with modern society.

In some societies, certain substances have been widely accepted and even celebrated, while in others, they have been heavily stigmatised and criminalised (Ahern, 2007; Crocq, 2007). Further to this, television advertisements and music videos always use role models (TV personalities, influencers, or actors and actresses) when advertising alcohol brands, which then reinforces the idea that consuming alcohol is glamorous and desirable. This can have a significant impact on young viewers, who are more susceptible to influence and peer pressure.

This can contribute to the normalisation of alcohol consumption among youth, leading to potential negative consequences such as underage drinking and alcohol abuse. This societal pressure to constantly be connected and online or use substances can exacerbate feelings of isolation and fear of missing out, which also shows the importance of the construction and use of language and how it influences people in societies, for those who struggle with internet and substance addiction.

Cultural norms and values also play a significant role in shaping perceptions of problematic internet use and substance use. Excessive internet use can be seen as a sign of productivity and success, as well as a form of escapism or addiction. For example, in societies where productivity and self-discipline are highly valued, excessive internet use is stigmatized and seen as a sign of weakness or a lack of self-control (Zahrai et al., 2022). On the contrary, in societies where technology and connectivity are highly encouraged, excessive internet use is normalized and even celebrated. Similarly, in cultures where alcohol consumption is a common social activity, moderate drinking is viewed as acceptable, while excessive drinking is seen as problematic. Substance use is accepted or even encouraged in certain cultural settings (Nwagu et al., 2017; Unger, 2014). Culture determines, what mostly constitutes acceptable foods and drinks in many societies. In many societies, the use of any substance is socially accepted or rejected depending on the socio-cultural values and norms of the people (Nwagu et al., 2017). These cultural norms surrounding food and drink can greatly influence individual behaviours and choices. The excessive use of the internet and substance abuse are thus understood, defined, and labelled through social interactions, cultural norms, and societal values. What constitutes “problematic” internet use or “excessive” substance use can differ across cultural and societal contexts. Using the DSM, which diagnoses behavioural and substance addiction as disorders, as well as their own research and experience, psychologists and researchers have also come to an agreement on what defines normal and abnormal use of substances and the internet. Patterns in behaviour are identified and classified using language and specific criteria, which determine when internet use and substance use become problematic. Psychologists and researchers have also thus shaped a discourse around these behaviours, and this reinforces the social construction that internet addiction as well as substance addiction are global concerns.

3.4. Conclusion

The social construction of addiction plays a significant role in shaping societal attitudes towards the internet and substance use, with cultural and societal norms influencing perceptions of what is considered acceptable behaviour. Additionally, the accessibility and availability of technology and substances can further contribute to the normalisation of excessive internet and substance use in certain societies. Social constructionism therefore makes it important to understand how societal norms and values influence the development and maintenance of addictive behaviours.

CHAPTER 4

RESEARCH METHODOLOGY

4.1. Introduction

This chapter presents a discussion of the research methodology utilised in the study. It includes an explanation of the procedure followed in a scoping review and concludes with ethical considerations regarding the chosen methodology.

4.2. Scoping Review

The current scoping review is underpinned by the protocol followed by systematic reviews to ensure that the study is carried out in a transparent and rigorous manner throughout the different stages of the review (Mays et al., 2001, as cited in Arksey & O'Malley, 2005). The process should thus be thoroughly documented to enable the study's replication by other researchers. This ensures that the findings are reliable and responds to any concerns that the study lacks methodological rigour. Although the first framework for conducting scoping reviews was published by Arksey and O'Malley (2005), scoping reviews are a relatively new methodology that does not have a clear definition or a definitive method yet (Khalil et al., 2016; Levac et al., 2010; Peters et al., 2021a, Peters et al., 2021b). The concept of a scoping review is to provide a comprehensive review of the literature related to a particular topic. However, until recently, it has been less emphasised as a technique for mapping the literature. Scoping reviews thus have great utility when it comes to synthesising research evidence due to their ability to map out the existing literature on a particular subject in terms of its volume, features, and nature (Arksey & O'Malley, 2005). A scoping review is typically utilised when there is a body of literature that has not yet been thoroughly examined and it exhibits a heterogeneous or complex nature (Khalil et al., 2016). While a systematic review is usually focused on a well-defined research question where appropriate study designs can be identified beforehand, a scoping review is more likely to address broader topics where multiple study designs may be applicable (Arksey & O'Malley, 2005).

Several authors, such as Arksey and O'Malley (2005), Peters et al. (2021b), and Munn et al. (2022), discuss the various common reasons why a scoping review could be chosen as a methodological framework:

- To identify gaps within a body of research.
- To summarise and disseminate the research findings on a particular topic.
- As a precursor to a systematic review, where a preliminary mapping might be performed to ascertain whether a full systematic review is feasible or relevant.
- To assess the scope, range, and nature of research activity. Although this type of rapid review might not provide a comprehensive analysis of the research findings, it is still a useful way to map fields of study where it is hard to determine the range of materials that might be available.

Thus, given the complexity of PIU and SUD, undertaking a scoping review appears to be the most appropriate method to synthesise the literature on these phenomena. Although a plethora of studies exist within the literature, there still appears to be much confusion around these two phenomena in terms of their relationship, particularly within the literature on PIU.

4.3. Main Characteristics

Due to the necessity of evidence-based practice, particularly within healthcare, a rapid growth in literature-based review research formats has resulted in the identification of approaches that share the same characteristics, such as collecting, evaluating, and presenting available literature on a topic (Arksey & O'Malley, 2005). While systematic reviews are regarded as having the highest rank in the evidence hierarchy, the types of questions they address do not always apply to every application (Peters et al., 2021a). Thus, for certain indications, a scoping review is more appropriate. For example, to thoroughly assess the scope and nature of a body of literature, to identify gaps in the literature, and to inform future research (Peters et al., 2021a; Peters et al., 2021b). Moreover, a scoping review is particularly useful when there is substantial proof of widespread and diverse types of evidence, and it is not yet feasible to question the effectiveness of the available evidence such as in the case of PIU and SUD among men. Thus, it is ideal to undertake a scoping review when the research questions or objectives involve the mapping, gathering, identifying, and reporting of various characteristics and concepts from different sources or when the research is focused on a broad evidence base.

A scoping review is a type of evidence synthesis that aims to identify and map relevant evidence that meets pre-determined inclusion criteria for a given topic, issue, or context (Peters et al., 2021a). A scoping review's question is broader than that of a typical systematic review

which usually addresses the effectiveness of a given intervention or people's experiences of a particular phenomenon of interest. Thus, a scoping review can include various types of evidence, such as primary research, non-empirical evidence, and multiple research methodologies. Since scoping reviews are more focused on developing an overall comprehensive summary of the evidence rather than a quantitative or qualitative synthesis of the data, it does not usually necessitate carrying out risk assessment or appraisal procedures of the various sources included in a scoping review (Peters et al., 2021a). The standards for conducting a scoping review are like those used for systematic reviews in the sense that they should also be based on well-defined methodological guidance and reporting standards, which include a priori protocol, eligibility criteria, and a comprehensive search strategy (Peters et al., 2021a). Reproducible and transparent methods are important factors that can help enhance the quality of a scoping review. It shows that the review adheres to the accepted guidelines and methodologies and consistently produces and reports results that are in line with a recognised methodology or checklist, which ultimately enhances rigour and utility. Through a scoping review, end users can gain insight into the various characteristics of an evidence body and the way a topic has been covered in the literature. A scoping review can provide an overview of a broad or specific policy or research field, identify gaps in the literature, help develop research agendas, and provide insight into areas for future evidence syntheses.

4.4. Methodological Approach

The use of a scoping review as a methodological approach has increased significantly since it was first introduced by Arksey and O'Malley (2005). The latest, most up to date and most advanced approach used when reporting scoping reviews uses the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR), which is largely based on a PRISMA statement and checklist, the Joanna Briggs Institute (JBI) methodological guidance, and other approaches for undertaking scoping reviews (Peters et al., 2021a). As a result, the present study was thus guided by the Joanna Briggs Institute (JBI) of evidence synthesis as the proposed methodological approach of this scoping review, which is based on earlier work by Arksey and O'Malley (2005) and Levac et al. (2010). Khalil et al. (2016) outline the various steps that serve as a guideline when undertaking a scoping review based on the JBI approach. According to Khalil et al. (2016), these stages are:

1. Identifying the research question by clarifying and linking the purpose and question.

2. Identifying the relevant studies using a three-step literature search to balance feasibility with breadth and comprehensiveness.
3. Careful selection of the studies using a team approach.
4. Extracting and charting the data in tabular and narrative format.
5. Collating the results to identify the implications of the study findings for policy, practice, or research.

4.4.1. Stage 1: Identifying the Research Question

The review objective(s) and specific question(s) should be clearly stated. They should be able to provide a comprehensive view of the study's scope and goals. They should also be aligned with the title and direct the development of a set of inclusion criteria. The review's aim and objectives are outlined below:

Aim of the Study

The increasing popularity of internet use has led to an increasing number of reports highlighting the potential negative consequences of overuse, such as substance use. Thus, the study aimed to synthesise the literature on PIU and SUD, including the way in which they affect men, given that prior research has predominantly focused on women.

Objectives of the Study

The following were the objectives of the study:

- To explore what type of research has been conducted on PIU and SUD among men.
- To synthesise research on the most common SUDs among men with PIU.
- To synthesise literature on PIU and SUD to determine its effect on men .
- To explore the association between PIU and SUD in adult men.

Furthermore, the review question should also include information about the participants, the main concept or focus, and the context of the review. Therefore, per JBI's scoping review manual, the PCC mnemonic is recommended as a guide to systematically construct a research question when conducting a scoping review, which stands for Population, Concept and Context. Thus, the following research question was formulated based on the above PCC framework: *What does existing literature reveal about problematic internet use and substance use disorder among adult men?*

4.4.2. Stage 2: Identifying the Relevant Studies

In line with their broad focus, scoping reviews generally include any existing literature that is relevant to the topic, such as text or opinion papers, guidelines, systematic reviews and meta-analyses (Khalil et al., 2016). The inclusion criteria decided upon for the review should clearly explain which sources will be considered for inclusion in the scoping review. The inclusion criteria for this scoping review were:

- English articles
- Full text studies
- Peer reviewed articles
- 18-35-year-old men
- Studies that mention PIU and SUD in men or broadly
- Published 10 years on the topic (from 2014)

The process for searching studies for a scoping review uses the same three-step approach as for a standard JBI systematic review. From a practical point of view, important decisions needed to be made about the coverage of the review in terms of time span and language. The three-step approach to identifying the relevant studies is thus outlined below:

Search Strategy

The search strategy was carried out in three phases, as below:

Phase One: Keywords

Table 1

The identification of initial keywords

Keywords / **Databases**	**Men and PIU**	**PIU and Substance Use Disorder**	**Internet Addiction and Substances**
Web of Science	X	X	
Psych Info	X	X	X
Science Direct	X	X	
Scopus	X	X	

The same key words were used across all databases to search the relevant literature to allow for consistency ("men and PIU"; "PIU and Substance Use Disorder"; "Internet Addiction and Substances").

Phase Two: Search Engines

The following databases were utilised to source out articles for this scoping review. These databases are commonly used in the discipline of psychology and hold access to peer-reviewed and accredited journal articles.

Table 2

Electronic Databases

Database	Accessed	Not accessed
Psych Info	X	
Scopus	X	
Web of Science	X	
Science Direct	X	

Phase Three: Grey Literature

Grey literature was also explored for additional information for inclusion in the study. Mahood et al. (2014) define grey literature by its core characteristics, such as "not produced for commercial publication, not available through standard distribution means, no standard bibliographic controls, not peer-reviewed, ephemeral, and historically difficult to find" (p. 2). Other definitions exist, such as "anything that won't stand up on a shelf on its own", which include dissertations, conference proceedings, reports, book chapters, magazine articles, newsletters, and blogs, to name a few, but not limited to these (Mahood et al., 2014, p. 2). Grey literature allowed for the review of a wider scope of literature to gain a deeper understanding of the available evidence on the research topic, which increased the number of sources contributing to the findings.

4.4.3. Stage 3: Study Selection

Depending on the question and purpose of the review, authors may find it most appropriate to search for all sources, which could, for example, be qualitative, quantitative, textual, or opinion (Khalil et al., 2016). This approach is often preferred when carrying out a scoping review to avoid potential omissions of important data, as the goal of the review is ultimately to map the existing literature on a particular topic. Thus, the process of reviewing

the literature guided by the inclusion criteria as outlined above was achieved through three screening phases, as below:

Data Screening

Initial Screening (title)

Through the initial screening studies, those that did not meet the inclusion criteria were excluded, including:

1. Studies conducted prior to 2014
2. Studies that were in a different language other than English
3. Studies that made no mention of PIU and/or SUD
4. Studies that focus on men below the age of 18 years
5. Studies that were not full text or peer reviewed articles

Second Screening Phase (title and abstract)

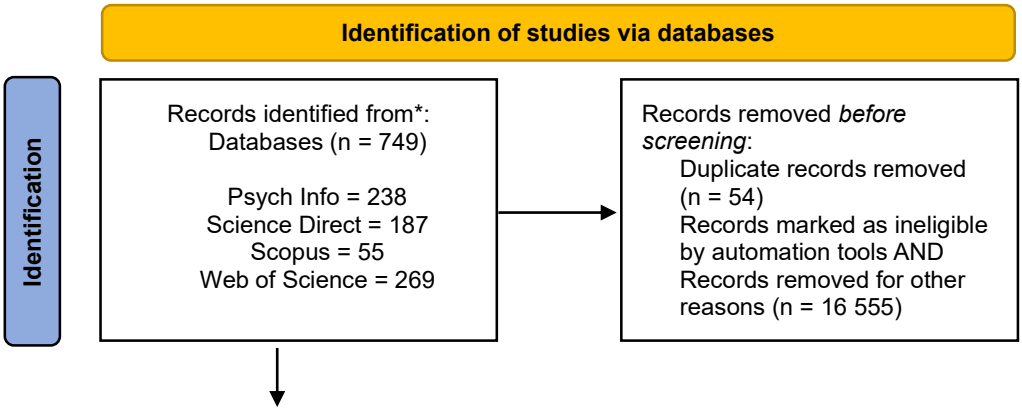
The abstracts were examined and read through for additional inclusion of the studies relevant to the research topic (mentioning PIU and/or SUD) during the second screening phase.

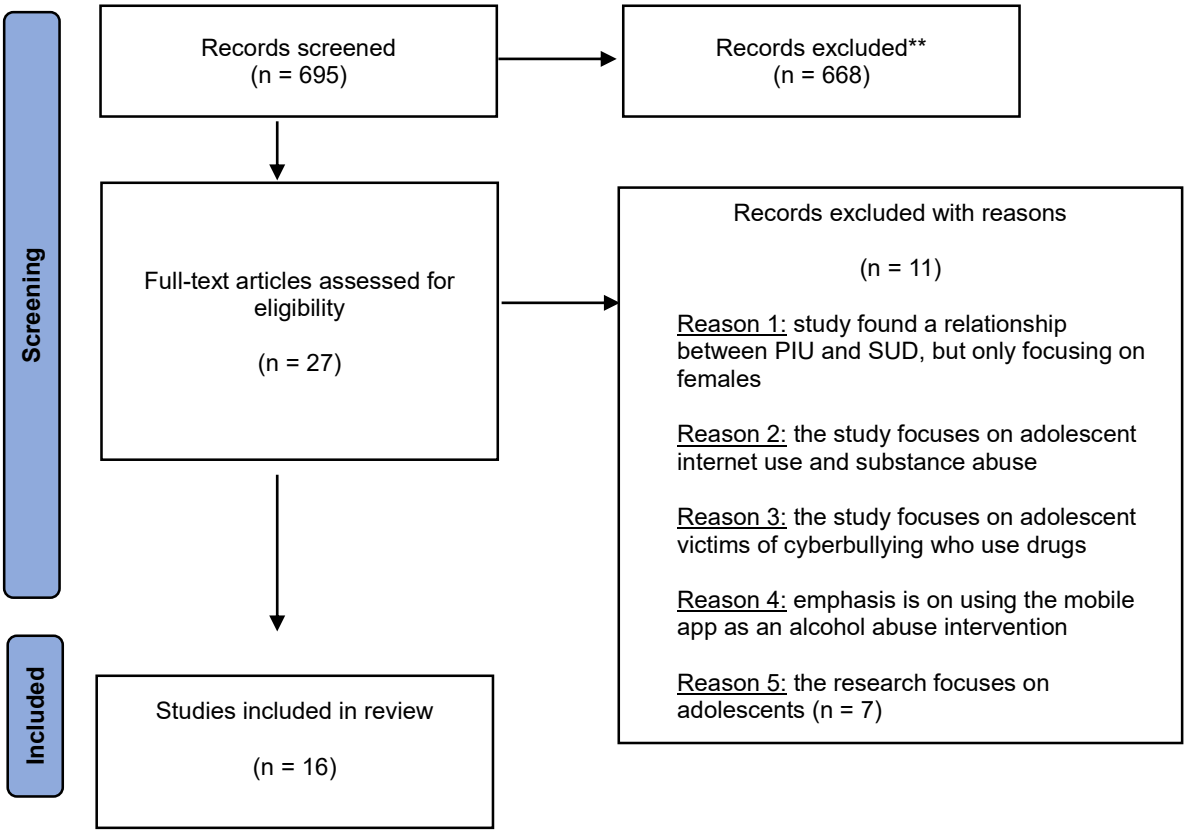
Third Screening Phase (full text assessed for eligibility)

The third and final screening phase involved reading the entire article to determine whether it supported the research question. The data screening and selection are illustrated in Appendix 2 for further reference. An independent reviewer was utilised during the selection process to ensure credibility and reduce any bias within the review. Figure 1 of the PRISMA Flow Chart shown below provides a summary of the entire selection process.

Figure 1

PRISMA Flow Chart





4.4.4. Stage 4: Presenting the Data

The number of studies that were selected for inclusion in the review should be reported. A narrative description of the process should also accompany the search decision flowchart (Khalil et al., 2016), as illustrated above. A flow chart should also detail the various steps involved in the process, such as the study selection, the removal of duplicates, the full retrieval, and the final summary presentation. The extraction of data for a scoping review is referred to as "charting the results" and should be a summary of the results displayed as a logical and descriptive representation of the findings that align with the objectives and questions of the review (Khalil et al., 2016). A draft charting table should be created as part of the review process to capture key information about the study, such as the various characteristics of the studies included in the study and their relevance to the research question. The following types of information may be extracted: author(s), year of publication, source origin, country of origin, aims, purpose, study population and sample size (if applicable), methodology, intervention type and comparator (if applicable), concept, duration of the intervention (if applicable), how outcomes are measured, and key findings that relate to the review question (Khalil et al., 2016). A Microsoft Excel sheet was created to document this step, which included columns for the author, year, title, journal name, volume, design, size, location, gender, age range, and conclusions of the studies included and those excluded, with reasons provided where an article

did not meet the eligibility criteria for inclusion in the write-up. A summarised version documenting this step is illustrated in Appendix 3, which displays only the studies included in the final review.

4.4.5. Stage 5: Collating the Results

After the results have been collated, consideration should be given to the conclusions that were derived from the included studies. The conclusion should be consistent with the main objective(s) or research question(s) based on the results of the review. According to Arksey and O'Malley (2005), scoping reviews require some analytic framework or thematic construction to provide a narrative account of the existing literature. However, according to Peters et al. (2021b) the process of analysing and extracting data during a scoping review is also largely dependent on the specific requirements of the review and the creativity and judgment of the authors. The most important aspect, though, when it comes to the analysis and extraction of data is the clarity of the approach taken by the authors using transparent and explicit methods, which includes clearly communicating the rationale for the approach and reporting clearly on the extracted data and analyses. Given the above, thematic analysis was thus utilised in this study. Thematic analysis provides a rich and detailed yet complex account of data, examining different perspectives as well as highlighting similarities, differences, and gaps in the literature (Braun & Clarke, 2022; Nowell et al., 2017). It is a method of identifying, analysing, and reporting themes within data (Braun & Clarke, 2006). The analysis was guided by Braun and Clarke's (2006) six steps: namely, familiarisation of the data, generating codes, searching for themes, reviewing the themes, defining, and naming them, and then reproducing the report. Thus, thematic analysis is appropriate for this study because of its usefulness in summarising the key features of the large data set and providing a comprehensive description thereof.

Phase 1: Data Familiarisation

During this phase, it is important to immerse yourself completely in the data set to ensure that you're familiar with its breadth and depth (Braun & Clarke, 2006). Doing so will allow you to identify patterns and meanings in the information. Before you start coding, it's ideal that you read through the entire set once. You can then proceed with the more formal process of coding.

Phase 2: Generation of Initial Codes

Phase two begins once you have thoroughly read through and familiarised yourself with all the data from the selected articles and have begun to form an idea of what is contained within the data. Thus, this phase involves the creation of initial codes, which represent the features of the data that caught your attention (Braun & Clarke, 2006). These codes identify the basic elements of the data that appear interesting to the researcher and can then be assessed in a meaningful way to evaluate the phenomena of interest.

Phase 3: Searching and Reviewing of Themes

After all the data has been coded and organized, the third phase begins. During this phase, which is re-focused on analysing the broader aspects of the data set (themes rather than the codes), you will need to sort the various codes into potential themes and organising all the coded data extracts within the identified themes (Braun & Clarke, 2006). Essentially, you should be able to identify the possible combinations of codes that can serve as the basis for an overall theme.

Phase 4: Reviewing Themes

The fourth phase involves the refinement of the set of candidate themes. During this stage, it will be apparent that some may not be suitable as themes, and others may be created by collapsing multiple themes into one (Braun & Clarke, 2006). This is usually done over two levels, where you read all the coded data extracts for each theme and determine if they create coherent patterns (Level 1). If they do, you move onto level two, which involves a similar process but in relation to the entire data set, where the validity of the individual themes is considered. This phase involves reviewing the entire data set for two reasons: to see if there are any themes that work well in relation to the data set, and to code additional data for missing themes from earlier coding stages (Braun & Clarke, 2006).

Phase 5: Defining and Naming Themes

You then need to define and further refine the themes that will be presented for the analysis and begin by analysing the data within them. This step will help you identify the elements of each theme and determine what aspects of the data each theme captures (Braun & Clarke, 2006). The identified themes were PIU prevalence among men, behavioural and substance related addictions, PIU and mental health disorders, the psychological consequences of PIU and substance use, and lastly, risk factors related to the development of PIU and SUD.

Phase 6: Producing the Findings

After you have identified the themes that will be used for your analysis, the next step is to create the final analysis and write-up of the report. The write-up should provide an interesting and concise account of the story that will be told about the data that you collected and should also contain sufficient evidence of the multiple themes that will be featured in the analysis (Braun & Clarke, 2006). The goal is not only to provide the data but also to tell a story about the data while making an argument in relation to the research question. Following the conclusion derived from the data analysis, recommendations for enhancing the quality of future research that are based on the gaps identified in the review's findings can be provided.

4.5. Quality and Rigour

Lincoln and Guba's (1985) model of trustworthiness was utilised in this study as a framework to ensure quality and rigour which consists of four components, namely, credibility, transferability, dependability, and confirmability.

Credibility

Credibility refers to whether the result of the research is believable, and according to Shenton (2004), credibility seeks to ensure that studies measure what is intended. This depends greatly on the quality of the research gathered rather than the amount of information gathered. Frequent debriefing sessions between the researcher and supervisor helped to ensure credibility. By doing so other experiences and perceptions, such as those of the supervisor, were considered, widening the vision of the researcher. Discussions with the supervisor also brought various flaws and the researcher's own biases and preferences to light, allowing the researcher to address them appropriately (Shenton, 2004). An independent review that formed part of the study selection was also utilised in the examination of the included studies.

Dependability

According to Shenton (2004), dependability refers to whether the conclusions made would still be consistent if the study were to be repeated with the same subject matter or in a similar context. Dependability was ensured by using the audit trail technique, which is when the researcher is transparent with their thoughts and decision-making processes by using the research steps taken from the start to the reporting of the findings, which will allow any observer to trace the course of the research step-by-step (Shenton, 2004). As such, this review used transparent and rigour methods at every stage of the methodological approach. The

manner in which data was collected, screened, and analysed was clearly documented in the various steps recommended when undertaking a scoping review, such that the study may be replicated by another researcher.

Confirmability

Confirmability refers to the degree to which the results are exclusively based on the research data being investigated, without any bias or beliefs of the researcher (Shenton, 2004). Confirmability was through the reflexivity technique, in which the researcher kept a reflective diary highlighting any personal feelings and challenges experienced while conducting the research. The researcher also kept records of the rationale behind their methodological decisions and reflections based on what was happening with regards to the researchers' own values, beliefs, and interests.

Transferability

Transferability refers to the degree to which the findings of the study can be generalised to larger populations and whether the findings can be applied to other contexts and settings (Shenton, 2004). A thick description was employed to ensure transferability, which is describing a particular phenomenon in sufficient detail to evaluate whether the conclusions are transferable to other contexts and situations, according to Lincoln and Guba (1985).

4.6. Blinding

In this section, blinding was considered to address concerns raised by observational research. Blinding is frequently employed to evaluate the risk of bias in these kinds of investigations. Blinding refers to the exclusion of journal house name, author name, institutions that employ the authors, and study sources of funding in the data characteristics in which data extracted from the selected articles is organised (De Vet et al., 2005). The researcher, however, chose to include the authors and journal publishers. The reason being that, although blinding may reduce bias, information on journal publishers and authors and associated impact factors is an important criterion for quality assessment. See Appendix 3 for further credibility and to provide context for the study's findings.

4.7. Ethical Considerations

Ethical approval for this study was granted by the Rhodes University Ethical Standards Committee (RUESC). The scoping review did not include active participants in the sampling

and recruitment of the studies. Thus, informed consent was not required. Moreover, the researcher had access to the databases being utilised, and some are publicly available. In addition, as the review consists of analysing secondary data, no permission was required to use the data found in the studies, as they are published and openly available to the public. An important consideration that needs to be considered is avoiding plagiarism, whereby the researcher is required to sufficiently acknowledge the authors of the literature.

4.8. Conclusion

This chapter looked at the methodological approach employed in carrying out the scoping review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) framework. The chapter then went on to explain the process of collecting, screening, analysing, and producing the data relevant to the research question in a systematic, documented manner using a 5-stage process. The PRISMA Flow Chart consolidated the results produced from the entire selection process. The chapter ended by looking at the four components necessary to assess and ensure quality and rigour within qualitative research.

CHAPTER 5

INTERPRETATION OF THE FINDINGS

5.1.Introduction

This review sought to identify and analyse both the phenomena of PIU and SUD separately, as well as the likely connection between the two, with a particular focus on men. The scoping review aimed to answer one main question that has been formulated using the JBI's PCC framework: *"What does existing literature reveal about PIU and SUD among adult men?"* The analysis of the reviewed articles selected for this study sheds light on the various factors contributing to both PIU and SUD, with respect to the way in which they affect adult men. An analysis of the articles showed a large focus on gender differences in addiction patterns, vulnerability to PIU across age groups, associations between substance use, and behavioural addictions, PIU and mental health disorders, the psychological consequences of PIU and substance use, and the various risk factors associated with the development of PIU and SUD. Therefore, this section of the chapter addresses the most common and predominant themes from the selected studies, including the theoretical underpinning, which will encompass a narrative explanation of how the study employed social constructionism and its underlying assumptions to present the findings. The social construction of addiction plays a significant role in shaping societal attitudes towards the use of the internet and substance use with cultural and societal norms influencing perceptions of what is considered acceptable behaviour. Understanding PIU and SUD as social constructs highlights the importance of nuanced approaches that consider multiple perspectives, contextual factors, and the dynamic nature of how men behave in these contexts. Therefore, it is important to understand how societal norms and values influence the development and maintenance of addictive behaviours such as PIU and SUD, which will be discussed in depth in the subsequent sections.

5.2. Overview of Emergent Themes

The themes identified from the reviewed studies were obtained using Braun and Clarke's (2006) thematic analysis. The current study explored the link between PIU and substance use disorder among adult men to understand and explore connections to improve treatment outcomes.

Table 3

Emergent Themes

Themes		Subthemes
Theme 1	Higher prevalence rates of PIU among men	Gender differences in addiction patterns Vulnerability to PIU across age groups
Theme 2	Associations between substance use and behavioural addictions	Associations between substance use (such as smoking, alcohol, cannabis, and cocaine) and PIU Neurological similarities between substance use and behavioural addictions
Theme 3	PIU, SUD, and mental health disorders	
Theme 4	Risk factors for the development of PIU and SUD	

5.3.Theme 1: Higher Prevalence Rates of PIU among Men

Concerns about PIU prevalence have grown in recent years as more and more studies have been conducted to clarify the condition's various symptoms and contributing variables. In all the demographic groups studied, adult men have emerged as a notable group that exhibits problematic internet usage patterns and vulnerability to PIU. In addition to determining the extent of the problem, knowing the prevalence rates of PIU among adult men is important for developing focused interventions and preventive measures that specifically address the challenges that they experience. Therefore, this theme on PIU prevalence among adult men looks at the complexity of PIU prevalence in adult males. Secondly, it looks at the gender differences between women and men as well as the vulnerable age group for developing PIU. According to studies conducted by Akpinar Aslan et al. (2021), Estevez et al. (2017), Hwang et al. (2014), Marazziti et al. (2020), and Tomska et al. (2022), the results are consistent with PIU being higher in men. The following excerpts illustrate how much more men are susceptible to PIU as opposed to women, as well as the kind of addictions men are most likely to develop when engaging online:

> *"Men were found to be at higher risk for potential alcohol dependence, pathological gambling, gaming addiction, and sex/pornography addiction" (Akpinar Aslan et al., 2021, p. 35)*

"Men were 3 times more likely to have potential pathological gambling, over 5 times more likely to be at risk for high-risk gaming addiction, and over 7 times at higher risk of high-risk sex/pornography addiction" (Akpinar Aslan et al., 2021, p. 38)

"In addition, gender differences were found…males scored significantly higher in gambling disorder and video game addiction" (Estevez et al., 2017, p. 534)

"We restricted enrolment to male patients and healthy controls because males have a higher prevalence of problematic internet use than females do" (Hwang et al., 2014, p. 2)

"PIU was significantly more present in men than women – generally, men spent more time online than women, although the difference was not significant. However, those subjects who were probably affected by PIU, according to the set point defined by us, were predominantly men than women" (Marazziti et al., 2020, pp. 411-413)

"Indeed, men showed higher scores than women at different factors, such as social withdrawal, abstraction from reality, loss of control, pornography addiction, ludopathy and addiction to twitter" (Marazziti et al., 2020, p. 416)

"Men resulted to be more involved in online recreational activities whereas women seemed more attracted to instant messaging and generally to social networks" (Marazziti et al., 2020, p. 411)

"It has been shown that males aged 15-25 are more likely to become addicted to the internet or online games – symptoms of addiction affect 21.4% of male gamblers and 9.1% of the women" (Tomska et al., 2022, p. 2)

As illustrated in the above quotes, men show higher levels of PIU than females. Similarly, a study conducted by Kożybka et al. (2023) found significantly higher levels of PIU in males than females. A cross-sectional study by Sayeed et al. (2021) found that from a sample of 404 internet users (an almost equal proportion of male and female) over the age of 18 years, PIU was significantly higher in males than female respondents. Similarly, a study by Zewde et

al. (2022) found that about one-third of African university and high school students are addicted to the internet, with male students residing in urban areas and spending over four hours daily on the internet.

This higher prevalence could be attributed to variations in their online preferences and activities. It has been reported that men are more likely than women to participate in specific internet activities, such as gaming, which increases the possibility of harmful usage patterns forming. Men also have higher rates of PIU, which can be attributed to the competitive nature of certain online gaming environments. This is supported by Su et al. (2019), who state that problematic internet use is prevalent and associated with negative measures of health functioning, with males appearing more vulnerable than females. Personality types also contribute to the differences in online behaviours (Kosinski et al., 2014). Introverted individuals may prefer to engage in more passive activities such as reading or observing, while extroverted individuals may be more likely to actively participate in online discussions and seek social validation. Moreover, internet use is associated with loneliness and can help escape and relieve stress for a short period of time to cope with the psychological distress of the pandemic (Singh et al., 2021).

In addition to men's variations in their online choices and activities, societal norms and expectations also play a role in the higher prevalence of PIU among men. The types of online activities that contribute to PIU often differ between men and women. Su et al. (2020) state that males have often reported experiencing higher levels of problematic internet use in comparison to women, but this differs in terms of the specific types of internet use. For instance, men are more likely to present with IGD and women with overuse of social networking sites, such as Facebook and Instagram. The differences in these online activities are influenced by societal norms and gender roles. Men are more drawn to the competitive nature of online gaming, while women find social media platforms as a means of connecting and expressing themselves. Thus, this means that the experiences of both men and women online differ due to their different preferences and motivations. These differences in online activities can also be attributed to the ways in which men and women are socialised. For instance, from a very young age, boys are often encouraged to participate in competitive activities, while girls are encouraged to focus on building and maintaining relationships.

The various ways in which men and women navigate and use the internet highlight the socially constructed nature of their online behaviours, reflecting and reinforcing societal

expectations, norms, and roles associated with gender. Men from early childhood are socialised to embody certain traits that are considered acceptable by society and that define who and what it is to be a man. In various societies, these traits include attributes such as strength, independence, and emotional stoicism (Neilson et al., 2020; Schlichthorst et al., 2019). These gender differences in online behaviours can have significant consequences for individuals' mental health and well-being. For example, excessive internet use among men is linked to increased levels of aggression and competition (Tomska et al., 2022), while women are more prone to experiencing cyberbullying and online harassment due to their focus on building relationships (Marcum et al., 2012). Therefore, these societal expectations and gender roles play a role in shaping the online behaviours of men and women, ultimately contributing to the gender differences presented by various studies in PIU, which will be discussed further below.

5.3.1. Subtheme 1.1: Gender Differences in Addiction Patterns

Notably, while some studies indicate that there is more prevalence of PIU in men than in women, others contradict this and reveal that women are more likely than men to exhibit PIU. Studies by Akpinar Aslan et al. (2021), Laconi et al. (2018), and Henzel et al. (2021), highlight notable gender differences in addictive behaviours as evidenced by the below excerpts:

> *"No statistically significant difference between men and women with regard to the rate of pathological internet use" (Akpinar Aslan et al., 2021, p. 42*)
>
> *"PIU was more prevalent among women in the respective samples, including the total sample" (Laconi et al., 2018, p. 430)*
>
> "*Evidence is somewhat inconclusive for gender differences, but several findings point to a slight overrepresentation among female users" (Henzel et al., 2021, p. 3)*
>
> *"No significant difference between men and women in regard to problematic use of social media" (Henzel et al., 2021, p. 8)*

This contradictory evidence further motivates that although there are contrary findings on whether males or females have the highest prevalence of PIU, there is substantial evidence that also suggest that men have the highest prevalence. The findings that suggest that men are more likely than women to have PIU emphasise how crucial it is to take gender dynamics into account when evaluating, comprehending, and handling internet-related problems. This highlights the need for further research to better understand the gender differences in PIU prevalence in order to create effective preventative and intervention plans. Along with gender differences, Tomska et al.'s (2022) findings that men between the ages of 15-25 are more likely

than women to become addicted to the internet or online gaming highlight an important aspect of PIU. This aspect suggests that certain demographic factors, such as age and gender, do play a significant role in the development of PIU. This age specific vulnerability raises a question about the factors that contribute to young men's increased susceptibility.

5.3.2. Subtheme 1.2: Vulnerability to PIU across Age Groups

Many studies consistently demonstrate that vulnerability to PIU has different age-related patterns, which emphasises the prevalence and susceptibility of PIU across different age groups (Akpinar Aslan et al., 2021; Henzel et al., 2021; Singh et al., 2022; Tomska et al., 2022). The following excerpts provide evidence for the age range being studied, which looked at men between the ages 18 – 35 years:

> *"Mild nicotine addiction, PIU and possible smartphone addiction, food addiction and gaming addiction were higher in the age group of 18-24 years than in older students" (Akpinar Aslan et al., 2021, p. 35)*

> *"Clear difference across age groups, with the highest percentage of problematic internet users in the younger groups (16-39 years)" (Henzel et al., 2021, p. 8)*

> *"PIU is most prevalent during emerging adulthood, a period marked by an increase in psychiatric disorders, including substance use disorders (SUDs)." (Singh et al., 2022, p. 307)*

> *"Our research shows the age range 13-30 years, known to be the most vulnerable to PIU and the related dangers" (Tomska et al., 2022, p. 6)*

The study by Henzel et al. (2021) highlights a clear difference in PIU prevalence across age groups, suggesting the highest percentage of problem users are in the younger demographic, particularly those aged 16-39 years. This finding aligns with previous research that has shown a higher risk of PIU among adolescents and young adults (Lakkunarajah et al., 2022; Paulus et al., 2022). A study conducted by Giotakos et al. (2016), with most respondents being male military personnel with a mean age of 32, found that the overuse of the internet was associated with the development of an addiction to online gambling, followed by substance use in general, and particularly the use of illicit drugs such as heroin and cocaine.

However, it is important to note that PIU can affect people of any age. As evidenced by the presence of PIU in older age groups (Hou et al., 2022; Rochat et al., 2021). The experiences of younger people and older people online differ due to technological familiarity and digital literacy. Children and adolescents of today's generation have grown up in the digital age and are more comfortable navigating online platforms and engaging in various online activities (Reid Chassiakos et al., 2016). In addition, they are mostly exposed to social media platforms such as Facebook, TikTok, Instagram, WhatsApp, and online gaming, which are the potential risk factors for PIU (Cicek et al., 2023). On the other hand, adults might be less experienced with technology and more cautious or limited in their online interactions. The different patterns of internet use among age groups highlight the socially constructed nature of technology adoption and online behaviour, reflecting the influence of societal norms, technological accessibility, and generational attitudes toward digital engagement. For example, the widespread use of social media platforms by younger age groups reflects the social construction of digital communication norms, influencing how people in these groups interact and share information online. The relationships between PIU and well-being suggest that older adults use the internet mainly to cope with negative emotions or life dissatisfaction (Rochat et al., 2022). This highlights the different motivations behind internet use across age groups, with younger individuals embracing social media as a means of connection and self-expression, while older adults may turn to the internet as a coping mechanism, information seeking or entertainment (Stockdale & Coyne, 2020).

According to Singh et al.'s (2022) research, emerging adults, typically those between the ages of 18-24, are especially vulnerable to developing PIU. Similarly, Akpinar Aslan's et al.'s (2021) research highlights greater rates of PIU, gaming addiction, probable smartphone addiction, and mild nicotine addiction, particularly in the 18-24 age range. This age range captures a significant portion of the population and emphasises the need for targeted interventions for individuals in their late adolescence through early adulthood. The findings suggest that the prevalence of PIU among adults is a growing concern. Moreover, the transition from adolescence to adulthood is a critical period for addressing and preventing PIU.

5.4.Theme 2*:* Associations between Substance Use and Behavioural Addictions

This theme presents the similarities between substance and behavioural addictions. Adorjan et al. (2021), Henzel et al. (2021), Hwang et al. (2014), Kotyuk et al. (2020), Lee et al. (2018), Romer Thomsen et al. (2018), and Zsido et al. (2019) all share consistent results. These findings

highlighted the interconnected nature of behavioural addictions, particularly internet addiction, with substance-related dependencies, implying the presence of common underlying risk factors, further confirming the idea that addictions have psychological causes. Zsido et al.'s (2019) findings further indicate that the similarities between internet addiction and substance-related addictions are rooted in inefficient self-control, leading to maladaptive behaviour and an inability to resist compulsive internet use. These findings suggest that individuals with internet addiction experience similar neurological and psychological mechanisms as those with substance-related addictions. This theme will be presented in two parts: firstly, the associations between substance use and PIU, and secondly, the neurological similarities between the two. The following excerpts illustrate the interconnected nature of behavioural addictions and substance related addictions:

> *"Studies have demonstrated that interrelationships between different behavioural addictions exist, suggesting common underlying risk factors, together with associations with addictive use of psychoactive substances" (Henzel et al., 2021, p. 2)*

> *"Internet Addiction (IA) is considered a behavioural addiction, and behavioural addictions such as pathological gambling share core features with substance addictions such as Alcohol Dependence (AD)" (Hwang et al., 2014, p. 1)*

> *"Results may indicate that internet addiction is similar to substance-related addictions, such that inefficient self-control could result in maladaptive behaviour and inability to resist Internet use." (Zsido et al., 2019, p. 35)*

Henzel et al.'s (2021), Hwang et al.'s (2014), and Zsido et al.'s (2019) findings, which emphasise the connections between behavioural addictions and substance-related dependence, highlight the complexity of relationships that are present in addictive behaviours. These findings raise questions about traditional thinking, which frequently differentiates behavioural addictions from substance abuse, and they also point to possible connections and common causes between the two. Additionally, the link between the addictive use of psychoactive substances and behavioural addictions suggests a dynamic interaction between the two. The emphasis on ineffective self-control as a common factor between internet addiction and substance abuse suggests a connection between neurobiological and psychological processes that contribute to these addictions. Research suggests associations between behavioural

addictions and substance dependency in men (Marmet et al., 2019; Starcevic & Khazaal, 2017). Behavioural addictions and substance use disorders tend to co-occur, and both are associated with mental health problems (Marmet et al., 2019). It begs the question of whether participating in one kind of addictive behaviour makes one more vulnerable to the other. Considering that individuals can develop multiple addictive behaviours, it is important to understand the underlying factors that contribute to the development of these behaviours. Inefficient self-control appears to be a common factor leading to maladaptive behaviour and an inability to resist both behavioural and substance-related addictions (Kozak et al., 2019). Moreover, studies indicate significant associations between PIU and substance dependency in men (Baroni et al., 2019; Cai et al., 2023), suggesting a link between behavioural factors such as problematic internet use and substance-related addictions.

5.4.1. Subtheme 2.1: Associations between Substance Use (such as smoking, alcohol, cannabis, and cocaine) and PIU

Multiple studies by authors such as Baroni et al. (2019), Henzel et al. (2021), Kotyuk et al. (2020), and Lyvers et al. (2020) share consistent results regarding the positive association between PIU and SUD, as evidenced by the following excerpts below:

> *"Findings indicated that PIU is more common in subjects taking cocaine and cannabis than in subjects taking opioids or alcohol, and that they also affected by pathological gambling disorder." (Baroni et al., 2019, p. 56)*

> *"There have been discoveries regarding associations and interrelationships between addictive online behaviour and use of psychoactive substances, in a number of European countries" (Henzel et al., 2021, p. 3)*

> *"Excessive use of internet has been shown to increase likelihood for use and abuse of alcohol and other substances" (Henzel et al., 2021, p. 3)*

> *"Associations [have been] found between smoking and PIU and gambling, alcohol consumptions and PIU, problematic online gaming and gambling, cannabis use and online gaming and gambling" (Kotyuk et al., 2020, p. 272)*

"Disordered social media use was significantly positively correlated with risky drinking" (Lyvers et al., 2020, p. 227)

The relationship between substance abuse and PIU is a complicated and diverse subject that has been investigated in public health, psychiatry, and psychology. Numerous studies have investigated the connection between PIU and substance usage, such as cocaine, alcohol, cannabis, and smoking (Henzel et al., 2021; Kotyuk et al., 2020; Lyvers et al., 2020; & Singh et al., 2022). Individuals who engage in substance use are more likely to have PIU, and vice versa. Comorbidity is common, which means that people with PIU symptoms may also have drug use disorders, and people with PIU use substances more frequently. Substance abuse and PIU also have common underlying causes. These behaviours co-occur due to several factors like impulsivity, sensation-seeking, and underlying mental health issues (which are discussed in the subsequent sections). Moreover, peer influence, societal norms, and the availability of substances or internet access can contribute to the development and maintenance of both substance use and PIU. Problematic internet use, especially in people with substance use disorders, negatively affects their quality of life (Saffari et al., 2022). Substance use can increase the risk of developing PIU, and vice versa. It is important to note that the relationship between substance use and PIU is complex and multifaceted. While substance use can increase the risk of developing PIU, it is also possible that individuals with pre-existing PIU are more likely to engage in substance use as a means of self-medication or a coping mechanism. Additionally, it is crucial to consider individual differences and unique circumstances when examining the co-occurrence of these behaviours, as not all individuals with substance use disorders will exhibit symptoms of PIU and vice versa.

5.4.2. Subtheme 2.2: Neurological Similarities between Substance and Behavioural Addictions

This subtheme recognises the neurological similarities between substance addictions and behavioural addictions. Adorjan et al. (2021), Lee et al. (2018), Kotyuk et al. (2020), and Romer Thomsen et al. (2018) research contributes to the idea of a strong neurobiological association, not only at the behavioural but also at the structural levels of the brain. The following excerpts illustrate the unique neurological similarities between substance and behavioural addictions:

"Similarities can be found between substance use disorders and PIU, not only at the behavioural level but also at the brain structural level" (Adorjan et al., 2021, p. 976)

"The phenomenological description and symptoms of substance use and potentially addictive behaviours [such as PIU] appear to share common ground, which is also reflected in the diagnostic criteria of such disorders in both the DSM-5 and ICD-11" (Kotyuk et al., 2020, p. 273)

"The result of the current study, which suggests a relationship between smoking and Problematic Video Game Use (PVGU) (along with other correlates), is consistent with previous literature suggesting neurological similarities between substance and behavioural addictions" (Lee et al., 2018, p. 284)

"Problematic use of Internet gaming, pornography, and binge eating are often conceptualized as behavioural addictions due to emerging evidence suggesting some overlap in underlying psychological and neurobiological mechanisms" (Romer Thomsen et al., 2018, p. 318)

Based on neurobiological principles, behavioural strategies that are only indirectly involved in the brain's neurotransmitter systems can act as effective substitutes for pharmacological substances (Albrecht et al., 2006). Recent studies have shown that there are common mechanisms underlying both substance-related and behavioural addictions (Albrecht et al., 2006; Sinclair et al., 2016). Thus, this subtheme emphasises a common understanding of addiction, focusing on shared psychological and neurobiological mechanisms that bridge the traditional divide between substance-related and behavioural addictions. There is a wide range of neurobiological evidence that can be used to inform the debate about the development of behavioural addictions. These include structural brain imaging, functional brain imaging, and cognitive assessment. On the structural level of the brain, it has been revealed that there is a link between internet gaming and reduced grey matter density in various regions of the brain (Chamberlain et al., 2016). In some cases, the development of behavioural addictions can be triggered by dopaminergic agents used for treating other conditions, such as Parkinson's Disease and restless leg syndrome (Chamberlain et al., 2016). This is consistent with Chamberlain et al. (2016) and Sinclair et al. (2016) who reported that available psychobiological data on chemical and behavioural addictions comes from studies on the

molecular biology and neural circuitry of substance use disorders. However, in recent years, the field has started to expand its attention to the psychobiology of behavioural addictions, especially gambling disorder. It has been known for many years that the prefrontal cortex plays a significant role in regulating behaviour. Substances that are addictive have a significant impact on the reward systems in the brain, including the neural circuitry and the neurotransmitter systems such as the dopaminergic and opioid systems (Sinclair et al., 2016).

The idea that PIU and internet addiction are frequently viewed as behavioural addictions reinforces the notion of a spectrum of addictive behaviours governed by shared neurobiological pathways. Men are more likely to develop addictions to substances such as alcohol and drugs (Compton et al., 2007; Fonseca et al., 2021; McHugh et al., 2018). Research has shown that men are more likely to engage in heavy and binge drinking compared to women, which may contribute to the higher prevalence of substance use disorders in men (Grant et al., 2015; Keyes et al., 2011). Despite the growing number of studies focused on the sex-related differences in drug addiction, few studies have investigated the potential differences in the behaviour of men and women when it comes to non-substance related addictions (Fattore et al., 2014). Regarding substance use, women who are at risk for substance abuse are more prone to using substances at a faster rate than men, leading to the development of an addiction (Becker, 2016). This is because of the circulating ovarian hormones in females, where short-term exposure to estradiol can contribute to the faster acquisition of substances by women. Furthermore, according to Becker (2016), women who attempt to stop using substances such as cocaine or amphetamine experience withdrawal symptoms more unpleasant than men, as with smoking. However, men experience more unpleasant symptoms when attempting to quit alcohol. Males are more likely than females to engage in risky behaviours such as experimenting with drugs, and if susceptible to substance abuse, they are drawn into a spiral that leads to addiction (Becker, 2012). On the other hand, women generally start using drugs as a form of self-medication to deal with symptoms of stress and depression (Becker, 2012). Because of this, women tend to spiral into addiction more quickly than men. Although the structures and processes involved in the reinforcement of positive and negative stimuli are similar in both males and females, the sex differences in how these neural systems are activated and connected are believed to underlie the development of addiction (Becker, 2012). Thus, it is evident that the neurobiological make-up of men and women may contribute to these gender differences in addiction. However, an in-depth exploration of the different mechanisms and neural pathways involved is beyond the scope of this study.

5.5.Theme 3: PIU, SUD, and Mental Health Disorders

This theme looks at the connection between PIU, addictive use of social media, and a range of mental health challenges. The findings, as illustrated by the below excerpts from the reviewed studies, collectively show that there is an interconnectedness of internet addiction with depression, anxiety, attention deficit hyperactivity disorder (ADHD), post-traumatic stress disorder (PTSD), and sleep disorders.

> *"Studies have shown that addictive use of social media is associated with depression, anxiety and mental distress" (Henzel et al., 2021, p. 3)*

> *"In addition to the health risks associated with PIU, it frequently co-occurs with psychiatric conditions" (Singh et al., 2022, p. 308)*

> *"Among nonsubstance use Mental Health Disorders (MHD), PIU is consistently associated with depression, anxiety, ADHD and PTSD" (Singh et al., 2022, p. 308)*

> *"PIU associated with several psychiatric problems such as depression, anxiety disorders and sleep disorders" (Adorjan et al., 2021, p. 975)*

> *"Patients (male) with Internet Addiction (IA) or Alcohol Dependence (AD) were significantly more depressed and anxious than were HCs (healthy controls)" (Hwang et al., 2014, p. 4)*

> *"High PIU was associated with higher symptoms of anxiety, depression and aggression (from a sample of 500 Polish men)" (Tomska et al., 2022, p. 5)*

The findings from the above reviewed studies, Adorjan et al. (2021), Henzel et al. (2021), Hwang et al. (2014), Tomska et al. (2022), and Singh et al. (2022), collectively show that there is an interconnectedness of internet addiction with depression, anxiety, ADHD, PTSD, and sleep disorders. A study by Cai et al. (2023) on the relationships between students' PIU and mental health outcomes indicated that PIU was moderately and positively associated with depressive symptoms, anxiety, loneliness, and other mental health outcomes and negatively related to subjective well-being. Research has also shown that individuals with PIU

are more likely to experience symptoms of depression and have a higher risk of developing other mental health disorders such as attention deficit hyperactivity disorder (ADHD) and substance abuse disorders (Kuss et al., 2014). Individuals with mental health challenges find solace or escape in excessive internet use (Diotaiuti et al., 2022; Dutta et al., 2017), leading to the development of PIU. According to Orhon et al. (2023), poor sleep quality was found to be higher in problematic internet users. This vicious cycle can further exacerbate their mental health symptoms and hinder their overall well-being. Additionally, individuals with PIU can also face difficulties in maintaining healthy relationships and engaging in fulfilling offline activities, which can further contribute to their mental health challenges. Kożybska et al. (2023) found that Polish medical school students with PIU lead an unhealthy lifestyle and more often show symptoms of depression and eating disorders than students without PIU. According to Xie et al. (2023), anxiety can predict internet addiction, and internet addiction can predict depression among male college students. Moreover, anxiety had a significant predictive effect on internet addiction among men. Furthermore, lonely individuals may be drawn online because of the increased potential for companionship, the changed social interaction patterns online, and as a way to modulate negative moods associated with loneliness (Morahan-Martin & Schumacher, 2003).

Studies have reported a higher prevalence of substance use disorders in individuals with mental illness compared to the general population (Peltzer et al., 2018). In another South African study, students who reported substance use at university reported higher depression and anxiety scores than those who did not (Blows & Isaacs, 2022). Furthermore, according to Bilsker et al. (2018), among all substances, the effects of alcohol on the mental health of men are the most significant. It is common for men to use alcohol to deal with psychological distress, which can ultimately result in dependence and significant mental health issues. A study by Marmet et al. (2019) examined the co-occurrence of six behavioural addictions and four SUDs among a sample of young Swiss men. The results indicated that having at least one addiction was associated with greater severity in all four mental health problems examined (major depression, attention-deficit hyperactivity disorder, social anxiety disorder, and borderline personality disorder), and these severities increased steeply if more than one addiction was present, showing that co-occurring addictions are strongly associated with the severity of mental health problems (Marmet et al., 2019). Cranford et al. (2009) found that “major depression was associated with lower odds of frequent binge drinking, whereas generalised anxiety disorder was associated with higher odds of frequent binge drinking. Both associations

were significantly stronger for males than females" (p. 142). Similarly, Geisner et al. (2004) found stronger associations between psychological distress, alcohol consumption, and alcohol-related problems for males compared to female college students. Other studies reviewed by Morris et al. (2005) have shown that the link between alcohol consumption and anxiety is stronger in men than in women. They noted that men may be more inclined to drink alcohol to reduce their anxiety compared to women, partly due to their positive expectations related to the effects of alcohol.

Societal expectations influence the way individuals perceive and interact with the internet. The pressure to constantly be connected and present on social media platforms can lead to increased feelings of anxiety and self-comparison, which can worsen existing mental health conditions. The pervasive influence of social media in contemporary society constructs a normative behaviour of constant online engagement, leading individuals to seek validation and social acceptance through their online presence. Moreover, constant exposure to online content, including negative news or cyberbullying, can further impact an individual's mental well-being and contribute to the development of PIU. Several reviews have shown that the use of negative coping techniques is associated with the stereotyped traits of masculinity. These include the misuse of drugs and alcohol, ignoring negative emotions, maintaining a rigid focus on one's autonomy and self-reliance, and engaging in risky behaviours (Bilsker et al., 2018). Depression and anxiety, for example, are socially constructed categories influenced by cultural norms and societal expectations, rather than inherent or universal conditions. Society constructs norms around acceptable coping mechanisms, and the internet can become an easily accessible refuge for individuals facing mental health challenges.

The complex interactions that exist between men's mental health, substance abuse, and problematic internet use highlight how crucial it is to comprehend these relationships in order to support holistic well-being. The relationship between men's mental health, problematic internet use, and substance misuse is further complicated by the fact that the internet can be a tool for accessing and encouraging substance use. The internet can encourage risky behaviours that can lead to a decline in mental health, whether it is through online communities that promote substance-related talks or the accessibility of substances via digital platforms. Psychological consequences such as impulsivity, poor decision making, a lower quality of physical health, and social relationships are further highlighted by this theme. The findings below show that men experiencing depression, having low self-esteem, and encountering poor family functioning are linked to problematic internet use. Furthermore, individuals with

internet addiction and alcohol dependence are similar in emotion, temperament, and personality traits, with both groups showing high levels of anxiety and depression, as illustrated by the excerpts below:

> *"Previous studies suggest that being male, being depressed, having low self-esteem, and poor family functioning are associated with internet addiction" (Hwang et al., 2014, p. 2)*

> *"Similarity found between patients with internet addiction and alcohol dependence, in terms of emotion, temperament and personality traits in general" and "patients in both groups (internet addiction and alcohol dependence) more depressed and anxious (from a sample of 30 male patients diagnosed with alcohol dependence)" (Hwang et al., 2014, p.6)*

> *"There was a correlation between the severity of mild depression symptoms and the occurrence of anxiety, verbal and physical aggression, and PIU (from a sample of 500 Polish men)" (Tomska et al., 2022, p. 1)*

As illustrated above, the psychological consequences of PIU and SUD are multifaceted, encompassing various aspects of mental health and overall well-being. Both PIU and SUD have been associated with several negative outcomes, including depression, anxiety, impulsivity, poor decision-making, and compromised physical health and social relationships. According to Zhang et al. (2021), social support was inversely correlated with the severity of online addiction, while impulsivity and despair rose with internet addiction severity levels. The group with strong internet addiction was more likely to comprise male freshmen with high impulsivity, low social support, and high despair. They also had a higher probability of encountering unfavourable outcomes in several aspects of their lives. Moreover, PIU has been associated with impaired cognitive functioning, including difficulties in concentration, memory, and decision-making abilities (Yen et al., 2008). Li et al. (2015) identified that depression, boredom, and stress were found to be common triggers resulting in the overuse of the internet among male and female university students ranging in age from 18 to 36 years.

For individuals struggling with PIU, the correlation with depression, anxiety, and impulsivity is particularly noteworthy. Men seem to be vulnerable to internet addiction when experiencing depression, low self-esteem, and dysfunctional family dynamics (Hwang et al.,

2014). These factors contribute to a reliance on the internet as a coping mechanism or escape, leading to the development or exacerbation of PIU. Moreover, the intersection between internet addiction and alcohol dependence stated by Henzel et al. (2021) reveals similarities in emotional, temperamental, and personality traits. Individuals with excessive internet use and alcohol dependence exhibit elevated levels of anxiety and depression. This suggests a potential co-occurrence of these addictive behaviours, possibly stemming from shared underlying psychological vulnerabilities. Substance use disorders are also associated with high levels of anxiety and depression (Mohamed et al., 2020). This suggests that individuals with internet addiction are at a higher risk of developing substance use disorders due to the presence of anxiety and depression. The interconnectedness of the findings by Henzel et al. (2021), Hwang et al. (2014), and Tomska et al. (2022) underscores the importance of considering the broader context of mental health and social dynamics when addressing PIU and SUD. It implies that individuals experiencing emotional distress, low self-worth, or challenging family relationships may be at an increased risk of developing problematic patterns of internet use or substance dependence.

5.6.Theme 4: Risk Factors for the Development of PIU and SUD

This theme discusses the various risk factors associated with PIU and SUD which includes impulsivity, personality traits, emotional regulation, and attachment.

> *"Potential risk factors for AIU (addictive internet use) include personality traits, reason for internet use, structural requirements of the respective area of use and environmental factors" (Adorjan et al., 2021, p. 976)*

> *"Risky behaviours have been related to emotional regulation and attachment, which may constitute risk factors for developing an addictive behaviour" (Estevez et al., 2017, p. 534)*

> *"Attachment predicted non-substance related addictions – gambling disorder, video game addiction and PIU" (Estevez et al., 2017, p. 534)*

> *"Emotion regulation was predictive of all addictive behaviours assessed in this study; alcohol and drug abuse, gambling disorder, video game addiction and PIU" (Estevez et al., 2017, p. 534)*

"It seems that specific personality traits, impulsivity and motivational factors play an important contributory role in both substance use and behavioural addictions" (Kotyuk et al., 2020, p. 273)

"Impulsivity is commonly impaired dimensionally across SUD and subcomponents have been shown to be a risk factor in the development of problematic substance use and SUD" and "impulsivity has been associated with substance addiction and gambling disorder, but its role in other non-substance addiction related behaviours is less understood" (Romer Thomsen et al., 2018, pp. 317-318)

The findings by Adorjan et al. (2021), Estevez et al. (2017), Kotyuk et al. (2020), and Romer Thomsen et al. (2018) provide various factors contributing to the development of PIU and substance use disorder. Impulsivity has been found to be associated with both PIU and substance use disorder, suggesting that individuals who are more impulsive may be more susceptible to developing these addictive behaviours. For example, studies by Diotaiuti et al. (2022), Salehi et al. (2023), and Zhu et al. (2023) found that individuals with higher levels of impulsivity were more likely to engage in excessive internet use and substance abuse compared to those with lower levels of impulsivity. Impulsive and compulsive symptoms and traits, pandemic stress, and age were related to problematic usage of the internet (PUI) in South Africa (Lochner et al., 2022). This suggests that impulsivity serves as a common risk factor for both PIU and substance use disorders. Men's impulsivity is strongly correlated with internet addiction compared to females' (Nam et al., 2018). According to Mitchell et al. (2015), women may be more likely to engage in addictive behaviours for negative reinforcement reasons (e.g., escape from stress), whereas men may be more likely to engage in addictive behaviours for positive reinforcement reasons (e.g., seeking a high). The various factors contributing to the development of PIU and SUD highlight the complex relationship between individual traits and social influences. Notably, the gendered dimension of impulsivity, with men showing a stronger correlation with internet addiction, and the distinct motivations for engaging in addictive behaviours among women and men are examples of how societal norms and expectations contribute to the construction of PIU and SUD.

Additionally, studies by Torres-Berrio et al. (2018), and Blows and Isaacs (2022) also revealed that individuals who reported experiencing higher levels of stress were more likely to

engage in both addictive behaviours, highlighting the role of stress as another contributing factor to the development of PIU and substance use disorder. Stress, as a shared risk factor, can act as a catalyst, influencing the manifestation of both PIU and SUD. In this context, stress can be experienced and understood through the lens of cultural, social, and individual factors that contribute to the development of addictive behaviours, rather than being merely an objective, universal phenomenon. For example, certain cultural norms and expectations may place individuals under significant pressure, leading to higher levels of stress and subsequently increasing their likelihood of engaging in addictive behaviours. Additionally, social factors such as peer pressure or a lack of support systems can also increase stress levels and contribute to the development of PIU and SUD.

Personality traits have also been noted to be risk factors for developing PIU and SUD. For example, individuals with high levels of impulsivity and sensation-seeking tendencies are more likely to engage in excessive internet use or substance abuse (Diotaiuti et al., 2022; Vassileva et al., 2019). Men's personalities, for instance indicate that they are more likely to explore the unknown and discover new innovative ideas (Islam & Hossin, 2016). This could gradually lead to compulsive use of the internet, as the internet is currently the centre of all the exciting escapades. A study by Zhang et al. (2021) reported that impulsivity and depression increased with internet addiction severity levels, whereas social support was inversely related to the severity of internet addiction. Male freshmen with high impulsivity, low social support, and high depression were more likely to be included in the high internet addiction group. Furthermore, a study by Teng et al. (2020) indicated that "males present with significantly higher negative associations between psychosocial factors (e.g., self-esteem and life satisfaction) and IGD compared to females (p. 5)." A preliminary study by Shokri et al. (2017) found that "impulsivity can predict the severity of PIU among both male and female Iranian university students (p. 277)". Additionally, research has shown that individuals with certain personality disorders, such as borderline personality disorder or antisocial personality disorder, may be at a higher risk for developing both PIU and SUD (Parmar & Kaloiya, 2018), and it can be due to their difficulty in regulating emotions and impulsive behaviours. A study by Laconi et al. (2017) found that "among men, PIU was predicted by Clusters B personality traits (antisocial, borderline, histrionic, and narcissistic)". Adorjan et al.'s (2021) findings that "potential risk factors for PIU include personality traits, reason for internet use, structural requirements of the respective area of use, and environmental factors" implies that the development of PIU is not solely determined by individual traits but is influenced by broader

contextual factors, including the environment and the structural aspects of internet use. Similarly, this can be said with substance use disorder; the development of addiction is not solely determined by individual traits but is influenced by broader contextual factors. These factors can include the availability and accessibility of internet use and substances; social influences, such as peer pressure or cultural norms surrounding substance and internet use; as well as socioeconomic status and familial influences, which can also play a role in the development of both PIU and substance use disorder. Men and women also have different susceptibilities to developing PIU and substance use disorders, as gender can interact with these contextual factors.

Individuals who struggle with regulating their emotions are susceptible to developing addictive behaviours across different domains. For example, Estevez et al.'s (2017) findings that emotion regulation is predictive of diverse addictive behaviours, ranging from alcohol and drug abuse to gambling disorder, video game addiction, and PIU, highlight the prevalent influence of emotional regulation across various addiction types. Estevez et al.'s (2017) findings on emotion regulation being predictive of diverse addictive behaviours underscore the idea that societal norms, cultural expectations, and interpersonal dynamics contribute to the construction of emotional regulation as a risk factor for various addictions. Emotions are not universal and fixed entities but rather socially constructed and interpreted within specific cultural and social contexts. The susceptibility to addictive behaviours, as linked to difficulties in emotion regulation, is thus contingent upon the societal meanings attributed to emotions within a given cultural milieu. For example, in some cultures, certain emotions might be stigmatized or discouraged, leading individuals to suppress or avoid expressing them. This can contribute to a higher risk of developing addictive behaviours as individuals may turn to substances or activities as a means of coping with their emotions in an unhealthy way. Additionally, societal norms and expectations regarding emotional expression can also influence the availability and acceptance of healthier coping mechanisms, further exacerbating the vulnerability to addiction.

Estevez et al. (2017) further emphasise the role of attachment, particularly in non-substance-related addictions such as gambling disorder, video game addiction, and PIU. According to research by Musetti et al. (2020), adolescents who experience emotional detachment and loneliness from their parents exhibit higher levels of PIU. This underscores the social dimension of addiction, indicating that the quality of relationships and attachment styles significantly impact vulnerability to specific addictive behaviours. Attachment styles are not

inherent or biologically determined but are constructed through social interactions and relationships. The quality of these relationships, informed by societal norms and expectations, plays a crucial role in shaping an individual's vulnerability to specific addictive behaviours. Studies that differentiate between the gendered differences in risk factors are scarce within the literature, motivating further research in this area of research. Understanding these shared risk factors allows for the identification of individuals at a higher risk of developing PIU and SUD, which can inform targeted prevention and intervention strategies.

5.7.Conclusion

It is evident that both PIU and substance abuse disorder can affect individuals regardless of gender. Research has shown that these behavioural addictions are prevalent among both men and women, though the prevalence rates differ. Various factors contribute to the development of PIU and substance use disorders, and these factors can be complex and multifaceted. Some common contributing factors include biological, psychological, social, and environmental aspects. It is also critical to recognise the possibility of a correlation between substance use disorders and PIU. People who struggle with substance abuse disorders utilise the internet as a coping mechanism or to find support from others. Excessive internet use, on the other hand, has the potential to contribute to or exacerbate substance abuse problems by influencing social behaviours, mental health, and coping mechanisms. Further research is needed to fully understand the interplay between PIU and substance abuse disorders and determine whether one can lead to the development of the other.

CHAPTER 6

IMPLICATIONS OF THE FINDINGS AND CRITICAL REVIEW OF THE RESEARCH

6.1. Introduction

This chapter provides the conclusion and implications of the findings of this scoping review. The conclusion highlights the key takeaways from the scoping review, emphasising the significance of addressing PIU and SUD in men. Moreover, it provides the limitations of this review as well as makes recommendations for future studies on PIU and SUD in men.

6.2. Conclusions

This study aimed to map and synthesise literature on PIU and SUD, including the way in which they affect men. This was achieved through the analysis of the following: 1) prevalence rates of PIU among men; 2) associations between substance use and behavioural addictions; 3) mental health disorders associated with PIU and SUD; and 4) risk factors for the development of PIU and SUD. This review drew on social constructionism as a framework to explore how societal norms, beliefs, and language contribute to the development and maintenance of PIU and SUD among men. This framework assisted in recognising the realities in which both phenomena are embedded, which showed that both problematic internet use and substance use disorder are not solely biological or individual phenomena but are constructed within social contexts.

The first theme highlighted that although there are contrary findings on whether males or females have the highest prevalence of PIU, there is substantial evidence that also suggests that men may have the highest prevalence (Akpinar Aslan et al., 2021; Estevez et al., 2017; Hwang et al., 2014; Marazziti et al., 2020; Tomska et al., 2022). However, it was found that the prevalence rates appear to be dependent on the types of activities men and women engage in when online. From a social constructionism perspective, it was evident that the manner in which men and women make use of the internet highlights the socially constructed nature of their online behaviours, reinforcing societal expectations, norms, and roles associated with gender. It has already been established that, from early childhood, men are taught to identify with certain behaviours or traits that society considers acceptable (Neilson et al., 2020; Schlichthorst et al., 2019). The socialisation process can result in toxic masculinity, wherein men are pressured to conform to harmful beliefs to fit into society's definition of who and what

a man is. For instance, women have been socialised to play with dolls from a young age, whereas men were socialised to play with cars. The same can be said about the types of online activities men and women engage in, where men are more prone to utilising the internet for gaming. Applying social constructionism showed that men are more prone to substance abuse or problematic internet use if they are subjected to gender-based expectations regarding what constitutes masculinity. Additionally, many males are socialised to think that seeking help is a weakness rather than a strength, which can make it hard for them to seek assistance for their problems with substance use or problematic internet use. This type of behaviour can also lead to feelings of isolation and shame. This in and of itself could explain the inconsistencies regarding the prevalence rates among men and further exacerbate any existing mental health conditions. Perhaps not enough men are coming forward with their problems because of this socialisation, amongst other things. Because of this, gender significantly affects the treatment and development of problematic internet use and substance abuse.

The second theme highlighted the interconnected nature of behavioural addictions, particularly internet addiction, with substance-related dependencies, implying the presence of common underlying risk factors, further confirming the idea that addictions have psychological causes (Adorjan et al., 2021; Henzel et al., 2014; Kotyuk et al., 2020; Lee et al., 2018; Romer Thomsen et al., 2018 & Zsido et al., 2019). In addition to the interconnectedness of behavioural and substance related addictions, multiple studies shared consistent results regarding the positive association between PIU and SUD. The third theme highlighted the adverse effects associated with PIU and SUD, with the focus being on various mental health disorders such as anxiety and depression, as well as the psychological consequences such as impulsivity, poor decision making, a lower quality of physical health, and social relationships. The findings of this review, supported by the social constructionism framework, showed that the way in which individuals use and interact with the internet is greatly influenced by societal expectations. The constant pressure to be connected on, for example, social media, a specific form of PIU, can result in heightened anxiety and even self-comparison, which in turn could worsen existing mental health conditions (such as anxiety and depression). Viewing this from a social constructionism lens allowed for a discussion on how the impact of social media, and perhaps the internet in its entirety, has created a normative behaviour that demands constant online engagement, which can result in individuals seeking validation and acceptance through their online presence. The internet can therefore be a refuge for those grappling with mental health issues, as society constructs norms concerning acceptable coping methods.

The fourth and last theme focused on the risk factors associated with the development of PIU and SUD, which included impulsivity, personality traits, emotional regulation, and attachment (Adorjan et al., 2021; Estevez et al., 2017; Kotyuk et al., 2020; Romer Thomsen et al., 2018). These potential risk factors for PIU were found not to be solely determined by individual traits but largely influenced by broader contextual factors, which include the environment, availability and accessibility of the internet, social influences such as peer pressure, and cultural norms. The same can be said for substance use disorders. Thus, the final yield of studies eligible for inclusion in this scoping review confirmed that not only are substance abuse disorders a major public health concern that affect people all around the world, but that the rise of digital technology has presented new challenges, such as the emergence of mental health issues related to problematic internet use. It made sense to examine both these phenomena simultaneously because of their interrelatedness and the mere fact that they share similar psychosocial characteristics. It is evident from the research that the bidirectional relationship between PIU and SUD highlights the complex interplay between the two phenomena, which necessitates the need for interventions that can address both at the same time. However, social constructionism was helpful because it allowed for the consideration of more nuanced approaches that consider multiple perspectives, contextual factors, and the dynamic nature of how men behave in these contexts.

6.3. Limitations

One of the main criticisms in developing research on problematic internet use or internet addiction is the lack of consensus regarding the diagnosis and conceptualisation of such disorders. Thus, despite the widespread attention paid to the issue, the development of a comprehensive standard of care for individuals suffering from internet addiction has been challenging due to the field's cultural diversity, namely with regard to the variance in the terminology used in academic literature (e.g., internet addiction, PIU, pathological internet use), and secondly, the challenge that arises with different inventories being used in their assessment, making it difficult for results to be generalised to other contexts.

The hope was that there would be an abundance of qualitative studies on the topic. However, conducting this scoping review highlighted that there was a paucity of studies employing research designs beyond quantitative methodologies. This usually makes for a good rationale, indicating a clear gap within the body of literature when it comes to PIU. Such a methodological gap in the literature implies a shortage of in-depth exploration of individuals'

perceptions, experiences, and feelings in relation to the topic of PIU. It is evident from the research that PIU is currently being treated as a disorder. Therefore, any research being done focuses on the person being evaluated for prevalence, clinical diagnosis, and severity.

There has not yet been much engagement with participants, focusing on a detailed account of their lived experiences in relation to PIU. As such, from a thorough search of various databases, it is quite evident that the literature is predominantly skewed towards quantitative data. Perhaps streamlining a study to focus on a specific type of internet use would produce more qualitative studies, which was beyond the scope of the current study. Additionally, it was rare to find literature specifically focusing on men. Within the literature, men were always studied against women, particularly when looking at the gender differences in the development of PIU.

6.4. Recommendations

The problem of PIU, or internet addiction, is relatively new, and scientific understanding of the problem is evolving. Although there are various arguments supporting the diagnostic validity of PIU, there is currently no consensus regarding the appropriate diagnosis and treatment for this disorder. This is largely because its classification remains uncertain. Thus, a clear understanding and conceptualisation of this behavioural addiction is vital, including the development and utilisation of appropriate and validated diagnostic and screening tools to measure its presence and, in turn, address it as an emerging mental health disorder. Using validated tools will allow for comparison with other studies.

The variance in the terminology used to identify PIU remains a difficulty. It would therefore be easier to navigate the topic of PIU once the terminologies have been standardised. Predominantly, research findings within this area usually include the general population, or else in a way that focuses on or compares the findings according to gender differences. Thus, as a way forward, researchers are advised to study men and women, given that they present differently in the kinds of internet related activities they engage in. Focus should therefore be given to the assessment of PIU by distinguishing the two different forms from each other, namely the generalised and specific forms of PIU. Additionally, given that there were very few to no qualitative studies conducted on the topic of PIU, much less addressing the possible association between the two, an assessment of the individual's experience, that of men, is lacking.

The researcher is under the assumption that gearing towards the inclusion of more qualitative data would only be possible once a consensus has been reached amongst researchers regarding the classification, aetiology, and progression of PIU. Identifying the various protective factors and risks associated with PIU plays a vital role in clinical practice and research. This study's findings contributed to this identification, assisting in early detection, and opening up further avenues for discussion. The information collected through this scoping review validates the necessity of conducting further research within the areas of PIU and SUD as a collective. Further research is needed to clarify the nature of the relationship between PIU and SUD for the purpose of establishing possible causality, including the neurobiological substrates involved. Many of the internet related activities discussed in this review are considered daily customs that contribute to our survival. Therefore, it is not surprising to see some controversy about the treatment and diagnosis of these different conditions. Nevertheless, the rise of digital technology has led to various remarkable developments within the area of cyber psychology, such as the inclusion of gambling disorder in the DSM-5 as an official mental health disorder, as well as the concept of IGD being acknowledged in the DSM-5 for further study.

REFERENCES

Adorjan, K., Langgartner, S., Maywald, M., Karch, S., & Pogarell, O. (2021). A cross-sectional survey of internet use among university students. *Eur Arch Psychiatry Clin Neurosci, 271*(5), 975-986. https://doi.org/10.1007/s00406-020-01211-1

Akbari M. (2017). Metacognitions or distress intolerance: The mediating role in the relationship between emotional dysregulation and PIU. *Addictive behaviors reports, 6,* 128–133. https://doi.org/10.1016/j.abrep.2017.10.004

Akpinar Aslan, E., Batmaz, S., Celikbas, Z., Kilincel, O., Hizli Sayar, G., & Unubol, H. (2021). Prevalence of Risk for Substance-Related and Behavioral Addictions Among University Students in Turkey. *ADDICTA: The Turkish Journal on Addictions, 8*(1), 35-44. https://doi.org/10.5152/addicta.2021.21023

Albertella, L., Rotaru, K., Christensen, E., Lowe, A., Brierley, M.-E., Richardson, K., Chamberlain, S. R., Lee, R. S., Kayayan, E., Grant, J. E., Schluter-Hughes, S., Ince, C., Fontenelle, L. F., Segrave, R., & Yücel, M. (2021). The influence of trait compulsivity and impulsivity on addictive and compulsive behaviors during COVID-19. *Frontiers in Psychiatry,* 12. https://doi.org/10.3389/fpsyt.2021.634583

Albrecht, J., Sidoryk-Węgrzynowicz, M., Zielińska, M., & Aschner, M. (2010). Roles of glutamine in neurotransmission. *Neuron glia biology*, *6*(4), 263–276. https://doi.org/10.1017/S1740925X11000093

Alhammad, M., Aljedani, R., Alsaleh, M., Atyia, N., Alsmakh, M., Alfaraj, A., Alkhunaizi, A., Alwabari, J., & Alzaidi, M. (2022). Family, Individual, and Other Risk Factors Contributing to Risk of Substance Abuse in Young Adults: *A Narrative Review. Cureus*, 14(12), e32316. https://doi.org/10.7759/cureus.32316

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

Amin, A., Kågesten, A., Adebayo, E., & Chandra-Mouli, V. (2018). Addressing Gender Socialization and Masculinity Norms Among Adolescent Boys: Policy and Programmatic Implications. *The Journal of adolescent health: official publication of the Society for Adolescent Medicine, 62*(3S), S3–S5. https://doi.org/10.1016/j.jadohealth.2017.06.022

Andrews, T. (2012). What is Social Constructionism. The Grounded Theory Review, 11(1), 39-45.

Angarita, G.A., Emadi, N., Hodges, S. et al. Sleep abnormalities associated with alcohol, cannabis, cocaine, and opiate use: a comprehensive review. *Addict Sci Clin Pract* 11, 9 (2016). https://doi.org/10.1186/s13722-016-0056-7

Arksey, H., & O'Malley, L. (2005). Scoping Studies: Towards a Methodological Framework. *International Journal of Social Research Methodology: Theory & Practice*, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616

Aromataris E, Munn Z (Editors). (2020) JBI Manual for Evidence Synthesis. Available from https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-01

Atmaca, M. (2007). A case of PIU successfully treated with an SSRI-antipsychotic combination. *Progress in neuro-psychopharmacology & biological psychiatry*, 31(4), 961–962. https://doi.org/10.1016/j.pnpbp.2007.01.003

Baloğlu, M., Şahin, R., &Arpaci, I. (2020). A review of recent research in PIU: gender and cultural differences. *Current Opinion in Psychology*, *36*, 124-129. https://doi.org/10.1016/j.copsyc.2020.05.008

Baroni, S., Marazziti, D., Mucci, F., Diadema, E., & Dell'Osso, L. (2019). Problematic Internet use in drug addicts under treatment in public rehab centers. *World J Psychiatry, 9*(3), 55-64. https://doi.org/10.5498/wjp.v9.i3.55

Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology & behavior, 4*(3), 377-383.

Becker, J. B., Perry, A. N., & Westenbroek, C. (2012). Sex differences in the neural mechanisms mediating addiction: a new synthesis and hypothesis. *Biology of sex differences*, 3, 1-35.

Benvenuti, M., Panesi, S., Giovagnoli, S., Selleri, P., & Mazzoni, E. (2023). Teens online: How perceived social support influences the use of the internet during adolescence. *European Journal of Psychology of Education*. https://doi.org/10.1007/s10212-023-00705-5

Berger, P. & Luckmann, T. (1991). The social construction of reality. London: Penguin Books

Bilsker, D., Fogarty, A. S., & Wakefield, M. A. (2018). Critical issues in men's mental health. *The Canadian Journal of Psychiatry*, 63(9), 590-596.

Blows, S., & Isaacs, S. (2022). Prevalence and factors associated with substance use among university students in South Africa: implications for prevention. *BMC psychology, 10*(1), 309. https://doi.org/10.1186/s40359-022-00987-2

Boness, C. L., Votaw, V. R., Schwebel, F. J., Moniz-Lewis, D. I. K., McHugh, R. K., & Witkiewitz, K. (2023). An evaluation of cognitive behavioral therapy for substance use disorders: A systematic review and application of the society of clinical psychology criteria for empirically supported treatments. *Clinical Psychology: Science and Practice*, *30*(2), 129–142. https://doi.org/10.1037/cps0000131

Boniel-Nissim, M., van den Eijnden, R. J. J. M., Furstova, J., Marino, C., Lahti, H., Inchley, J., Šmigelskas, K., Vieno, A., & Badura, P. (2022). International Perspectives on social media use among adolescents: Implications for mental and social well-being and substance use. *Computers in Human Behavior,* 129, 107144. https://doi.org/10.1016/j.chb.2021.107144

Bonner, C. P., Carney, T., Browne, F. A., Ndirangu, J. W., Howard, B. N., & Wechsberg, W. M. (2020). Substance use and depressive and anxiety symptoms among out-of-school adolescent girls and young women in Cape Town, South Africa. South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde, 111(1), 40–45. https://doi.org/10.7196/SAMJ.2020.v111i1.14520
https://doi.org/10.1016/j.addbeh.2016.06.019

Bouza, E., Arango, C., Moreno, C., Gracia, D., Martín, M., Pérez, V., Lázaro, L., Ferre, F., Salazar, G., Tejerina-Picado, F., Navío, M., Granda Revilla, J., Palomo, E., & Gil-Monte, P. R. (2023). Impact of the COVID-19 pandemic on the mental health of the general population and health care workers. Revista espanola de quimioterapia : publicacion oficial de la Sociedad Espanola de Quimioterapia, 36(2), 125–143. https://doi.org/10.37201/req/018.2023

Brand, M., Rumpf, H. J., Demetrovics, Z., MÜller, A., Stark, R., King, D. L., Goudriaan, A. E., Mann, K., Trotzke, P., Fineberg, N. A., Chamberlain, S. R., Kraus S. W., Wegmann, E., Billieux, J., & Potenza, M. N. (2020). Which conditions should be considered as disorders in the International Classification of Diseases (ICD-11) designation of "other

specified disorders due to addictive behaviors"?. *Journal of behavioral addictions, 11*(2), 150-159. https://doi: 10.1556/2006.2020.00035

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. *Qualitative Psychology, 9*(1), 3–26. https://doi.org/10.1037/qup0000196

Burnhams, N. H., Bharat, C., Williams, D. R., Stein, D. J., & Myers, B. (2019). Transitions between lifetime alcohol use, regular use and remission: Results from the 2004 South African Stress and Health Survey. *South African Medical Journal, 109*(1), 40-46.

Cai, Z., Mao, P., Wang, Z., Wang, D., He, J., & Fan, X. (2023). Associations between problematic internet use and mental health outcomes of students: a meta-analytic review. *Adolescent research review, 8*(1), 45-62. https://doi.org/10.1007/s40894-022-00201-9

Cannizzaro, E., Lavanco, G., Castelli, V., Cirrincione, L., Di Majo, D., Martines, F., Argo, A., & Plescia, F. (2022). Alcohol and Nicotine Use among Adolescents: An Observational Study in a Sicilian Cohort of High School Students. *International journal of environmental research and public health*, *19*(10), 6152. https://doi.org/10.3390/ijerph19106152

Carroll, K. M., & Kiluk, B. D. (2017). Cognitive behavioral interventions for alcohol and drug use disorders: Through the stage model and back again. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors, 31*(8), 847–861. https://doi.org/10.1037/adb0000311

Cash, H., Rae, C. D., Steel, A. H., & Winkler, A. (2012). Internet Addiction: A Brief Summary of Research and Practice. *Current psychiatry reviews, 8*(4), 292–298. https://doi.org/10.2174/157340012803520513

Chang, F. C., Chiu, C. H., Miao, N. F., Chen, P. H., Lee, C. M., Chiang, J. T., & Pan, Y. C. (2015). The relationship between parental mediation and Internet addiction among adolescents, and the association with cyberbullying and depression. *Comprehensive psychiatry, 57*, 21–28. https://doi.org/10.1016/j.comppsych.2014.11.013

Chatterjee, D., & Rai, R. (2023). Behind the screens: Proposing a mentalization-based theoretical model of PIU. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 17*(5), Article 6. https://doi.org/10.5817/CP2023-5-6

Cicek, E., Ucar, M. T., & Öztürk, M. (2023). Risk factors associated with problematic internet use in high school students: a nested case-control study. *Addicta, 10*(2), 115-26.

Coeffec, A., Romo, L., Cheze, N., Riazuelo, H., Plantey, S., Kotbagi, G., & Kern, L. (2015). Early substance consumption and problematic use of video games in adolescence. *Front Psychol, 6*, 501. https://doi.org/10.3389/fpsyg.2015.00501

Compton, W. M., Thomas, Y. F., Stinson, F. S., & Grant, B. F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the national epidemiologic survey on alcohol and related conditions. *Archives of general psychiatry, 64*(5), 566–576. https://doi.org/10.1001/archpsyc.64.5.566

Connery, H. S., McHugh, R. K., Reilly, M., Shin, S., & Greenfield, S. F. (2020). Substance Use Disorders in Global Mental Health Delivery: Epidemiology, Treatment Gap, and Implementation of Evidence-Based Treatments. *Harvard review of psychiatry, 28*(5), 316–327. https://doi.org/10.1097/HRP.0000000000000271

Cranford, J. A., Eisenberg, D., & Serras, A. M. (2009). Substance use behaviors, mental health problems, and use of mental health services in a probability sample of college students. *Addictive behaviors, 34*(2), 134-145.

Crocq M. A. (2007). Historical and cultural aspects of man's relationship with addictive drugs. *Dialogues in clinical neuroscience, 9*(4), 355–361. https://doi.org/10.31887/DCNS.2007.9.4/macrocq

Dahl, D., & Bergmark, K. H. (2020). Persistence in Problematic Internet Use-A Systematic Review and Meta-Analysis. *Frontiers in sociology, 5,* 30. https://doi.org/10.3389/fsoc.2020.00030

Daley, D. C. (2013). Family and social aspects of substance use disorders and treatment. *Journal of food and drug analysis, 21*(4), S73–S76. https://doi.org/10.1016/j.jfda.2013.09.038

Davis, A., McMaster, P., Christie, D. C., Yang, A., Kruk, J. S., & Fisher, K. A. (2023). Psychiatric comorbidities of substance use disorders: does dual diagnosis predict inpatient detoxification treatment outcomes?. *International Journal of Mental Health and Addiction, 21*(6), 3785-3799. https://doi:10.1007/s11469-022-00821-1

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in human behavior, 17*(2), 187-195. https://doi.org/10.1016/S0747-5632(00)00041-8

Deutrom, J., Katos, V., Al-Mourad, M. B., & Ali, R. (2022). The relationships between gender, life satisfaction, loneliness and problematic internet use during COVID-19: Does the lockdown matter?. *International journal of environmental research and public health, 19*(3), 1325. https://doi: 10.3390/ijerph19031325

Dib, J., Haddad, C., Sacre, H., Akel, M., Salameh, P., Obeid, S., & Hallit, S. (2021). Factors associated with PIU among a large sample of Lebanese adolescents. *BMC Pediatrics*, *21*(1). https://doi.org/10.1186/s12887-021-02624-0

Diotaiuti, P., Mancone, S., Corrado, S., De Risio, A., Cavicchiolo, E., Girelli, L., & Chirico, A. (2022). Internet addiction in young adults: The role of impulsivity and codependency. *Frontiers in psychiatry, 13*, 893861. https://doi.org/10.3389/fpsyt.2022.893861

Dong, G., Lu, Q., Zhou, H., & Zhao, X. (2011). Precursor or sequela: pathological disorders in people with Internet addiction disorder. *PloS one, 6*(2), e14703. https://doi.org/10.1371/journal.pone.0014703

Ersche, K. D., Turton, A. J., Pradhan, S., Bullmore, E. T., & Robbins, T. W. (2010). Drug addiction endophenotypes: Impulsive versus sensation-seeking personality traits. *Biological Psychiatry, 68*(8), 770–773. https://doi.org/10.1016/j.biopsych.2010.06.015

Estevez, A., Jauregui, P., Sanchez-Marcos, I., Lopez-Gonzalez, H., & Griffiths, M. D. (2017). Attachment and emotion regulation in substance addictions and behavioral addictions. 4. https://doi.org/10.1556/2006.6.2017.086

Ezeugwu, C. R., & Ojedokun, O. (2020). Masculine norms and mental health of African men: what can psychology do?. *Heliyon, 6*(12), e05650. https://doi.org/10.1016/j.heliyon.2020.e05650

Faghani, N., Akbari, M., Hasani, J., & Marino, C. (2020). An emotional and cognitive model of PIU among college students: The full mediating role of cognitive factors. *Addictive behaviors, 105*, 106252. https://doi.org/10.1016/j.addbeh.2019.106252

Fattore, L., Melis, M., Fadda, P., & Fratta, W. (2014). Sex differences in addictive disorders. *Frontiers in neuroendocrinology, 35*(3), 272-284.

Fonseca Casals, F., Robles-Martínez, M., Tirado Muñoz, J., Alías i Ferri, M., Mestre-Pintó, J. I., Coratu, A. M., & Torrens, M. (2021). A gender perspective of addictive disorders. *Curr Addict Rep, 8,* 89–99. https://doi.org/10.1007/s40429-021-00357-9

Galbin, A. (2012). An introduction to social constructionism. Social Research Reports, 26, 82-92.https://www.researchreports.ro/images/researchreports/social/srr_2014_vol026_004.pdf

Gallimberti, L., Buja, A., Chindamo, S., Terraneo, A., Marini, E., Rabensteiner, A., Vinelli, A., Gomez Perez, L. J., & Baldo, V. (2016). Problematic cell phone use for text messaging and substance abuse in early adolescence (11- to 13-year-olds). *Eur J Pediatr, 175*(3), 355-364. https://doi.org/10.1007/s00431-015-2645-y

Gámez-Guadix, M., Calvete, E., Orue, I., & Las Hayas, C. (2015). Problematic Internet use and problematic alcohol use from the cognitive-behavioral model: a longitudinal study among adolescents. *Addictive behaviors, 40*, 109–114. https://doi.org/10.1016/j.addbeh.2014.09.009

Geisner, I. M., Larimer, M. E., & Neighbors, C. (2004). The relationship among alcohol use, related problems, and symptoms of psychological distress: Gender as a moderator in a college sample. *Addictive Behaviors, 29,* 843−848.

Gomez, R., Stavropoulos, V., Brown, T., & Griffiths, M. D. (2022). Factor structure of ten psychoactive substance addictions and behavioural addictions. *Psychiatry Research*, *313*, 114605. https://doi.org/10.1016/j.psychres.2022.114605

Greenfield, D. (1999). *Virtual addiction: Help for Netheads, Cyberfreaks, and those who love*

Griffiths, M. D., Kuss, D. J., Billieux, J., & Pontes, H. M. (2016). The evolution of Internet addiction: A global perspective. *Addictive behaviors, 53*, 193-195. https://doi: 10.1016/j.addbeh.2015.11.001

Gusfield, J.R. (1996). Contested Meanings: The construction of alcohol problems. Madison: University of Wisconsin Press.

Hassan, T., Alam, M. M., Wahab, A., & Hawlader, M. D. (2020). Prevalence and associated factors of internet addiction among young adults in Bangladesh. *Journal of the Egyptian Public Health Association, 95*, 1-8. https://doi.org/10.1186/s42506-019-0032-7

Henzel, V., & Hakansson, A. (2021). Hooked on virtual social life. Problematic social media use and associations with mental distress and addictive disorders. *PLoS One, 16*(4), e0248406. https://doi.org/10.1371/journal.pone.0248406

Herman, A. A., Stein, D. J., Seedat, S., Heeringa, S. G., Moomal, H., & Williams, D. R. (2009). The South African Stress and Health (SASH) study: 12-month and lifetime prevalence of common mental disorders. *South African medical journal, 99*(5).

Hinshaw, S. P. (2023). Stigma Related to Substance Use and Addiction: The Long Journey Ahead—Commentary on Krendl and Perry (2023). *Psychological Science in the Public Interest, 24*(2), 75-81. https://doi.org/10.1177/15291006231202775

Hou, B., Li, Y., & Wang, H. (2022). Internet use and health status among older adults: The mediating role of social participation. *Frontiers in public health, 10,* 1072398. https://doi.org/10.3389/fpubh.2022.1072398

Hwang, J. Y., Choi, J. S., Gwak, A. R., Jung, D., Choi, S. W., Lee, J., Lee, J. Y., Jung, H. Y., & Kim, D. J. (2014). Shared psychological characteristics that are linked to aggression between patients with Internet addiction and those with alcohol dependence. *Ann Gen Psychiatry, 13*(1), 6. https://doi.org/10.1186/1744-859X-13-6

Islam, M. A., & Hossin, M. Z. (2016). Prevalence and risk factors of problematic internet use and the associated psychological distress among graduate students of Bangladesh. *Asian journal of gambling issues and public health, 6,* 1-14.

Jojo, C. E., & Sundaramoorthy, J. (2022). Personality traits associated with internet addiction among college students in South India. *Cogent Education, 9*(1). https://doi.org/10.1080/2331186x.2022.2142455

Kaswa R, De Villiers M. (2020). Prevalence of substance use amongst people living with human immunodeficiency virus who attend primary healthcare services in Mthatha, South Africa. *S Afr Fam Pract. 62*(1), a5042. https://doi.org/10.4102/safp.v62i1.5042

Khalil, H., Peters, M., Godfrey, C.M., McInerney, P., Soares, C.B., Parker, D. (2016) An Evidence-Based Approach to Scoping Reviews. *Worldviews Evid Based Nurs. 13*(2):118-23. doi: 10.1111/wvn.12144. Epub 2016 Jan 28. PMID: 26821833.

Kittinger, R., Correia, C., & Irons, J. (2012). Relationship Between Facebook Use and PIU Among College Students. *Cyberpsychology, Behavior, And Social Networking*, *15(6)*, 324-327. https://doi.org/10.1089/cyber.2010.0410

Klingemann, J. I., & Klingemann, H. (2023). Masculinity and addiction: A narrative review of therapeutic interventions for men with substance-use disorders. *Alcoholism and Drug Addiction, 36*(3), 207–220. https://doi.org/10.5114/ain.2023.134777

Koob, G. F., Kandel, D. B., Baler, R. D., & Volkow, N. D. (2023). Neurobiology of addiction. In *Tasman's Psychiatry* (pp. 1-51). Cham: Springer International Publishing.

Kosinski, M., Bachrach, Y., Kohli, P. et al. Manifestations of user personality in website choice and behaviour on online social networks. *Mach Learn 95,* 357–380 (2014). https://doi.org/10.1007/s10994-013-5415-y

Kotyuk, E., Magi, A., Eisinger, A., Kiraly, O., Vereczkei, A., Barta, C., Griffiths, M. D., Szekely, A., Kokonyei, G., Farkas, J., Kun, B., Badgaiyan, R. D., Urban, R., Blum, K., & Demetrovics, Z. (2020). Co-occurrences of substance use and other potentially addictive behaviors: Epidemiological results from the Psychological and Genetic Factors of the Addictive Behaviors (PGA) Study. *J Behav Addict, 9*(2), 272-288. https://doi.org/10.1556/2006.2020.00033

Kovačić Petrović, Z., Peraica, T., Blažev, M., & Kozarić-Kovačić, D. (2023). Association between PIU and specific Internet activities and COVID-19- and earthquake-related stress, anxiety, and depression symptoms among Croatian young adults. *Frontiers in psychiatry, 14,* 1227182. https://doi.org/10.3389/fpsyt.2023.1227182

Kozak, K., Lucatch, A. M., Lowe, D. J. E., Balodis, I. M., MacKillop, J., & George, T. P. (2019). The neurobiology of impulsivity and substance use disorders: implications for treatment. *Annals of the New York Academy of Sciences, 1451*(1), 71–91. https://doi.org/10.1111/nyas.13977

Kożybka, M., Radlińska, I., Kolwitz, M., & Karakiewicz, B. (2023). PIU among Polish Students: Prevalence, Relationship to Sociodemographic Data and Internet Usage

Patterns. *International journal of environmental research and public health, 20*(3), 2434. https://doi.org/10.3390/ijerph20032434

Kumar, P., & Basu, D. (2000). Substance abuse by medical students and doctors. *Journal of the Indian Medical Association, 98*(8), 447–452.

Kuper, L. E., Gallop, R., & Greenfield, S. F. (2010). Changes in coping moderate substance abuse outcomes differentially across behavioral treatment modality. *The American journal on addictions,* 19(6), 543–549. https://doi.org/10.1111/j.1521-0391.2010.00074.x

Kuss, D. J., & Lopez-Fernandez, O. (2016). Internet addiction and problematic Internet use: A systematic review of clinical research. *World journal of psychiatry, 6*(1), 143–176. https://doi.org/10.5498/wjp.v6.i1.143

Laconi, S., Kaliszewska-Czeremska, K., Gnisci, A., Sergi, I., Barke, A., Jeromin, F., Groth, J., Gamez-Guadix, M., Ozcan, N. K., Demetrovics, Z., Király, O., Siomos, K., Floros, G., & Kuss, D. J. (2018). Cross-cultural study of Problematic Internet Use in nine European countries. *Computers in Human Behavior, 84*, 430-440. https://doi.org/10.1016/j.chb.2018.03.020

Laconi, S., Vigouroux, M., Lafuente, C., & Chabrol, H. (2017). Problematic internet use, psychopathology, personality, defense and coping. *Computers in Human Behavior, 73,* 47-54.

Lagerberg, T. V., Andreassen, O. A., Ringen, P. A., Berg, A. O., Larsson, S., Agartz, I., Sundet, K., & Melle, I. (2010). Excessive substance use in bipolar disorder is associated with impaired functioning rather than clinical characteristics, a descriptive study. BMC psychiatry, 10, 1-9. https://doi.org/10.1186/1471-244X-10-9

Lai F. T., Kwan J. L. (2017). Socioeconomic influence on adolescent problematic internet use through school-related psychosocial factors and pattern of internet use. *Comput. Hum. Behav. 68,* 121–136. 10.1016/j.chb.2016.11.021

Lakkunarajah, S., Adams, K., Pan, A.Y. (2022) A Trying Time: PIU (PIU) and its association with depression and anxiety during the COVID-19 Pandemic. *Child Adolesc Psychiatry Ment Health 16,* 49. https://doi.org/10.1186/s13034-022-00479-6

Lanthier-Labonté, S., Dufour, M., Milot, D. M., & Loslier, J. (2019). Is PIU associated with substance use among youth? A systematic review. *European Journal of Public Health, 29*(Supplement_4). https://doi.org/10.1093/eurpub/ckz185.471

Lee, H. J., Tran, D. D., & Morrell, H. E. R. (2018). Smoking, ADHD, and Problematic Video Game Use: A Structural Modeling Approach. *Cyberpsychol Behav Soc Netw, 21*(5), 281-286. https://doi.org/10.1089/cyber.2017.0429

Lee, H. W., Choi, J. S., Shin, Y. C., Lee, J. Y., Jung, H. Y., & Kwon, J. S. (2012). Impulsivity in internet addiction: a comparison with pathological gambling. *Cyberpsychology, behavior and social networking, 15*(7), 373–377. https://doi.org/10.1089/cyber.2012.0063

Letter, 15(7), 8.

Levac, D., Colquhoun, H. & O'Brien, K.K. Scoping studies: advancing the methodology. *Implementation Sci 5, 69* (2010). https://doi.org/10.1186/1748-5908-5-69

Liu, T. C., Desai, R. A., Krishnan-Sarin, S., Cavallo, D. A., & Potenza, M. N. (2011). Problematic Internet use and health in adolescents: data from a high school survey in Connecticut. *The Journal of clinical psychiatry*, *72*(6), 836–845. https://doi.org/10.4088/JCP.10m06057

Lochner, C., Albertella, L., Kidd, M., Kilic, Z., Ioannidis, K., Grant, J. E., Yücel, M., Stein, D. J., & Chamberlain, S. R. (2022). The COVID-19 pandemic and problematic usage of the internet: Findings from a diverse adult sample in South Africa. *Journal of Psychiatric Research, 153,* 229–235. https://doi.org/10.1016/j.jpsychires.2022.06.035

Lynch, F. L., Peterson, E. L., Lu, C. Y., Hu, Y., Rossom, R. C., Waitzfelder, B. E., Owen-Smith, A. A., Hubley, S., Prabhakar, D., Williams, L. K., Beck, A., Simon, G. E., & Ahmedani, B. K. (2020). Substance use disorders and risk of suicide in a general US population: a case control study. *Addiction science & clinical practice, 15*, 1-9. https://doi: 10.1186/s13722-020-0181-1

Lyvers, M., Narayanan, S. S., & Thorberg, F. A. (2020). Disordered social media use and risky drinking in young adults: Differential associations with addiction-linked traits. *Australian Journal of Psychology, 71*(3), 223-231. https://doi.org/10.1111/ajpy.12236

Maepa, M. P., & Wheeler, A. (2022). The Relationship between Personality Traits and Facebook Addiction among Adolescents in an Urban, Rural and Semi-Rural Secondary School. International *Journal of Environmental Research and Public Health. 19*(20):13365. https://doi.org/10.3390/ijerph192013365

Marazziti, D., Baroni, S., Mucci, F., Piccinni, A., Ghilardi, A., Fiorillo, A., Massimetti, G., Luciano, M., Sampogna, G., Moroni, I., & Dell'Osso, L. (2020). Characteristics of Internet Use amongst Italian University Students. *Psychiatr Danub, 32*(3-4), 411-419. https://doi.org/10.24869/psyd.2020.411

Marcum, C. D., Higgins, G. E., Freiburger, T. L., & Ricketts, M. L. (2012). Battle of the sexes: An examination of male and female cyber bullying. *International journal of cyber criminology, 6*(1).

Marmet, S., Studer, J., Wicki, M., Bertholet, N., Khazaal, Y., & Gmel, G. (2019). Unique versus shared associations between self-reported behavioral addictions and substance use disorders and mental health problems: A commonality analysis in a large sample of young Swiss men. *Journal of behavioral addictions, 8*(4), 664–677. https://doi.org/10.1556/2006.8.2019.70

Mays, N., Roberts, E. and Popay, J. (2001) Synthesising research evidence. In N. Fulop, P. Allen, A. Clarke and N. Black (eds) *Studying the Organisation and Delivery*

Mazhari S. (2012). The prevalence of PIU and the related factors in medical students, Kerman, Iran. *Addiction & health, 4*(3-4), 87–94.

McHugh, R. K., Votaw, V. R., Sugarman, D. E., & Greenfield, S. F. (2018). Sex and gender differences in substance use disorders. *Clinical psychology review, 66,* 12–23. https://doi.org/10.1016/j.cpr.2017.10.012

McKenzie, S. K., Collings, S., Jenkin, G., & River, J. (2018). Masculinity, Social Connectedness, and Mental Health: Men's Diverse Patterns of Practice. *American journal of men's health, 12*(5), 1247–1261. https://doi.org/10.1177/1557988318772732

McLellan A. T. (2017). Substance Misuse and Substance use Disorders: Why do they Matter in Healthcare? *Transactions of the American Clinical and Climatological Association, 128*, 112–130.

Mitchell, M. R., & Potenza, M. N. (2015). Importance of sex differences in impulse control and addictions. *Frontiers in psychiatry, 6,* 24. https://doi.org/10.3389/fpsyt.2015.00024

Mohajerin, B., Dolatshahi, B., Pour Shahbaz, A., & Farhoudian, A. (2013). Differences between expressive suppression and cognitive reappraisal in opioids and stimulant dependent patients. *International journal of high-risk behaviors & addiction, 2*(1), 8–14. https://doi.org/10.5812/ijhrba.8514

Mohamed, I.I., Ahmad, H.E.K., Hassaan, S.H. (2020) Assessment of anxiety and depression among substance use disorder patients: a case-control study. *Middle East Curr Psychiatry, 27*, 22. https://doi.org/10.1186/s43045-020-00029-w

Moreno, M., Riddle, K., Jenkins, M. C., Singh, A. P., Zhao, Q., & Eickhoff, J. (2022). Measuring PIU, Internet Gaming Disorder, and Social Media Addiction in Young Adults: Cross-sectional Survey Study. *JMIR public health and surveillance, 8*(1), e27719. https://doi.org/10.2196/27719

Moretta, T., & Buodo, G. (2020). Problematic Internet use and loneliness: How complex is the relationship? A short literature review. *Current Addiction Reports, 7*, 125-136.

Moretta, T., Buodo, G., Demetrovics, Z., & Potenza, M. N. (2022). Tracing 20 years of research on problematic use of the internet and social media: Theoretical models, assessment tools, and an agenda for future work. *Comprehensive Psychiatry, 112,* 152286. https://doi.org/10.1016/j.comppsych.2021.152286

Morioka, H., Itani, O., Osaki, Y., Higuchi, S., Jike, M., &Kaneita, Y. et al. (2017). The association between alcohol use and PIU: A large-scale nationwide cross-sectional study of adolescents in Japan. *Journal of Epidemiology*, *27*(3), 107-111. https://doi.org/10.1016/j.je.2016.10.004

Morris, E. P., Stewart, S. H., & Ham, L. S. (2005). The relationship between social anxiety disorder and alcohol use disorders: A critical review. *Clinical Psychology Review, 25,* 734−760.

Munn, Z., Pollock, D., Khalil, H., Alexander, L., Mclnerney, P., Godfrey, C. M., Peters. M., & Tricco, A. C. (2022). What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis. *JBI Evidence Synthesis, 20*(4), 950-952.

Musetti, A., Terrone, G., Schimmenti, A. (2018). An exploratory study on PIU predictors: Which role for attachment and dissociation? *Clin. Neuropsychiatry, 15*, 35–41.

Myers, M. G., & Kelly, J. F. (2006). Cigarette smoking among adolescents with alcohol and other drug use problems. *Alcohol research & health : the journal of the National Institute on Alcohol Abuse and Alcoholism, 29*(3), 221–227.

Neilson, E. C., Singh, R. S., Harper, K. L., & Teng, E. J. (2020). Traditional Masculinity Ideology, Posttraumatic Stress Disorder (PTSD) Symptom Severity, and Treatment in Service Members and Veterans: A Systematic Review. *Psychology of Men & Masculinities.* Advance online publication. http://dx.doi.org/10.1037/men0000257

Nowell, L., Norris, J., White, D., & Moules, N. (2017). Thematic Analysis. International *Journal of Qualitative Methods, 16*(1), 2. https://doi.org/10.1177/1609406917733847

Nwagu, E. N., Dibia, S. I. C., & Odo, A. N. (2017). Socio-cultural norms and roles in the use and abuse of alcohol among members of a rural community in Southeast Nigeria. *Health education research, 32*(5), 423-436.

Onaemo, V. N., Fawehinmi, T. O., & D'Arcy, C. (2022). Risk of suicide ideation in comorbid substance use disorder and major depression. *PloS one, 17*(12), e0265287. https://doi.org/10.1371/journal.pone.0265287

Orhon, F., Ergin, A., Topçu, S., Çolak, B., Almiş, H., Durmaz, N., Aygün, B., Boran, P., Bağ, Ö., Ayçiçek, T., Altun, D., & Başkan, S. (2023). The role of social support on the relationships between internet use and sleep problems in adolescents during COVID-19 pandemic: a multicentre study. *Child and adolescent mental health, 28*(1), 117–123. https://doi.org/10.1111/camh.12626

Orzack, M. (1999). Computer addiction: Is it real or is it virtual? *Harvard Mental Health*

Parent, M. C., Gobble, T. D., & Rochlen, A. (2019). Social Media Behavior, Toxic Masculinity, and Depression. *Psychology of men & masculinity, 20*(3), 277–287. https://doi.org/10.1037/men0000156

Parmar, A., & Kaloiya, G. (2018). Comorbidity of Personality Disorder among Substance Use Disorder Patients: A Narrative Review. *Indian journal of psychological medicine, 40*(6), 517–527. https://doi.org/10.4103/IJPSYM.IJPSYM_164_18

Paulus, F. W., Joas, J., Gerstner, I., Kühn, A., Wenning, M., Gehrke, T., Burckhart, H., Richter, U., Nonnenmacher, A., Zemlin, M., Lücke, T., Brinkmann, F., Rothoeft, T., Lehr, T., & Möhler, E. (2022). PIU among Adolescents 18 Months after the Onset of the COVID-19 Pandemic. *Children (Basel, Switzerland), 9*(11), 1724. https://doi.org/10.3390/children9111724

Peltzer, K., & Phaswana-Mafuya, N. (2018). Drug use among youth and adults in a population-based survey in South Africa. *The South African journal of psychiatry: SAJP: the journal of the Society of Psychiatrists of South Africa, 24,* 1139. https://doi.org/10.4102/sajpsychiatry.v24i0.1139

Pengpid, S., Peltzer, K., & Ramlagan, S. (2021). Prevalence and correlates of hazardous, harmful or dependent alcohol use and drug use amongst persons 15 years and older in South Africa: Results of a national survey in 2017. *African journal of primary health care & family medicine, 13*(1), e1–e8. https://doi.org/10.4102/phcfm.v13i1.2847

Penguin Books.

Peters, M. D., Marnie, C., Colquhoun, H., Garritty, C. M., Hempel, S., Horsley, T., ... & Tricco, A. C. (2021). Scoping reviews: reinforcing and advancing the methodology and application. *Systematic reviews, 10*(1), 1-6.

Peters, M.D.J., Godfrey, C., McInerney P, Munn Z, Tricco AC, Khalil, H. Chapter 11: Scoping Reviews (2020). Aromataris E, Munn Z, editors. *JBI Manual for Evidence Synthesis.* JBI; 2020. Available from https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-12

Peters, M.D.J., Marnie, C., Tricco, A.C., Pollock, D., Munn, Z., Alexander, L. (2021). Updated methodological guidance for the conduct of scoping reviews. JBI evidence synthesis, 18(10), 2119-2126. https://10.11124/JBIES-20-00167

Pettorruso, M., Valle, S., Cavic, E., Martinotti, G., di Giannantonio, M., & Grant, J. E. (2020). PIU (PIU), personality profiles and emotion dysregulation in a cohort of young adults: trajectories from risky behaviors to addiction. *Psychiatry research, 289,* 113036. https://doi.org/10.1016/j.psychres.2020.113036

Qeadan, F., Egbert, J., & English, K. (2022). Associations between PIU and substance misuse among US college students. *Computers in Human Behavior,* 107327. https://doi.org/10.1016/j.chb.2022.107327

Redžepagić, Š., & Ladas, A. I. (2023). Prospective memory, sustained attention and response inhibition in poly-substance users stable on methadone maintenance treatment. *Substance Use & Misuse, 58*(3), 397-405. https://doi: 10.1080/10826084.2023.2165410

Reid Chassiakos, Y. L., Radesky, J., Christakis, D., Moreno, M. A., Cross, C., Hill, D., Ammenuddin, N., Hutchinson, J., Levine, A., Boyd, R., Mendelson, R., & Swanson, W. S. (2016). Children and adolescents and digital media. *Pediatrics, 138*(5). https://doi.org/10.1542/peds.2016-2593

Reidy, D. E., Berke, D. S., Gentile, B., & Zeichner, A. (2016). Masculine discrepancy stress, substance use, assault and injury in a survey of US men. *Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention, 22*(5), 370–374. https://doi.org/10.1136/injuryprev-2015-041599

Richert, T., Anderberg, M. & Dahlberg, M (2020). Mental health problems among young people in substance abuse treatment in Sweden. *Subst Abuse Treat Prev Policy, 15*, 43. https://doi.org/10.1186/s13011-020-00282-6

Roberts, A., Sharman, S., & Bowden-Jones, H. (2022). Clinical services for problematic internet usage. *Current Opinion in Behavioral Sciences, 46,* 101180. https://doi.org/10.1016/j.cobeha.2022.101180

Romer Thomsen, K., Callesen, M. B., Hesse, M., Kvamme, T. L., Pedersen, M. M., Pedersen, M. U., & Voon, V. (2018). Impulsivity traits and addiction-related behaviors in youth. *J Behav Addict, 7*(2), 317-330. https://doi.org/10.1556/2006.7.2018.22

Rücker, J., Akre, C., Berchtold, A., & Suris, J. C. (2015). PIU is associated with substance use in young adolescents. *Acta paediatrica (Oslo, Norway : 1992), 104*(5), 504–507. https://doi.org/10.1111/apa.12971

Saffari, M., Chen, H. P., Chang, C. W., Fan, C. W., Huang, S. W., Chen, J. S., Chang, K. C., & Lin, C. Y. (2022). Effects of sleep quality on the association between problematic

internet use and quality of life in people with substance use disorder. *BJPsych open, 8*(5), e155. https://doi.org/10.1192/bjo.2022.557

Salehi, M., Abbaspour, Z., Molana, A., & Shahini, N. (2023). Impulsivity, inhibition, and internet addiction in medical students of north of Iran. *Frontiers in Psychiatry, 13.* https://doi.org/10.3389/fpsyt.2022.1002625

Samara, M., Massarwi, A. A., El-Asam, A., Hammuda, S., Smith, P. K., & Morsi, H. (2021). The mediating role of bullying and victimisation on the relationship between PIU and substance abuse among adolescents in the UK: The parent–child relationship as a moderator. *Frontiers in Psychiatry, 12*. https://doi.org/10.3389/fpsyt.2021.493385

Santoniccolo, F., Trombetta, T., Paradiso, M. N., & Rollè, L. (2023). Gender and Media Representations: A Review of the Literature on Gender Stereotypes, Objectification and Sexualization. *International journal of environmental research and public health, 20*(10), 5770. https://doi.org/10.3390/ijerph20105770

Schick, M. R., Weiss, N. H., Contractor, A. C., Thomas, E. D., & Spillane, N. S. (2020). Difficulties Regulating Positive Emotions and Substance Misuse: The Influence of Sociodemographic Factors. *Substance use & misuse, 55*(7), 1173–1183. https://doi.org/10.1080/10826084.2020.1729205

Schlichthorst, M., King, K., Turnure, J., Phelps, A., & Pirkis, J. (2019). Engaging Australian men in masculinity and suicide - A concept test of social media materials and a website. *Health promotion journal of Australia: official journal of Australian Association of Health Promotion Professionals, 30*(3), 390–401. https://doi.org/10.1002/hpja.246

Shadzi, M. R., Salehi, A., & Vardanjani, H. M. (2020). Problematic internet use, mental health, and sleep quality among medical students: A path-analytic model. *Indian Journal of Psychological Medicine, 42*(2), 128-135.

Shokri, O., Potenza, M. N., & Sanaeepour, M. H. (2017). A preliminary study suggesting similar relationships between impulsivity and severity of problematic internet use in male and female Iranian college students. *International Journal of Mental Health and Addiction, 15,* 277-287.

Sinclair, H., Lochner, C., & Stein, D. J. (2016). Behavioural Addiction: a Useful Construct? *Current Behavioral Neuroscience Reports*, *3*(1), 43–48. https://doi.org/10.1007/s40473-016-0067-4

Singh, A., Levitt, E., Soreni, N., Van Ameringen, M., & MacKillop, J. (2022). Characterizing problematic internet use in a sample of heavy drinking emerging adults. *Psychol Addict Behav, 36*(4), 307-317. https://doi.org/10.1037/adb0000837

Singh, S., Mani Pandey, N., Datta, M., & Batra, S. (2021). Stress, internet use, substance use and coping among adolescents, young-adults and middle-age adults amid the 'new normal' pandemic era. *Clinical epidemiology and global health, 12,* 100885. https://doi.org/10.1016/j.cegh.2021.100885

Smith, D.E. (2012). The process addictions and the new ASAM definition of addiction. *J Psychoactive Drugs. 44*(1):1–4.

Spada, M. M. (2014). An overview of PIU. *Addictive behaviors, 39*(1), 3–6. https://doi.org/10.1016/j.addbeh.2013.09.007

Starcevic, V., & Khazaal, Y. (2017). Relationships between Behavioural Addictions and Psychiatric Disorders: What Is Known and What Is Yet to Be Learned?. *Frontiers in psychiatry, 8,* 53. https://doi.org/10.3389/fpsyt.2017.00053

Stockdale, L. A., & Coyne, S. M. (2020). Bored and online: Reasons for using social media, problematic social networking site use, and behavioral outcomes across the transition from adolescence to emerging adulthood. *Journal of adolescence, 79,* 173-183.

Su, W., Han, X., Yu, H., Wu, Y., & Potenza, M. (2020). Do men become addicted to internet gaming and women to social media? A meta-analysis examining gender-related differences in specific internet addiction. *Computers in Human Behavior*, 113, 106480. https://doi.org/10.1016/j.chb.2020.106480

Sun, Y., Li, Y., Bao, Y., Meng, S., Sun, Y., Schumann, G., Kosten, T., Strang, J., Lu, L., & Shi, J. (2020). Brief Report: Increased Addictive Internet and Substance Use Behavior During the COVID-19 Pandemic in China. *Am J Addict, 29*(4), 268-270. https://doi.org/10.1111/ajad.13066

Sun, Y., Li, Y., Bao, Y., Meng, S., Sun, Y., Schumann, G., Kosten, T., Strang, J., Lu, L., & Shi, J. (2020). Brief Report: Increased Addictive Internet and Substance Use Behavior During the COVID-19 Pandemic in China. *The American journal on addictions, 29*(4), 268–270. https://doi.org/10.1111/ajad.13066

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):696–710.

Teng, Z., Pontes, H. M., Nie, Q., Xiang, G., Griffiths, M. D., & Guo, C. (2020). Internet gaming disorder and psychosocial well-being: A longitudinal study of older-aged adolescents and emerging adults. *Addictive behaviors, 110,* 106530. https://doi.org/10.1016/j.addbeh.2020.106530

them. Oakland, CA: New Harbinger Publication.

Tindimwebwa, L. K., Ajayi, A. I., & Adeniyi, O. V. (2021). Prevalence and determinants of tobacco use amongst South African adults with mental illness in the Eastern Cape. *The South African journal of psychiatry : SAJP : the journal of the Society of Psychiatrists of South Africa, 27,* 1637. https://doi.org/10.4102/sajpsychiatry.v27i0.1637

Tomczyk, Ł., & Wąsiński, A. (2020). Risk Behaviors among Youths in a Two-Aspect Approach: Using Psychoactive Substances and Problematic Using of Internet. *Journal of Child & Adolescent Substance Abuse, 29*(1), 27-45. https://doi.org/10.1080/1067828x.2020.1805839

Tomita, A., & Manuel, J. I. (2020). Evidence on the Association Between Cigarette Smoking and Incident Depression From the South African National Income Dynamics Study 2008-2015: Mental Health Implications for a Resource-Limited Setting. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco, 22*(1), 118–123. https://doi.org/10.1093/ntr/nty163

Tomska, N., Ryl, A., Turon-Skrzypinska, A., Szylinska, A., Marcinkowska, J., Durys, D., & Rotter, I. (2022). Emotional State of Young Men in Relation to Problematic Internet Use. *Int J Environ Res Public Health, 19*(19). https://doi.org/10.3390/ijerph191912153

Torres-Berrio, A., Cuesta, S., Lopez-Guzman, S., & Nava-Mesa, M. O. (2018). Interaction Between Stress and Addiction: Contributions from Latin-American Neuroscience. *Frontiers in psychology, 9,* 2639. https://doi.org/10.3389/fpsyg.2018.02639

Tricco, A.C., Lillie E., Zarin W., O'Brien K. K., Colquhoun H., Levac D., Moher, D., Peters, M. D. J., Horsley T., Weeks L., Hempel S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., Godfrey, C. M., Macdonald, M. T., Langlois, E. V., Soares-Weiser, K., Moriarty, J., Clifford, T., Tunçalp, Ö., & Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med. 169*(7):467-473. doi: 10.7326/M18-0850. Epub 2018 Sep 4. PMID: 30178033.

Unger, J. B. (2014). Special issue on culture and substance use. *Substance use & misuse, 49*(8), 919–921. https://doi.org/10.3109/10826084.2014.887384

Van Rooij, A. J., Kuss, D. J., Griffiths, M. D., Shorter, G. W., Schoenmakers, T. M., & Van de Mheen, D. (2014). The (co-) occurrence of problematic video gaming, substance use, and psychosocial problems in adolescents. Journal of behavioral addictions, 3(3), 157-165. https://doi.org/10.1556/JBA.3.2014.013

Vassileva, J. & Conrod, P.J. (2018). Impulsivities and addictions: A multidimensional integrative framework informing assessment and interventions for substance use disorders. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *374*(1766), p. 20180137. doi:10.1098/rstb.2018.0137.

VILA, M., Carballo, J. L., & Coloma-Carmona, A. (2018). Academic outcomes and cognitive performance in problematic Internet users. *Adicciones, 30*(2).

Wartberg, L. & Kammerl, R. (2020). Empirical Relationships between Problematic Alcohol Use and a Problematic Use of Video Games, Social Media and the Internet and Their Associations to Mental Health in Adolescence. *Int. J. Environ. Res. Public Health , 17,* 6098. https://doi.org/10.3390/ijerph17176098

Whitesell, M., Bachand, A., Peel, J., & Brown, M. (2013). Familial, social, and individual factors contributing to risk for adolescent substance use. *Journal of addiction, 2013*(1), 579310.https://doi.org/10.1155/2013/579310

World Health Organization. (2022). World health statistics 2022: Monitoring health for the SDGs, sustainable development goals. Geneva.

Xie, X., Cheng, H., & Chen, Z. (2023). Anxiety predicts internet addiction, which predicts depression among male college students: A cross-lagged comparison by sex. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.1102066

Young, K. S. (1999). Internet Addiction: Symptoms, Evaluation, And Treatment. Innovations in Clinical Practice [serial on the Internet]. 17 Available from: http: //treatmentcenters.com/downloads/ internet-addiction.pdf .

Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences. *American behavioral scientist, 48*(4), 402-415. https://doi: 10.1016/j.addbeh.2015.05.016

Young, K. S. (2013). Treatment outcomes using CBT-IA with Internet-addicted patients. *Journal of behavioral addictions, 2*(4), 209–215. https://doi.org/10.1556/JBA.2.2013.4.3

Young, K. S. (2017). The evolution of Internet addiction. *Addictive Behaviors, 100*(64), 229-230.

Young, K. S., & De Abreu, C. N. (Eds.). (2010). *Internet addiction: A handbook and guide to evaluation and treatment.* John Wiley & Sons.

Zahrai, K., Veer, E., Ballantine, P. W., de Vries, H. P., & Prayag, G. (2022). Either you control social media or social media controls you: Understanding the impact of self-control on excessive social media use from the dual-system perspective. *Journal of Consumer Affairs, 56*(2), 806–848. https://doi.org/10.1111/joca.12449

Zhang, Y., Liu, Z., & Zhao, Y. (2021). Impulsivity, social support and depression are associated with latent profiles of internet addiction among male college freshmen. *Frontiers in Psychiatry, 12.* https://doi.org/10.3389/fpsyt.2021.642914

Zhang, Y., Mei, S., Li, L., Chai, J., Li, J., & Du, H. (2015). The Relationship between Impulsivity and Internet Addiction in Chinese College Students: A Moderated Mediation Analysis of Meaning in Life and Self-Esteem. PloS one, 10(7), e0131597. https://doi.org/10.1371/journal.pone.0131597

Zsido, A. N., Darnai, G., Inhof, O., Perlaki, G., Orsi, G., Nagy, S. A., Labadi, B., Lenard, K., Kovacs, N., Doczi, T., & Janszky, J. (2019). Differentiation between young adult Internet addicts, smokers, and healthy controls by the interaction between impulsivity and temporal lobe thickness. *J Behav Addict, 8*(1), 35-47. https://doi.org/10.1556/2006.8.2019.03

APPENDIX 1 – PRISMA-ScR CHECKLIST

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	X
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	ii
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	6
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	6
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Click here to enter text.
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	32
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	33
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	88
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	34
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence	36

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
		(e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	Click here to enter text.
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	Click here to enter text.
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	36
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	35
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Click here to enter text.
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	Click here to enter text.
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	89
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	89
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	41
Limitations	20	Discuss the limitations of the scoping review process.	64
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	62

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	Click here to enter text.

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.

APPENDIX 2 – SCREENING AND SELECTION

	PsychInfo	Science Direct	Scopus	Web of Science	
Folder 1	62	90	18	163	
Folder 2	32	97	37	106	
Folder 3	144				Overal Total
Total	**238**	**187**	**55**	**269**	**749**

First Screen (Title and key words)			
	Include	Exclude	Duplicates
PsychInfo	64	162	12
SD	5	165	17
Scopus	10	37	8
WoB	25	227	17

Second Screen (Title and Abstract)				
	Include	Exclude		
PsychInfo	8	218		
SD	0	170		
Scopus	6	41		
WoB	13	239		Overal Total
Total	**27**	**668**	**54**	**749**

Third Screen (Full text assessed for eligibility)				
	Include	Exclude		
PsychInfo	5	221		
SD	0	170		
Scopus	4	43		
WoB	7	246		Overal Total
Total	**16**	**680**	**54**	**749**

Reasons for Exclusion
1. Duplicate articles
2. The articles that are relevant to the research topic don't align with the research question.
3. Articles make no mention of PIU and SUD, even separately or in men.
4. Articles do not meet the inclusion criteria. PIU or SUD, 18–35 years old; adult men.
5. The focus is on adolescents and women.

Inclusion criteria
1. Englsih studies
2. 18 - 35 year old men
3. Mention PIU and SUD in men or broadly
4. Published 10 years on the topic (from 2013 onwards)

PsychInfo | Scopus | WebOfScience | Screening & selection

APPENDIX 3 – ELIGIBILITY SPREADSHEET AND FINDINGS

Author(s)	Title	Journal Name	Design	Sample	Country	Age	Findings
Akpinar et al. 2021	Prevalence of Risk for Substance-Related and Behavioral Addictions Among University Students in Turkey	ADDICTA: The Turkish Journal on Addictions	Quanti	612 female and male students	Turkey	18 and above	The study revealed varying rates of addictive behaviours among students. The prevalence of potential alcohol dependence, pathological internet use, and potential smartphone addiction stood at 2.0%, 11.4%, and 24.7%, respectively. Only 0.3% reported severe problems with substance use. Different addiction types exhibited distinct gender and age patterns. Men showed higher rates of potential alcohol dependence, pathological gambling, gaming addiction, and sex/pornography addiction. Meanwhile, mild nicotine addiction, PIU, possible smartphone addiction, food addiction, and gaming addiction were more common in the 18–24 age group compared to older students.
Lyvers et al. 2020	Disordered social media use and risky drinking in young adults: Differential associations with addiction-linked traits	Australian Journal of Psychology	Quanti	143 females and males	Australia	18–35	Disordered social media use was significantly negatively correlated with age and social desirability and was significantly positively correlated with risky drinking. Present results point to similarities and differences in addiction-linked traits when comparing disordered social media use to risky or problematic substance use. Disordered social media use was predicted by narcissism, reward sensitivity, and impulsivity, whereas risky alcohol use was predicted by narcissism, alexithymia, and impulsivity.
Laconi et al. 2018	Cross-cultural study of PIU in nine European countries	Computers in Human Behavior	Cross-cultural	5593 female and males	Europe	18 - 87	PIU was related to time spent online at weekends, obsessive-compulsive symptoms, hostility, and paranoid ideation among the total sample of women; among men, phobic anxiety was also significant. Prevalence estimates of PIU ranged between 14.3% and 54.9%. PIU was more prevalent among women in the respective samples, including the total sample.
Lee et al 2018	Smoking, ADHD, and Problematic Video Game Use: A Structural Modeling Approach	Cyberpsychol Behav Soc Netw	Quanti/ Structural modeling approach	2,801 females and males	Canada Germany Sweden United States	18 - 57	Results suggest that greater ADHD symptomatology, cigarette use, and video game use may all be associated with problematic use of video games. Together, ADHD symptomatology, smoking behaviour, and the amount of video game use appear to have a significant impact on PVGU.
Kotyuk, et al. 2020	Co-occurrences of substance use and other potentially addictive behaviors: Epidemiological results from the Psychological and Genetic Factors of the Addictive Behaviors (PGA) Study	J Behav Addict	Quanti	3,003 female and males	Hungary	mean age 21 years	Associations were found between: (i) smoking and PIU; exercising; eating disorders; and gambling (ii) alcohol consumption and PIU, problematic online gaming, gambling; and eating disorders; and (iii) Cannabis use and problematic online gaming and gambling

Zsido, et al. 2019	Differentiation between young adult Internet addicts, smokers, and healthy controls by the interaction between impulsivity and temporal lobe thickness	J Behav Addict	Quanti/Control	30 female and males	Hungary	19–28 years	Internet addicts had a thinner left superior temporal cortex than controls. Further analysis of smokers revealed that the left middle temporal and left transverse temporal cortical thickness changes might be exclusive to Internet addiction. The effects of impulsivity, combined with long-term exposure to some specific substance or stimuli, might result in different types of relationships between impulsivity and brain structure when compared to healthy controls. The results may indicate that Internet addiction is similar to substance-related addictions, such that inefficient self-control could result in maladaptive behaviour and the inability to resist Internet use.
Baroni et al. 2019	PIU in drug addicts under treatment in public rehab centers	World J Psychiatry	Quanti	183 female and males	Southern Italy		The findings indicated that PIU is more common in subjects taking cocaine and cannabis than in subjects taking opioids or alcohol, and that the also affected by pathological gambling disorder. This suggests a favoring role of stimulant drugs towards the development of behavioral addictions. The relationship between time spent online and body mass index indicates that Internet use might be a factor that promotes weight gain and obesity. Addiction prevention should take into consideration PIU, which currently represents a worldwide epidemic.
Tomska et al.2022	Emotional State of Young Men in Relation to PIU	Int J Environ Res Public Health	Quanti	500 men	Poland	18-30	There was a correlation between the severity of mild depression symptoms and the occurrence of anxiety, verbal and physical aggression, and PIU.
Estevez et al.2017	Attachment and emotion regulation in substance addictions and behavioral addictions	Journal of Behavioral Addictions	Quanti	472 female and males students	Spain	13-21	Findings demonstrated that emotion regulation was predictive of all addictive behaviors assessed in this study (alcohol and drug abuse, gambling disorder, video game addiction, and PIU). In addition, gender differences were found, with females scoring significantly higher in maternal and peer attachment, whereas males scored significantly higher in gambling disorder and video game addiction.
Romer et al.2018	Impulsivity traits and addiction-related behaviors in youth	J Behav Addict	Quanti	109 females and males		16–26 years	The UPPS-P model was positively associated with indicators of all addiction-related behaviours except problematic Internet gaming. In the fully adjusted models, sensation seeking, and lack of perseverance were associated with the problematic use of alcohol; urgency was associated with the problematic use of cannabis; and lack of perseverance was associated with the problematic use of other drugs than cannabis. Furthermore, urgency and lack of perseverance were associated with binge eating, and lack of perseverance was associated with problematic use of pornography.
Marazziti et al. 2020	Characteristics of Internet Use amongst Italian University Students	Psychiatr Danub	Quanti	3324 females and males	Italy	23.4±5	Men were more involved in online recreational activities, whereas women seemed more attracted to instant messaging and, generally, to social networks. PIU was significantly more prevalent in men than women. The findings of the present study indicate that the use of Internet through new technologies may exceed its real utility amongst Italian university student, with some sex-related differences. Men seem more prone to use Internet for passing time and women for social relationships. Men are also at risk of developing PIU. Again, Internet use might be a basic vulnerability factor of increasing weight gain and obesity amongst young people. No information was gathered on emotional distress, or associated mental disorders, substance abuse and disturbed behaviours that are currently under investigation.
Adorjan et al.2021	A cross-sectional survey of internet use among university students	Eur Arch Psychiatry Clin Neurosci	Quanti/ Cross-sectional study	483 female and males' students	Germany	17–62	The study found no significant differences in substance use between AIU + and AIU - groups, except in random browsing. However, there was no higher prevalence of substance use among students with AIU. Except in the area of random browsing, where the AIUr + group consumed energy drinks more frequently than the AIUr group.
Henzel et al. 2021	Hooked on virtual social life. Problematic social media use and associations with	PLoS One	Qaunti/Cross-sectional study	2118 females and male	Sweden	16 - 50 & above	Problematic social media use was associated with younger age, time spent using instant messaging services, and mental distress, but not with education level, occupational status, or treatment needs for alcohol or drug problems.

	mental distress and addictive disorders						
Singh et al. 2022	Characterizing PIU in a sample of heavy drinking emerging adults	Psychol Addict Behav	Longitudinal study	730 females and males	Ontario	19 - 22	PIU showed no association with SUD but was positively associated with MHD.
Sun et al.2020	Brief Report: Increased Addictive Internet and Substance Use Behavior During the COVID-19 Pandemic in China	Am J Addict	Quanti	6416 females and males	China	28	These three coping behaviors (internet, alcohol, and smoking) during this COVID-19-related crisis appear to have increased the risk for substance use disorders and internet addiction. The overall rate of alcohol drinking and smoking among the 6416 participants increased only marginally during the COVID-19 pandemic, from 31.3% (n = 2006) to 32.7% (n = 2098) for drinking and from 12.8% (n = 822) to 13.6% (n = 873) for smoking. Among those who were severely addicted to internet use, their dependence degree (IAT score) rose 20 times more often than it declined.
Hwang et al 2014	Shared psychological characteristics that are linked to aggression between patients with Internet addiction and those with alcohol dependence	Ann Gen Psychiatry	Quanti/Control Trial	90 males	South Korea		The IA and Alcohol Dependent groups showed a lower level of agreeableness and higher levels of neuroticism, impulsivity, and anger expression compared with the HC group, which are characteristics related to aggression. The addiction groups showed lower levels of extraversion, openness to experience, and conscientiousness and were more depressed and anxious than the Healthy Controls, and the severity of IA and AD symptoms was positively correlated with these types of psychopathology. IA and AD are similar in terms of personality, temperament, and emotion, and they share common characteristics that may lead to aggression. Our findings suggest that strategies to reduce aggression in patients with IA are necessary and that IA and AD are closely related and should be dealt with as having a close nosological relationship.