# A SCOPING REVIEW OF THE MENTAL HEALTH OF UNIVERSITY STUDENTS WHO USE CANNABIS IN SOUTH AFRICA.

**BY**

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# ABSTRACT

Cannabis use amongst university students continues to rise and remains a public health concern. It is of paramount importance to find out the impact of cannabis use on students' mental health. Cannabis use and other substances amongst students is often linked to adverse psychological, health and academic outcomes. The study aimed to conduct a scoping review of the mental health of university students who use cannabis in South Africa.

The study used the five steps outlined by Arksey and O'Malley as a methodological framework. A search was conducted on Google scholar, EBSCOhost, PubMed, as well as grey literature on websites such as the World Health Organization (WHO) and government websites to identify scoping review studies. Due to meeting the inclusion criteria, 54 studies were included in the final review. This included mental health of university students who use cannabis.

The results showed that cannabis use is linked to several mental health problems and may contribute to cognitive decline. Students were found to hold positive views about cannabis and did not view it as a serious health risk. There are several factors that contribute to the use of cannabis, including peer-influence and parental attitudes, stress, psychosocial stressors, and social milieu. Cannabis use can be reduced using student focused programs, motivational interviewing and drug education. In conclusion, there is a need to educate students through evidenced based research regarding the negative mental health effects of using cannabis.

KEY words: Cannabis, Student and Mental health.

## DECLARATION

I declare that **A SCOPING REVIEW OF THE MENTAL HEALTH OF UNIVERSITY STUDENTS WHO USE CANNIBIS IN SOUTH AFRICA** (Mini dissertation) submitted at the University of KwaZulu-Natal for a Master of Social Science in Clinical Psychology, has not been previously submitted by me for a degree at this or any other university; that it is my work in design and execution, and the material contained herein has been dully acknowledged.

Magagane Kgothatso Alpheus Date

[redacted] 31/01/2023

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## DEDICATION

I would like to dedicate this mini dissertation to my family. My mother, father, siblings and partner. You have all supported me through this arduous journey. My beloved mother, you have stood by me from the beginning and never stopped believing in me despite the countless hurdles. Your enduring support held me during times when my strength was failing. To the divine God, thank you for sending angels into my life to help make this journey a success. I appreciate all my colleagues, for the constant encouragement and support during my weakest moments. I could not have achieved this alone.

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Finally, thank you to my family and friends for the support and encouragement.

## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| MI | = Motivational Interviewing |
| NIDA | = National Institute on Drug Abuse |
| UNODC | = United Nations Office on Drugs and Crime |
| WHO | = World Health Organisation |

## Contents

# CHAPTER 1: INTRODUCTION

The use and abuse of drugs is a significant concern in South Africa, where the use of drugs exceeds the world norm, according to Tshitangano and Tosin (2016). The authors mentioned that, in South Africa, over 15% of individuals are reported to have a drug problem, with cannabis as the most commonly used drug. It was further stated that, in the use of all substances, males had higher prevalence rates as compared to females, with alcohol, cigarettes, cannabis and glue being the most used substances (Ramlagan et al., 2010). According to the National Institute on Drug Abuse (NIDA) (2018), cannabis, also called - herb, weed pot, ganja, bud, grass, dagga, and a whole lot of slang terms - is defined as a greenish-grey mixture of dried flowers of Cannabis Sativa. Cannabis has been legalised across many states including South Africa which just recently legalised marijuana for private use; this suggests that our societies' perceptions of marijuana are positive, hence, now more accepting of its use. According to Mokwena (2019) the legalisation of marijuana speaks to how the use of cannabis continues to gain social acceptance in South Africa. The legalisation of smoked marijuana will result in public health concerns, which will overwhelm South Africa's health system while posing a serious threat to many people (Mokwena, 2019)

Baker and Moreno (2021) conducted a longitudinal study on the effects recreational marijuana legalization on college students and reported that legalization suggested a climate that is increasingly supportive of cannabis use. However, this article focused on the mental health effects of using cannabis without expounding on the impacts of legalisation on cannabis use. The World Health Organisation (WHO) (2018) postulated that it is imperative for people to understand what is known about cannabis; both the harmful health effects and the benefits associated with the use of cannabis. This study conducted a scoping review of literature on the mental health of university students who use cannabis. The purpose of this study was to explore literature regarding the state of mental health for university students who use cannabis.

In this section the researcher has given the background to the study, the problem statement, the significance of the study, aim and objectives of the study. The researcher also outlined the research questions, limitations of the study, definition of key terms and the theoretical framework.

**Background to the study**

Cannabis is the most used illicit drug worldwide. It is reported by WHO (2018) that approximately half of the drug seizures in the world are caused by cannabis. Additionally, the seizures' spread is global, affecting every country. Cannabis is consumed by approximately 147 million people worldwide in 2018, which is 2.5% of the world's population. Cocaine and opiates are consumed by 0.2% and 0.2% of the world's population, respectively (WHO,2018). Marijuana use, although, legal in many countries still remains a major public health concern, affecting the health and well-being of millions of people around the world (Ayala et al., 2017).

Resko (2014) reports that among illicit drug users in America, approximately 64.3% per cent report using marijuana only. The use of marijuana usually begins amid adolescence and by 12th grade, in the United States about 36% of youth report past-year marijuana use (Resko, 2014). The author continues that in a longitudinal study of 1,000 people that used marijuana heavily during their adolescence up until adulthood, it was found that their IQ dropped alarmingly between the ages of 14 and 38. Marijuana use can also result in impaired judgment, leading to careless behaviour, such as driving while intoxicated or under the influence, or engaging in unprotected sexual activity. The risk of developing substance abuse disorders increases with the age at which marijuana use begins (Resko, 2014).

According to United Nations Office on Drugs and Crime (UNODC) (2018), substance abuse is a major concern in tertiary institutions around the world. It is estimated that 60% of students at university or college report alcohol use, and one in five report current marijuana use

being at disturbing levels. Frequent marijuana use amongst university students is associated with elevated risk of a myriad of problems, which are aggravated by users with previous mental health problems (Fernández-Artamendi et al., 2011). The author further reported that most university students who used cannabis also had existing mental health issues.

According to UNODC (2018), marijuana was the most commonly consumed drug around the world in 2016, with 192.2 million past-year users. That is about 3.9% of the world's population aged 15-45. In Central and West Africa, prevalence rates are 13.2 per cent, in Oceania, 11.0 per cent, and in North America, 12.9 (UNODC,2018). According to Batalla et al. (2013) marijuana in 2013 was the most widely available illicit drug and the most used globally. Marijuana is consumed by between 125 and 203 million people annually, mostly among the student population, 18 - 34 years, with a yearly prevalence rate of 2.8%–4.5% (Batalla et al., 2013).

In Africa, marijuana is also the most widely used illicit substance. Prevalence of use is found highest in Central and West Africa with rates between 5.2% and 13.5%, respectively (UNODC, 2018). WHO (2017) reports that in Mozambique, about 1.4% of students in secondary school smoke marijuana, with male students making up 2.1% and female students, 0.7%. Studies in Kenya reveal that cannabis is amongst the most used drugs along with alcohol and nicotine, with users being mostly university students from the age of 18-34 (Ministry of Health, 2017).

Sakiyo et al. (2013) indicated that marijuana use serves as an entry level drug, introducing one to the drug world. In 2012, a study carried out in Nigeria by Sakiyo et al. (2013) amongst students it was found that all students who had used illicit drugs had also used cannabis. The authors alluded that smoking marijuana is perceived by students as a normal process that they must experience in the process of growing up. Students' perception of

cannabis use has changed, with those who view using marijuana once or twice a week as perilous declining from 55.7% in 2008 to 39.6% in 2013 (Roditis et al., 2016). Social media is a key vehicle for exchanging cannabis-related information and perceptions, specifically amongst students. For example, more adolescents than adults tweeted concerning marijuana, between 2011 and 2012, with most of the tweets reflecting permissive views about marijuana (Roditis et al., 2016).

In South Africa among students, the use of cannabis was found prevalent in the provinces of Western Cape, Gauteng, Mpumalanga, Limpopo and Free State. Amongst adults, the most prevalent rates were in Gauteng, North-West and Western Cape Provinces (Peltzer et al., 2010). Marijuana use rates do not seem to be linked to educational levels. Schmidt et al. (2016) investigated students' perceptions on cannabis use before and after legalisation and found that students reported little to no concern about the risks of marijuana use after the passing of the law. It appears that state legalisation of cannabis does not influence students' perception of its use (Schmidt et al, 2016).

**Problem statement**

Substance abuse and misuse among young adults and adolescence, specifically university students, remain an important concerning issue for public health, usually associated with disturbing psychological, health and academic issues (Giovazolias et al., 2014). These psychological and health effects of substance use, in particular cannabis, motivated the researcher to explore literature on the state of mental health for university students who use cannabis. The traditional pattern of drug use and abuse has evolved from one involving primarily adults to one where young people are also involved (Resko, 2014).

NIDA (2018), reports that in 2015, more than 11 million youth, between the ages of 18-25 who are mostly university students used cannabis in the year 2014; additionally, the number

of students who perceive cannabis use to be harmful, is declining. With many states legalising marijuana, including South Africa, these views will be affected. In the World Drug Report (UNODC, 2018), based on data collected from 130 countries, it was estimated that 13.9 million youth (primarily students) between the ages of 16 and 23 smoked marijuana at least once in the past 12 months in 2016, representing 5.6% of the population in this age group, while 19.2 million individuals were between the ages of 15 and 64.

The Ministry of Health (2017) established that two hours of cannabis use has both physical and mental health effects; one may develop dry mouth, conjunctival infection (red eyes), exaggerated appetite and elevated heart rate. It is reported that cannabis users also have impaired motor co-ordination, anxiety, sensation of slowed time, euphoria and impaired judgement; this shows that as much as cannabis may be legal, its harmful effects still remain (Ministry of Health, 2017). As cannabis has gained legal status, there is concern that cannabis use may increase, and become a substitute for alcohol. It is against this background that the researcher explored literature on the mental health of university students who use cannabis.

**Significance of the study**

The study will contribute towards understanding views on mental health of cannabis users and can contribute towards demonstrating the future studies required. The study will shed light on the socially and culturally informed belief systems in South African universities with reference to cannabis use. The study will improve students' knowledge and awareness of the psychological and health effects of marijuana use, as well as help the University Management in planning intervention and awareness programs. The study will also benefit the Department of Social Development in its various social assistance programs. The results of the study will also be beneficial to the following stakeholders:

***Students***

The students will have improved insight about the harmful health and psychological effects of cannabis. Students who are knowledgeable will be able to make informed decisions and share knowledge with those outside the university. The study will also help potential cannabis users to avoid using the substance.

***University Management***

This study will help the University Management to be aware of the state of mental health for students using cannabis which will direct the necessary intervention and awareness programs to be implemented. The university management will be able to reach out to students who are at risk and those already affected through the use of this information.

***Department of Social Development***

The researcher hopes the Department of Social Development will conduct ongoing research on the negative mental health effects of marijuana use on university students. This will help influence policy and help the department develop campaigns and implement intervention programs aimed at reducing cannabis.

**Aim of the study**

- To explore literature regarding the mental health of university students who use cannabis in South Africa.

**Objectives of the study**

- To conduct a scoping review of literature on the factors that contribute towards cannabis use among university going students.

- To conduct a scoping review on literature to determine ways in which cannabis use can be reduced.

**Research questions**

- What is the mental health of university students who use cannabis?
- What are the factors that contribute towards cannabis use?
- What are the ways in which cannabis use can be reduced?

**Delimitation of the study**

The scoping review of literature focuses only on university students and no other populations.

**Definition of key terms**

- ***Cannabis:*** According to NIDA (2018) marijuana is a "greenish-grey mixture of the dried flowers of Cannabis Sativa." In this study cannabis refers to marijuana, dagga or weed.
- ***Student:*** Anyone who is learning at a college or university (Machemer & Crawford, 2007) and in this study, is anyone registered to study at any University.
- ***Mental health:*** Refers to one's psychological, emotional and social well-being which influences one's thoughts, feelings and actions (Merikangas et al., 2010). In this study, the same definition is used.

**Theoretical approach**

Social cognitive learning theory focuses on the learning process and social behaviour; it was conceptualised by Albert Bandura in the 1970s. There are two fundamental principles in the social cognitive learning theory indicating the psychological mechanisms that determine a person's behaviour: outcome expectancies, motivation, self-efficacy and social support

(Morgenstern, 1993). Self-efficacy has to do with individuals' conviction that they can have control over the facts that determines their lives and incorporates a general psychological process which intervenes in one's response (behaviourally) to received input (Bandura,1986). It also refers to an individual's assessment regarding their ability to execute behaviour in a particular situation. Outcome expectancies include an individual's convictions as to whether their indulgence in specific behaviours will lead to expected outcomes or not. They are a result of either an individual's immediate experience of a particular behaviour, or by observing others' experiences concerning the outcomes of this behaviour (Annis, 1990).

These people may include an individual's family, friends or famous people that represent an individual's dominant models (Bandura, 1986). These reveals how those who use cannabis have calculated the risks regarding its use and assessed whether they would be willing to use cannabis given the risks associated with use and the expectations that they have with respect to cannabis use. Cannabis users are therefore cognizant of the risks and benefits and whatever outcome that may result from use.

A person may realise, for example, that using marijuana makes one to relax by observing the positive effects experienced, when their parents or any model consume marijuana after a tedious day at work. Individuals calculate the benefits that they would get from using cannabis. The application of the social cognitive learning in addressing substance use notes that individuals uphold positive attitudes and expectancies towards substances by way of mimicking positive attitudes or statements of their models or by observation maintains that those who use substances, in this case marijuana, do so through observing others (models) and they imitate this from their models, or the people that they look up to (Annis, 1990). Social learning theory provides an important lens to understand and explain risk behaviours and provides a contextual approach that incorporates both individualistic and social/environmental factors.

## Conclusion

In this chapter the researcher has given the background of the study, which revealed global and local perceptions about cannabis and the state of mental health for university students as well as the statistics on cannabis use. The researcher outlined the research problem, significance of the study, the aim of this study and three research questions arising from the aim. The delimitation forced on the research, key terms and brief explanation of the supporting theory for the topic were provided in this chapter. The next chapter provides the methodological framework used in this study.

# CHAPTER 2: RESEARCH METHODOLOGY

To meet the objectives of this study a scoping review was adopted as a methodological framework. A scoping review of a body of literature can be of particular value when an area of study has not been thoroughly researched or is of a diverse nature (Armstrong et al., 2005). According to Arksey and O'Malley (2005) it aims to outline the current literature in an area of study by reviewing the nature, quantity and characteristics. Owing to the lack of extensive study on the current topic and the heterogeneity of the topic, a scoping review was deemed appropriate. Furthermore, a scoping review allowed the researcher to have a description of the reviewed literature without attempting to critically appraise each study or synthesize findings from multiple studies (Anderson et al., 2008).

The study aimed to conduct a scoping review of the mental health of university students who use cannabis in South Africa. As a methodological framework, this study used the five steps identified by Arksey and O'Malley (2005): "1) identifying the research question, 2) identifying relevant studies, 3) study selection, 4) charting the data and 5) collating, summarising and reporting the results."

## Step 1: identifying the research question

The researcher began by defining the research question, which included a review of the literature regarding the mental health of university students who use cannabis. Following are some of the research questions that were identified:

- What is the mental health of university students who use cannabis?
- What are the factors that contribute towards cannabis use?
- What are the ways in which cannabis use can be reduced?

## Step 2: identifying relevant studies

In order to locate relevant studies, the researcher conducted a comprehensive search of Google scholar, EBSCOhost, PubMed, as well as grey literature on websites such as the World

Health Organization (WHO) and government websites. June 17, 2021 was the date of the initial search. Databases were selected for their comprehensiveness and broad scope of coverage. Key concepts that were searched included cannabis use, cannabis users, mental health, mental illness, university students, and South Africa. A customized search query was used for each database, depending on its requirements.

Following consideration of the amount of time required to screen each hit and the possibility that further screening would yield a limited number of relevant articles, the researcher opted to screen only the first 100 hits (sorted by relevance) (Levac et al., 2010). Searches were performed manually in the databases. To get the most and current literature, the search included sources published within a 15-year period, from 2007 to 2022, that were written in English.

**Step 3: study selection**

The inclusion of studies was based on how broadly they described the mental health of university students who use cannabis. In the absence of adequate translation resources, articles published in languages other than English were excluded. Reference lists of excluded articles were reviewed to identify additional scoping reviews. This decision was further influenced by the limited access to search engines. The researcher selected studies that addressed cannabis users and mental health, cannabis use in universities, and included all study designs published from 2007 to date in order to conduct this study. Studies not primarily focused on cannabis use and mental health were excluded as well as studies from the media or social media. A set of duplicate citations were removed as they were discovered during the process.

First-level screening was limited to citation titles and abstracts to prevent wasting time and resources on articles that didn't meet the minimum inclusion criteria. Each citation was reviewed independent of the other by the researcher. A review of full articles whose abstracts

were unavailable was conducted in the data characterization phase for articles whose full articles did not have abstracts. Following the abstract and title screening, all citations deemed relevant were obtained for the full text review. The researcher attempted contacting the original author or journal for assistance following failure to obtain a desired article from the available databases.

**Table 1**

*INCLUSION/EXCLUSION CRITERIA*

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| Articles available in full text<br><br>Studies primarily focused on cannabis use and mental health<br><br>Studies focused on cannabis/substance use in universities<br><br>All study designs<br><br>Grey Literature | Studies not available in full text<br><br>Studies not primarily focused on cannabis use and mental health<br><br>Studies from the media or social media<br><br>Studies written or published in other languages other than English |

**Step 4: charting the data**

A charting template for Microsoft Excel was used by the researcher to analyse the data from each study. A number of factors were considered, including the names and years of publication of the authors, the type of publication, the purpose of the study, the population of each study, and the geographical location of the study. As part of the data extraction process, the methods, interventions, and key findings of the study were also included. In each study,

context data were extracted using a descriptive analytical approach. All studies that did not meet the eligibility criteria at this stage were excluded.

### *Quality Appraisal*

To evaluate the quality of the studies included in this scoping review the Mixed-Method Appraisal Tool (MMAT) was used. Although, it is an optional step in scoping reviews to assess the quality of included studies, the use of MMAT as a methodological rigour reveals how conclusions were confidently drawn from included studies and the underlying logic of the research design (Grant & Booth, 2009). This included the review of the methodological rigor of all included studies.

The researcher used the MMAT to determine whether studies to be included had clearly defined research questions that meet the objectives of the study. The research methods and design were evaluated to determine their relevance for answering the research questions. In addition, the researcher assessed whether the interpretations of the research results were consistent with the collected data. In essence, the research aimed at ensuring that there was a sound link between the data collected, analysis and interpretation. Moreover, to assess whether the correct conclusions were drawn in accordance to the data collected and analysed  Finally, the researcher assessed whether the findings were applicable to the study.

### Step 5: collating, summarising, and reporting of results

In reporting and summarising the data, the researcher presented a thematic analysis of the data and results were reported according to emerging themes. Thematic Analysis is a type of qualitative analysis used to dissect classifications and show themes that are associated to the data. It explains the data in great detail and bargains with different subjects by means of interpretations (Kothari & Garg, 2012).

Braun and Clarke (2006) identified a six-step guide which is a valuable system frame for conducting thematic analysis. Firstly, the researcher became familiar with the data. The primary step in any qualitative analysis, therefore, is reading, and re-reading the transcripts (Braun & Clarke (2006). Secondly, the researcher generated initial codes. In this stage the researcher began to compose the data in a coherent and systematic way. Coding reduces lots of data into little chunks of meaning (Alholjailan, 2012). Thirdly, the researcher searched for themes; a theme is a pattern that captures something noteworthy or curiously concerning the data and/or research question.

The researcher then reviewed the themes in the fourth step. During this stage the researcher reviewed, modified and developed the preliminary themes that were identified in the third step. The fifth step is to define themes. This is the final refinement of the themes, and the researcher identified the quintessence of what each pattern was about. The sixth and final step is the writing-up. The researcher finally writes a report, which in this case was the final dissertation.

**Conclusion**

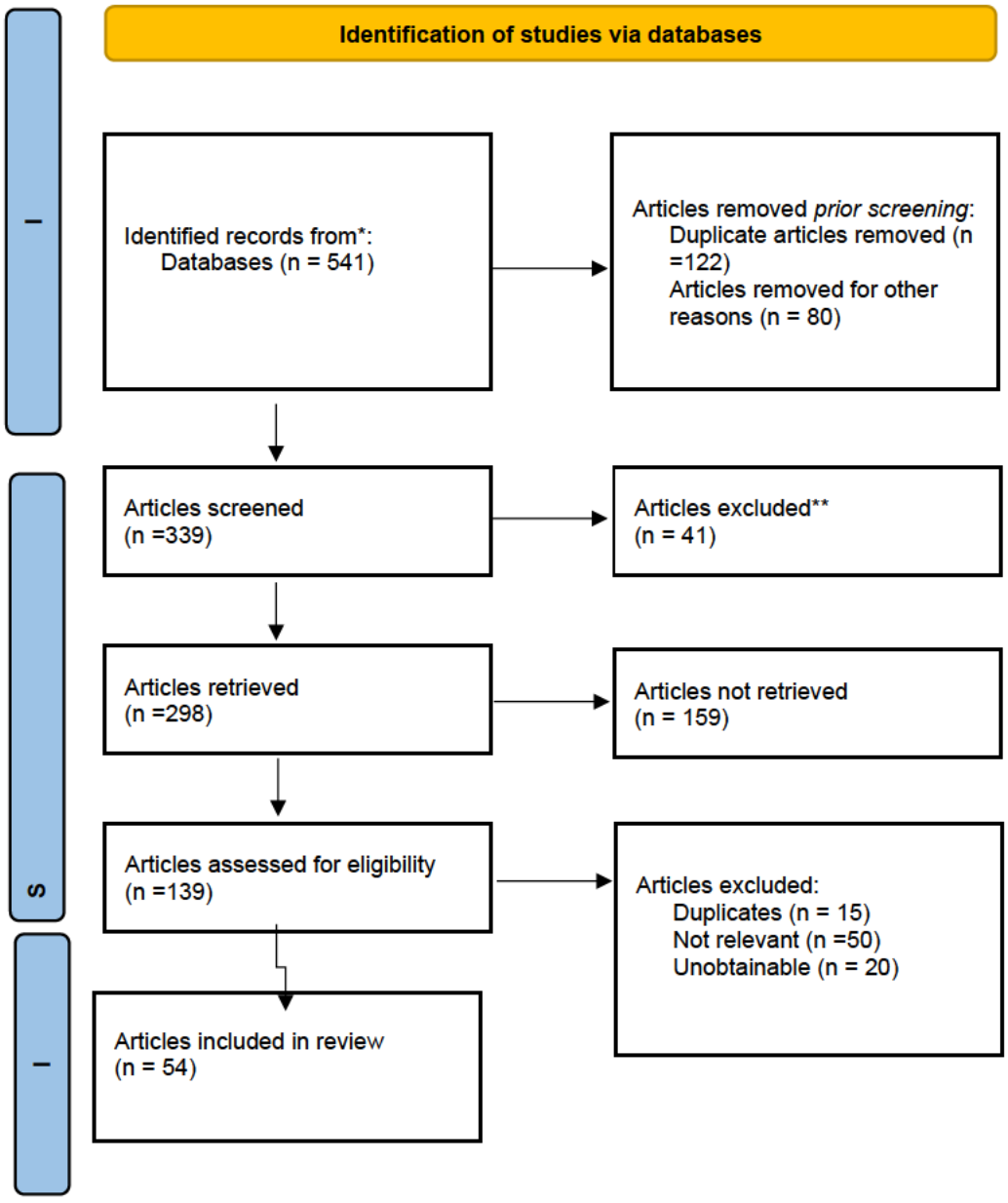
In this chapter, the researcher gave an overview of the research methodology that was used to conduct this study. This included the five-stage framework Arksey, and O'Malley provide. The next chapter gives a qualitative report of the findings of study.

# CHAPTER 3: RESULTS

Searches of electronic databases yielded 541 articles. Following screening for title and abstract, 139 studies were selected, and their full text was obtained. There were 54 reviews included in the final review because they met the inclusion criteria and included the mental health of university students who use cannabis. A summary of the screening and selection process is provided in a PRISMA flow chart in Figure 1 below.

**Figure 1**

*PRISMA flowchart of study selection process*



A qualitative presentation of the findings according to the themes that emerged is found below.

## The mental health of university students who use cannabis

Regular cannabis use appears to exacerbate mental health problems in users with a history of mental illness (Fernández-Artamendi et al., 2011). Although Fernández-Artamendi at al. (2011) found that not all cannabis users suffer from mental health issues, there is an elevated risk for mental health disorders among cannabis users.

### *Cannabis and mental health*

The use of cannabis is associated with several mental health complications. The use of cannabis results in both affective and psychotic changes, contributing to cognitive decline as well as antisocial behavior. For example, individuals who use cannabis as a coping mechanism usually suffer from more psychopathology, poorer psycho-social adaptation, and worse mental health, than those who use cannabis to socialize or for recreational purposes (Madras, 2016).

Additionally, WHO (2018) reported that those who use cannabis frequently display several psychological and mental health factors, such as a lack of self-control, low self-esteem, and difficulties coping. Existing mental disorders may be exacerbated by cannabis use. Mental disorders commonly exacerbated by cannabis include personality changes, anxiety, psychosis, and depression, according to Miller et al. (2017a). According to WHO (2018), cannabis use has some reported consequences relating to cognitive functioning and neuropsychological functioning. In addition to the cognitive functions directly affected by cannabis use, other mental functions negatively impacted include - attention span, processing speed, estimation of time, cognitive flexibility, short-term memory, motor control, and executive function.

As established by Pyramid Healthcare (2017), it is possible to experience temporal sensations or hallucinations while high on cannabis, as well as temporal paranoia, excessive suspicions about others when under the influence of cannabis (Pyramid Healthcare, 2017).

Researchers found that cannabis use may result in temporary psychotic reactions directly related to their consumption. These reactions include amnesia, hallucinations, confusions, delusions, paranoia, mood changes, or hypomania. This can occur even if they have never used cannabis before. Even those with substantial education often experience neuropsychological decline after long-term cannabis use (Fernández-Artamendi, et al., 2011).

It was shown in Miller et al. (2017a) that "55% and 90%" of users of cannabis have an increased likelihood to be diagnosed with mental illness, anxiety disorders, and suicidality. Cannabis use, especially amongst students, has been linked to high rates of schizophrenia, in that either it triggers or alterably triggers psychotic symptoms typical of schizophrenia. A Pyramid Healthcare (2017) report supports these findings, adding that genetic predisposition is also a contributing factor of psychotic disorders. The WHO (2018) also asserted that individuals who use cannabis as a result of dependence display many psychological and mental health issues, such as diminished self-control, poor self-esteem, and inadequate coping mechanisms.

Several disorders are associated with cannabis use, according to Pyramid Healthcare (2017). Various cannabis-related disorders may be diagnosed based on psychological, physiological, and social criteria. Such disorders may result in withdrawal symptoms or an inability to control use (WHO, 2018). The "diagnostic and statistical manual of mental disorders (DSM) and the international classification of diseases and health problems (ICD)" both define cannabis-use disorders (WHO, 2018). While ICD-10 distinguishes between drug dependence and harmful use of cannabis, the DSM-5 classification of cannabis-use disorders distinguishes between mild, moderate, and severe disorders (WHO, 2018).

Miller et al. (2017a) stated that cannabis aggravates the symptoms of depression, anxiety, psychosis, and personality changes. Cannabis use can result in what is known as the

'cannabis withdrawal syndrome', which often manifests in a period 24 hours of stopping use. Anxiety, aggressiveness, depression, sleep disturbances, nausea, sweating, and severe withdrawal symptoms are all characteristics of cannabis withdrawal syndrome (Pyramid Healthcare, 2017). Symptoms of withdrawal tend to peak within the first seven days of abstinence but may continue for four weeks (Miller et al., 2017a). In addition to withdrawal symptoms, cannabis users can also suffer from lack of motivation. Apathy, lack of interest, intolerance, fatigue, poor concentration, and frustration are some common symptoms (Pyramid Healthcare, 2017).

Volkow et al. (2013) alluded that people who regularly consumed marijuana had fewer neurons in specific regions of their brains. For example, the praecuneus, which is involved in higher level functions of alertness and self-conscious awareness, and the fimbria, “an area of the hippocampus involved in memory and learning” (Volkow, et al., 2014). In addition, functional declines have been reported in prefrontal networks, associated with executive function, and subcortical networks, typically involved in habit formation and routines (Miller, et al., 2017a).

The researchers also showed that emerging studies in marijuana users revealed reductions in activity in prefrontal regions and smaller volumes in the hippocampus, which suggests that certain areas of the brain may be more vulnerable to the effects of long-term marijuana use. The effects of marijuana on the brain begin almost immediately following usage, according to the Pyramid Healthcare (2017) study. When marijuana is used, users can experience altered senses, such as an altered sense of time as well as altered moods, poor motor coordination, and diminished thinking abilities as well as impaired memory.

The effects of using marijuana for a long period on the risk of lung cancer are not clear. For example, the consumption of marijuana, for the equivalent of 31 or more conservative years

was associated with a higher risk of lung cancer and a few cancers of the upper aerodigestive tract (Volkow et al., 2017). Marijuana smoke irritates the lungs, contributing to problems like phlegm and daily cough, as well as lung illness including bronchitis and pneumonia (Pyramid Healthcare (2017). Hall and Degenhardt (2009) add that marijuana use is linked to inflammation of the large airways, lung hyperinflation and increased airway resistance. It is also reported that frequent users of marijuana are more likely to report the signs of chronic bronchitis than those who don't use.

In support of the above findings, Mokwena (2019) reported that smoking marijuana can lead to serious lung damage similar to and equal to that caused by tobacco smoking. Short-term bronchial dilation may also be there. Marijuana is carcinogenic; hence, it is linked with brain gliomas, cervical and prostate cancers (Volkow et al., 2017). The long-term consequences greatly negate whatever minor positive effects present (Miller et al, 2017a).

Marijuana use is also reported to increase the risk of heart attack as it leads to ischemia by a five-fold increase in blood carboxyhemoglobin, which tempers with the haemoglobin's ability to transport oxygen and also increases the heart rate dramatically, by fourty beats per minute or more (WHO, 2018). This is consistent with findings by Pyramid Healthcare (2017) that revealed that marijuana results in increased heart rate, rising up for up to three hours, after smoking. This can elevate the chance of a heart attack, particularly in those already having heart diseases (Pyramid Healthcare, 2017).

***Cannabis and students***

According to National Institute of Health (NIH) (2021), the use of cannabis among university and college students continues to rise in the past 6 years. Based on this data from NIH, this is the highest degree of marijuana use following the 1980s. According to the author,

44% of university students mentioned using marijuana in the past year in 2020, this represents a significant increase in the usage of marijuana in the United States, compared to 38% in 2015.

The use of marijuana among students in United States have been increased drastically from 1980s to 2020. Data provided in this report have been published in the University of Michigan's annual monitoring of the Future panel study (Sherburne, 2021). In the 1980s, professors at the University of Michigan began conducting the study each year. They found out that in 2020 for college students the use of marijuana has been highest over the course of the study and as for non-college students, the use of marijuana was below (Sherburne 2021).

According to Pitchenvsky et al. (2012) cannabis use causes short-term memory impairments and concentration impairments - both of which are especially relevant to college students. Students who use cannabis report less studying time, being absent from class more frequently and performing poorly academically than non-users. Miller et al. (2017b) showed that cannabis use was linked to truancy, lower grades, less time spent studying and dropping out of college in 1,200 first-year college students. Similarly, Wallis et al. (2019) indicated that marijuana has potential negative consequences including “or not being able to do homework or study for a test”. Researchers have shown that students usually misperceive how much and how often their peers use cannabis, and that these misperceptions influence their behaviour. Additionally, it has been suggested that students may be more likely to engage in cannabis use when they perceive the behaviour as typical (Pyramid Healthcare, 2017). These results are in agreement with Muswede and Roelofse (2018) who concluded that many university students overestimate how much their peers drink and use drugs. Moreover, for cannabis use, their study highlighted that more students than expected used cannabis, indicating that the typical student used cannabis as well (Muswede & Roelofse, 2018).

While there may be some negative effects associated with cannabis use, there has been a steady decline in perceived harm and disapproval of cannabis to the point where perceptions favouring cannabis use have been increasing over the years (Resko, 2014). According to the author, adults who favour cannabis use represented 12% of the population in 1969. However, recent studies show that over 50% of adults in the United States now favour cannabis use. Students and college-age adults use marijuana at significantly higher rates than the general population in the United States, according to Wallis et al. (2019). A comparison of perceptions of typical student behaviour to actual behaviour revealed that cannabis, alcohol and drug use were overestimated among South African students (Department of Social Development, 2013).

WHO (2018) reported that perceptions regarding the risks of cannabis use among students and young people declined between the late 1990s and 2000s. In accordance with these findings, Resko (2014) reported in 2011 that many students do not view frequent cannabis use as a serious health risk. There is evidence to suggest that students who believe cannabis is a low-risk substance or are supportive of its use are more likely to use it. Students' religious beliefs and rules are relevant to their perception of marijuana, regardless of whether marijuana is legal in their country (Skalisky et al., 2019). Cannabis use is less permissive among religious students than among non-religious students. There was an increase in people's perception that the use of cannabis weekly does not harm and that across all age groups, there is a tendency towards a more tolerant view of cannabis.

Schmidt et al. (2016) found that weekly cannabis use is no longer associated with harm. The authors found that the number of students who believe that a weekly use of cannabis is not a big risk was twice as great in 2013 as it was in 2004 in states where medical cannabis has been legalized. According to Miller et al. (2017b), 71% of adults, amongst which were student in 2015 supported legalizing marijuana, which shows their acceptance of the substance.

According to a study by Muswede and Roelofse (2018) conducted among students at the University of Limpopo, participants held positive views regarding marijuana and its use. Participants reported that different types of marijuana, for example, Swaziland's, bring pleasure, are stimulating, and relieve stress. So, there are also different uses of marijuana that are positive and negative. As reported by Muswede and Roelofse (2018), most participants believed that marijuana or drug abuse does not affect their academic performance, but that it helps them remain focused, energizes them, and enhances their intellectual abilities. Students' perceptions, therefore, are highly tolerant of marijuana use.

According to the leading investigator of the Monitoring the future panel at the University of Michigan, Johan Schulenberg, he mentioned that in the early 20s the brain is still developing, and the usage of cannabis affects the development of the brain. As a leading Surgeon General, and others, he stipulated that the heavy use of cannabis among students in their early 20s poses a negative impact on the functioning of the brain and its mental health (Sherburne, 2021). According to Schulenberg, the increased of the usage of marijuana among university and college students is associated with the growing perception that they are less risky and harmful. There has been a decline in the perception that marijuana is dangerous and harmful to marijuana users (Sherburne 2021).

As measured by the prevalence level in a study conducted by the Department of Social Development (2013) in the Limpopo Province, marijuana was found to be the most popular drug within the districts in the province; students were found to be more tolerant of marijuana use and did not perceive it as harmful. Norms that are more accepting of cannabis use are reflected in the recent declines in perceived risk (Resko, 2014).

## Factors contributing towards cannabis use

It is imperative to understand factors associated with marijuana use as they help in the knowledge of how to formulate and select relevant interventions tailored to address these factors (Wallis et al., 2019). There are various factors that contribute to marijuana use. The following points below are factors that contribute towards the use of cannabis among students.

### *Coping Mechanism*

A study conducted at the University of Limpopo on drug use by Roelofse and muswede (2018) indicated that marijuana among students might be used as a coping strategy against boredom or idleness because students do not utilize their time effectively. Similarly, Miller et al. (2017b) reported that some students used as a way to relieve frustration, boredom, and anxiety. A study by Claros (2012) suggested that students may use marijuana to treat their emotions. In support of this results, WHO (2018) alluded that some of the factors contributing to marijuana use are poor impulse control, lack of self-control regulation, sensation seeking, and low-harm avoidance. Researchers found that some students use marijuana specifically to cope with life's pressures, according to Miller et al. (2017b).

Many college and university students who avoid seeking psychological intervention for their anxiety may attempt to cope with their symptoms through using cannabis (Wallis et al., 2019). It has been shown that anxiety sensitivity and marijuana dependence are related, and that the relationship is mediated by coping motives (Johnson et al., 2010). The author further noted that there is a strong belief amongst college students in cannabis' utility as stress and anxiety management tool. This is supported by Muswede (20180 who reported that some students found cannabis to calm and relax them in times of distress.

***Peer Influence and Parental Attitudes***

According to Pinchevsky et al. (2012), students who use marijuana after entering university are more likely to have low religiosity, a high percentage of peers who use marijuana, and is related to exposure opportunity, to being male, poor parental monitoring, and sensation seeking behaviour. In 2013, the Department of Social Development found that factors contributing to the use of marijuana and other substances included lack of role models in the form of parents, cultural practices and customs.

Hall and Degenhardt (2009) noted that positive parental attitudes toward drug use, lack of parental supervision, minimal parental involvement, and low parental expectations all contribute to one using marijuana and other drugs. Similarly, Napper et al. (2015) noted that, students who are more likely to use marijuana frequently are those who share typical behaviour patterns with their peers, have poor parental monitoring, and have high injunctive parental norms. Parents' monitoring plays a significant role in predicting students' approval of marijuana, according to Napper et al. (2015).

LaBrie et al. (2010) found that, the perception that close friends or other students accept one's use directly predicted personal use, whereas changing from parental approval to marijuana use was entirely determined by one's approval. Those who use marijuana or other substances have more friends who also use them, according to Pinchevsky et al. (2012). Among students who did not consume marijuana, 41.6% had friends who used marijuana while 97.5% of those who did had friends who used marijuana. Ramlagan et al. (2010) found that interviewees and questionnaire respondents talked about using marijuana as a result of self-experimentation. In addition, 36% indicated peer pressure, 32% family problems, 25% found marijuana easy to obtain, 23% said that they underestimated the dangers of marijuana, and 14% said that there were not enough recreational activities (Ramlagan et al., 2010).

A study conducted by Mason et al. (2014) found that adolescent substance use was most influenced by peer attitudes. When close peers start to believe that the substances are safe to use, their peers will soon follow and start using together.

***Social Milieu***

As Pinchevsky et al. (2012) stated, the more a person is exposed to values, practices, and activities that encourage drinking underage, marijuana use, and receives no punishment for these acts, there is an increased likelihood that the person will misuse marijuana, alcohol, and other substances. A lot of factors contribute to people using marijuana, including the environment in which they live, laws and norms that encourage drug use, accessibility of marijuana, and extreme poverty (WHO, 2018). Individuals are more likely to use marijuana if their family context is not strict and there are no rules for acceptable conduct (Resko, 2014). Several aspects of parenting are associated with youth drug use, for instance, parents who monitor their children closely influence their development positively, thereby significantly reducing their chances of using drugs in later life (Pinchevsky et al., 2012).

WHO (2018) states that people with low social status are more likely to use illicit drugs, including marijuana. Family factors, such as parental conflict, poor parent-child relationships, and parental drug use, are found to increase the likelihood of one using illicit drugs, including cannabis (WHO, 2018). It can be concluded that in South Africa the prevalence of substance use could be influenced by the socioeconomic status of the country. According to Mokwena (2019), there is an association between poverty and cannabis dependence. The author mentioned that the use of cannabis is greater amongst those who come from communities that are socio-economically compromised.

Given the levels of poverty in South Africa it can be surmised that there could be in increase in the number of individuals who use cannabis. The above assertion is in line with

Ramlagan el al. (2010) who reported that in neighbourhood where the use of cannabis and other substances are prevalent, the residents experience extreme poverty and use addictive substances to cope. The author alluded that the use of cannabis and other substances to cope with negative mental effects of poverty and associated trauma creates a vicious cycle.

**Ways in which marijuana use can be reduced**

The first step in attempting to reduce the use of marijuana is to conduct research to better understand students' attitudes, values and behaviours regarding substance use, and this knowledge would then guide the interventions to be implemented (Peltzer, 2018). In comparison, little work has reviewed interventions for marijuana use among the college or university populace, in spite the high level of use at universities (Lee et al., 2013).

***Student-focused programs***

Using multi-sectoral, information-based strategies, Muswede and Roelofse (2018) showed that the University of Limpopo provides student-focused programs aimed at holistically developing, encouraging and creating a contributive learning environment for students. Ramlagan et al. (2010) documented that student-focused programmes can be a low-cost, effective way to decrease substance use disorders. Madras (2016) suggested that student focused programmes can be led by diverse individuals, for example teachers in the classroom, psychologists and psychiatrists. According to WHO (2011) interventions targeting students have been found to be most effective in curbing cannabis and alcohol use. Madras (2016) emphasised the importance of making these efforts accessible and fun, in order to ensure that the specific students find them appealing and take action.

***Motivational Interviewing***

Lee et al. (2013) describe Motivational Interviewing (MI) as non-judgmental, non-threatening and aimed at enhancing natural motivation, to change behaviour by exploring and resolving contradictory feelings about change within users. In their study, Montanari et al. (2017) pointed out that interventions involving marijuana disorders might have the potential to reduce the use of marijuana. An adaptation of MI called motivational enhancement therapy (MET) involves providing individualized feedback (Lee et al., 2013). In studies on adults who are not seeking treatment, MET has been shown to be a successful intervention for reducing marijuana use (Grossbard et al., 2010).

Lee et al. (2013) suggested personal interventions could incorporate a motivational framework. Further, it was found that an intervention to decrease alcohol-related harm also had an impact on marijuana use, indicating that motivational enhancement therapy could have a positive impact (Grossbard et al., 2010). A research team developed and tested a web-based personalized feedback intervention for marijuana use targeted at college freshmen as a way to formulate a low-cost, brief motivational intervention (Lee et al., 2013).

***Drug education***

An effective drug prevention program is able to influence behaviour change, according to WHO (2011). Effectively addressing factors that initiate and sustain drug use is essential for such programs to succeed (Ramlagan et al., 2010). For behaviour change to occur and persist, factors related to a particular type of behaviour, such as marijuana use, need to be dealt with sustainably. Grossbard et al. (2010) recommend that drug education programmes are appropriate for developmental stage, evidence-based, comprehensive, and sequential (Grossbard et al., 2010).

There is evidence that peer-led, interactive interventions that engage students in group discussions and role-plays, which allow them to become active participants in learning about

drug abuse, are superior to non-interactive, instructive teaching programs (Lee et al, 2013). The authors continued to state that simulations, group work, Socratic dialogues, discussions in classes, brainstorming and cooperative learning are ways to engage students in self-evaluation and role-playing. A study by WHO (2011) revealed that prevention programmes should take a holistic approach to fighting drug abuse, which includes legal and illegal drugs such as heroin, marijuana, as well as over the counter and prescription drugs.

## Conclusion

This section provided an overview of the body of writing relevant for this research. According to the literature presented, students' views of marijuana show tolerance of its use, with low-risk perceptions, hence; there is less consideration by students of the mental health effects of marijuana. It is evident from the findings of the scoping review that cannabis use has long lasting mental health effects, therefore, there is a growing need for tailor-made intervention strategies for students, to reduce cannabis use. However, that is not always the case, some participants of studies have indicated that cannabis use has a positive impact on their health. Participants identified both positive and negative health effects of cannabis use, and they will be discussed in the next chapter. The benefits and risks of cannabis use have been, and they continue to be researched extensively. Some young users of cannabis are said to be less likely to reach higher levels of employment and education and are more prone to use illegal drugs.

# CHAPTER 4: DISCUSSION OF STUDY FINDINGS

This chapter discusses the results of the study presented in the previous chapter. This scoping review found that there has been little contribution by researchers about the state of mental health of university students who use cannabis, particularly in South Africa. This section aims to discuss the themes that emerged from the findings of the study. The themes discussed are- (a) the mental health of university students who use cannabis; (b) factors contributing towards cannabis use; and (c) ways in which cannabis use can be reduced. The data were presented qualitatively.

## The mental health of university students who use cannabis

This subsection is about the mental health of university students who use cannabis. The data revealed that cannabis use increases the likelihood of university students developing a range of mental health disorders, or the worsening of existing ones. This can result in the onset of psychotic disorders, anxiety and depression. It is important to note that these changes can occur even if they have never used cannabis before. Cannabis use was also associated with a decline in cognitive functioning and reduced mental capacity amongst student users. It is evident from the findings of the study that cannabis use negatively impacts one's menta health. For university students this would include attention span, short term memory, processing speed, estimation of time and general executive functioning.

There appears to be clear evidence that cannabis use poses a great risk to one's mental health state. Fernández-Artamendi et al. (2011) emphasised that marijuana users have several psychotic reactions that emanate from the direct effects of its consumption; hallucinations, delusions, confusions, amnesia paranoia and hypomania. Furthermore, mood changes can occur in individuals without any prior clinical history after using large quantities of cannabis. It is evident that if students continue to use cannabis, their memory and thinking may be

impaired, and they may also suffer learning disabilities that may last for years (Pyramid Healthcare, 2017). It has been reported by Pinchevsky et al. (2012) that those who use cannabis were found to have few neurons in specific parts of the brain.

Previous studies on the performances of cannabis users have also indicated that cannabis has a negative impact on neuro cognitive functioning. Research by Grant et al. (2003) has showed that those who heavily use cannabis have suffered major impairment because they are unable to recall new information imparted to them, also a study by Schwartz et al. (1983) and Lyons et al. (2004) have stated that marijuana users are likely to have long term effects of cognitive abilities because of the chronic use of cannabis. However, according to Kilmer and Lee (2021), they have indicated that individuals who abstain from the use of marijuana, their cognitive performance improves but it is likely to happens after 28 days of abstinence. The more the individuals use cannabis the more they are likely to suffer from cognitive challenges such as attention, memory and other cognitive abilities.

Cannabis negatively impacts the state of mental health for those who use as already outlined above. The results of this study suggested that students who use cannabis perform poorly academically owing to the negative impact of cannabis on their mental state. This results in truancy and students dropping out of university. This is supported by Miller et al. (2017b) who revealed that cannabis use was linked to truancy, lower grades, less time spent studying and dropping out of college in 1,200 first-year college students. Mokwena (2019) added that the educational and social impacts of marijuana use include poor academic performance and failure to complete studies.

Moreover, it has been found to be an increase in the number of students using cannabis over the years due to students' misperceptions about use. Resko (2014) alluded that a greater number of students perceive cannabis use as typical which led to the decline in perceived harm

and disapproval of cannabis amongst the student population. This is consistent with social cognitive learning theory that states that individuals assess their ability to perform certain tasks and also whether such behaviour will lead to their expected outcomes (Bandura, 1986).

It can be inferred that students to an extent observe their environment and their own ability to withstand the effects of marijuana before they begin use. Furthermore, it can be concluded that students view cannabis as substance that is less harmful which informs their decision to use. As students continue to use cannabis and do not experience any negative outcomes, it then reinforces their belief that cannabis is not harmful, therefore, holding true their expectations. This thinking is consistent with the social cognitive learning theory (Bandura, 1986). Considering the association between cannabis use and mental health and the current decline in perceived harm amongst students, it can be concluded that university students are at risk of developing a range of mental health disorders.

This raises concerns about the overall health of university students and their academic functioning. These findings further raise questions about students' knowledge about the negative health effects of cannabis use. However, in addressing this question, the above evidence suggested that students perceive cannabis as a low-risk substance. Cannabis was also found to be the preferred substance amongst the student population. The increased tolerance towards cannabis use appears to have also been influenced by legalisation of cannabis across states. Miller (2017b) mentioned that in 2015 most students supported the legalisation of cannabis. Marijuana legalization and decreased perceptions of harm from cannabis use will, without a doubt, lead to greater tolerance towards cannabis, which will result in increased addiction. It appears that students are more open to cannabis use now than in years past (Miller, 2017b).

A study titled *"impact of cannabis on the neurocognitive performance of Jamaican adolescents"* by Powell-Booth and De La Haye (2016) explored the neuropsychological performances of young adolescent males' cannabis users and non-users in terms of learning, memory and attention to details. The study meant to investigate the psychological effects or impacts that are associated with cannabis on male users in Jamaica. Jamaica is not a case study, but this could help us understand the effects of cannabis on mental health of students. The study found out that there was a significant difference between cannabis users and non-cannabis users in terms of learning, memory and attention performances. The findings supported that cannabis use have a negative effect on learning, attention and memory performances among young adolescent males' users in schools and other areas of learning (Powell-Booth & De La Haye (2016). This supports the statement that, cannabis influence mental health of students and impair neuro-cognitive functioning. According to Powell-Booth and De La Haye (2016):

> "*The findings of the study suggest that there is a significant difference in performance between Jamaican male adolescent cannabis users and non-users on neuro-cognitive tests. Users of cannabis displayed cognitive deficits on all tests of memory, intelligence, language and attention that were conducted. The present findings lend new support to the notion that cannabis use may impair neurocognitive functioning. There are implications for poor school performance by adolescent users of cannabis in Jamaica."*

However, findings based on other studies cite that the use of cannabis or marijuana assist students in playing critical role in focusing on their schoolwork. Such remarks were made on a study that was conducted Muswede and Roelofse (2018) conducted among students at the University of Limpopo. Resko (2014) also reported that in 2011 that many students do not view frequent cannabis use as a serious health risk. The impairment of neuropsychological by cannabis users seems to be controversial. Studies that are conducted scientifically and

observationally concludes that the use of cannabis among individuals result in impairment. In other studies where the cannabis users are participants and interviewed as part of the study, the perception is deemed to yield positive results (Ramodumo, 2021). Fernández-Artamendi et al (2011) found that not all cannabis users suffer from mental health issues.

In a study conducted by Ramodumo (2021), titled "*University students' perceptions of the influence of cannabis use on menta health*", explored the use of cannabis on the mental health among university students and the data collected was from 15 students, involving cannabis users and non-users. The study had positive and negative responses from the participants regarding the use of cannabis. Apparently, the findings of the study indicated that those with positive responses on the effects of cannabis were those who were previously users of marijuana, whereas those with negative responses were non-users of cannabis. This supports the notion that those who have not used marijuana are less likely to use cannabis owing to their negative perception (Muswede and Roelofse, 2018). It is interesting to note that despite the negative effects documented, there are students who report experiencing positive mental health effects as reported by Ramodumo (2021). According to Ramodumo (2021) study:

> *"Participants seem to think that they perform better when they have used cannabis, because of the academic stress, it seems that students sometimes find it hard to stay focused and cannabis serves as a pulling factor".*

In other words, Cannabis has used by students at university as an improvement in their academic performances. With one participant mentioning that, "well…I use it to relax and stay calm, so I have been smoking since Grade 12 and I feel like I have been more productive" (Ramodumo, 2021). In addition, Degenhardt, et.al. (2013) also indicated that students experience performance anxiety and to deal with it they use cannabis to perform better. The latter statements and experience from the students reveal how the use of cannabis is perceived

by some students as less harmful to their health and cognitive functioning. However, students have agreed that those who abuses the use of cannabis can have a major negative effect on mental health. The use of cannabis should be responsible and manageable. Another participant from Ramodumo (2021) have stated that:

> *"I can go days without smoking it, weed is not addictive, its unlike cigarettes…you know with cigarettes, it leads to psychological dependence but with marijuana, you can take it and be fine, just be normal, for weeks or months or sometimes, you can smoke, just decide to smoke like every day, it just depends on you on how you are feeling right now."*

A notion that stipulates that Students who use cannabis report less studying time, being absent from class more frequently and performing poorly academically than non-users seemed to be not hundred percent accurate. It depends on the determination and willingness of student because some students who are non-cannabis users also fail and be absent from classes frequently. The study by Ramodumo has indicated that there are learners who are cannabis users, yet they are excelling in their academic achievements if the cannabis usage is not abused. The notion the heavy use of the cannabis has been further supported by Pope and Yurgelun-Todd (2007), mentioning that heavy users of cannabis among college students had exhibited significantly greater impairment of cognitive than light users on attention and executive functions.

All previous studies have indicated that the use of cannabis have positive and negative effects on the academics of students. On positive effects, some students have used the cannabis to deal with academic stress and burnout. They use it as part of relaxation and contribute to their success as students and improve their ability to deal with their workload. According to the participants, the use of cannabis can be beneficial to the mental and be used as a coping

mechanism. However, other students perceive the use of cannabis as posing a high risk to their cognitive functioning.

Those who use cannabis have indicated that the use of cannabis is better than the use of alcohol as social drug. Kilmer and Lee (2021) concluded that those who are already experiencing impaired cognitive should consider taking a break from the use of cannabis or reducing how they use. And they also indicated that for those students who feel positive effects for the use of cannabis, might be indicative signs of addiction to cannabis. Kilmer and Lee (2021) point out that:

> "*In our conversations with college students, we hear some students who typically use marijuana say that when they don't use, they can't sit still, or they feel restless and anxious, the authors report. These students might assume that marijuana use is 'helping' them. Those things could also be indicative of addiction to cannabis, or what is called a cannabis use disorder, they state. This might mean when students continue to use marijuana, they might feel a sense of less anxiety or restlessness but are actually making withdrawal symptoms stop by resuming use."*

**Factors contributing to cannabis use**

This subsection explored literature on factors contributing towards cannabis use. According to results from the study, there are several factors that contribute to marijuana use. The results suggest that marijuana is used as a way coping with adverse life situations (Wallis et al., 2019; Johnson et al., 2010). Ramlagan et al. (2010) found that most students who used marijuana had family problems. The findings of the review showed that cannabis is also used by students to regulate difficult emotions and impulse control problems. This suggests that university students are not equipped with effective coping strategies and use cannabis as a

scapegoat. This raises concerns about student exposure to psychological services and the availability thereof.

However, family problems are not the only factors that influence students to use cannabis to escape stress, some students are using cannabis as a strategy to cope with academic stress. The results of the study have indicated that some students get relaxed after using cannabis when experiencing academic distress and they are able to focus whilst under the influence of cannabis (Ramodumo, 2021). The findings from the review showed that parental attitudes and peer influence contribute to students' use of cannabis. Considering that most students at university are far away from their parents, there is less parental involvement in their decision making. This further exposes students to peer influence. Multiple researchers have identified peer influences as a significant factor influencing substance use at various developmental stages as revealed by the findings of this review. Students typically use marijuana because their friends are also using it. It was most predictable that one would use marijuana if they were approved by their parents and close friends (LaBrie et al., 2010).

It appears that parental approval and peer influence have a great bearing on students' use and approval of cannabis. This suggest that positive parental modelling and disapproval of cannabis would greatly influence students' use of cannabis. This further suggests that parental drug use is a significant contributor to students' use of cannabis (WHO, 2018). In addition, students' association with peers who do not use cannabis would result in reduced risk of cannabis use as suggested by the findings of this study.

One of the contributing factors towards cannabis use was an individual's social milieu. It was revealed that the social environment that students find themselves in greatly influence their use of cannabis. This infers that if an individual's social milieu approves of cannabis use the more likely it is for that individual to use cannabis. Students' cannabis use was found to be

influenced by what they were exposed to earlier in their environment. For example, students who had close parental monitoring and who grew up in a strict environment were found to be less likely to use marijuana (Resko, 2014; Pinchevsky et al., 2012).

Furthermore, being in an environment wherein cannabis is easily accessible and being exposed to norms that encourage drug use contributes to individuals' use of cannabis. WHO (2018) and Pinchevsky et al. (2012) found poverty, unemployment and stressful family environment to increase the chances of using cannabis. It can be assumed that a lot of students in South Africa who use cannabis could be influenced by their socioeconomic status. However, this does not suggest that those from advantaged family backgrounds are less likely to use cannabis. It is evident from the findings of this review that the environment that students live in, including the laws and norms that govern their environment can increase or decrease their likelihood of use cannabis.

It can also be noted that most teenagers when they get to universities, are more likely to want to explore and discover new things. Students are adapting to new lifestyles that differ from those they left at home, they get to attend events and meet new friends, in an attempt to fit in students may start using different substances. The freedom and independence the students receive gives them an opportunity to explore things they would have not previously explored.

**Ways in which cannabis use can be reduced**

This subsection focused on ways in which marijuana use can be reduced. little work has reviewed interventions for marijuana use among the college or university populace, in spite the prevalence of use on campuses (Lee et al., 2013). There is not enough literature regarding ways to reduce cannabis in universities. The above results suggest that student-focused programmes are both low cost and effective for the reduction of substance use including

marijuana. Student focused programmes have been found to be flexible and can be led by diverse individuals including students.

Interventions that include a motivational framework have also been found to be effective for the reduction of cannabis. This includes approaches such as MI and MET as outlined above. Furthermore, an approach focused on marijuana that uses motivational enhancement appears to have potential benefits. Drug education was also found to be effective in reducing marijuana use. Drug education programs should be implemented prior to the onset of drug use. It was further revealed that drug education interventions are most effective when they use interactive approaches and peer-led groups during the educational process. Not much has been written about ways of reducing cannabis use particularly amongst university students.

The university or college management with the help of relevant stakeholders should not only look into the negative side of the usage of the marijuana. Coming from the above literature, the researcher has noted that cannabis plays a significant role in the lives of other students as they could be exposed to peers who use cannabis which ultimately influences use (peer influence) (Pitchenvsky et al., 2012). In addition, Mason et al. (2014) revealed that approximately 93% of college students use marijuana owing to peer influence. Furthermore, it is possible for witnesses to perceive that such behaviour is both expected and normal in university (Mason et al., 2014)

In light of the above, the management should provide supporting programs that could assist and educate the students about heavy usage of marijuana. According to WHO (2011) interventions targeting students have been found to be most effective in curbing cannabis and alcohol use. The programmes to support students who uses cannabis should ask relevant in their venture to support them, questions such as how does the use of marijuana help them? How does it hinder them? What negative consequences have those students experience?

In that way it will be easier for the higher education institutions management to be able to intervene and assist the students to reduce the use of marijuana at campuses.

**Conclusion**

This chapter focused on discussing the results of the findings according to the themes that emerged. As outlined above, cannabis use was found to pose a great mental health risk to students but to some students, the use of cannabis yields positive outcomes. The above discussion showed how students using cannabis could suffer from a range of mental health disorders and perform poorly academically. It was also revealed how a great number of students view cannabis as low risk substance which accounts for the prevalence of use in universities.

This section further discussed factors that contribute towards cannabis use, revealing how students' social milieu is a significant contributor towards cannabis use. Finally, this chapter highlighted ways in which cannabis reduced and noted how not much has been written about reducing cannabis in universities. It is therefore imperative that future studies focus on reducing cannabis use amongst university students.

# CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

This chapter gives a summary of the research report and a written account of the recommendations from the study. The recommendations find their premise on the themes identified. The limitations of the study are also discussed.

## Summary of the study

### *Aim of the study*

The aim of this study was to explore literature regarding the mental health of university students who use cannabis.

### *The objectives of the study*

- To conduct a scoping review of literature on the factors that contribute towards cannabis use amongst university going students.
- To conduct a scoping review on literature to determine ways in which cannabis use can be reduced

### *Research questions*

- What is the mental health of university students who use cannabis?
- What are the factors that contribute towards cannabis use?
- What are the ways in which cannabis use can be reduced?

### *Research Methodology*

A scoping review of literature was conducted to explore mental health of university students who use cannabis. The researcher used the five stages identified by Arksey and O'Malley (2005) as a methodological framework. The researcher first identified the research question, which aimed to explore the mental health of university students who use cannabis. The researcher proceeded to identify relevant studies, by conducting a comprehensive scoping

literature search on Google scholar, EBSCOhost, PubMed, ResearchGate and also search for grey literature on websites such as the World Health Organisation and government websites. The main key concepts that were searched included cannabis use, cannabis users, mental health, mental illness, university students and South Africa. In order to get the most up-to date literature the search included sources published within a 15-year period, from 2007 and 2022, that were written in English.

To meet the objectives of this study the researcher selected studies that focused on cannabis users and mental health, cannabis use in universities, published from 2007 to date and included all study designs. Study findings that did not focus primarily on cannabis use or mental health, as well as studies published in the media and on social media, were excluded from the study. Following this, the researcher charted the data on a Microsoft Excel charting template to extract the data from the various studies.

This included information on the authors and the years of publication, the type of publication, the purpose of the study, the population of the study, and the geographical location of the study. Furthermore, key findings from the study were extracted along with the methods used and interventions undertaken. The contextual data for each study was extracted using a descriptive analytical method. As a final step in summarizing and reporting the results of the study, a thematic analysis of the data was conducted, and the findings were reported in accordance with emerging themes.

***Findings of the study***

The results of the study identified the following themes as already argued in the previous chapter:

**Theme 1: The mental health of university students who use cannabis.** The findings revealed that cannabis use cannabis use has some reported consequences relating to cognitive functioning and neuropsychological functioning. Furthermore, ongoing use may result in the

onset of mental disorders or exacerbating existing mental disorder and learning problems. According to the above findings, university students are cognisant of the adverse and favourable mental health effects of cannabis. This demonstrates that students are knowledgeable about the psychological effects of marijuana and yet continue use. In addition, it appeared that most students hold a more permissive view of cannabis and are predominantly tolerant of its use.

**Theme 2: Factors contributing towards marijuana use.** There are various factors that contribute towards marijuana use, amongst which are – peer influence, psychosocial stressors, social environment and parental attitudes. The above study further revealed how students' perception about the negative effects of cannabis use influence their own use.

**Theme 3: Ways in which marijuana use can be reduced.** There are various ways in which marijuana use can be reduced. The different ways in which marijuana can be reduced include, student-focused programs, motivational interviewing and dug education. The findings also suggested that it may be difficult to reduce cannabis amongst university students owing to students' permissive views.

**Study limitations**

- The study was limited to students studying at university and did not include other institutions of higher learning and high school students; therefore, the outcomes of this study may not be generalized beyond this group.
- The study used scoping of available literature which was limited to a 15-year period and included only studies written in English. These results did not account for studies written in other languages, consequently, the results should not be generalised to studies written in other languages.

- Furthermore, the researcher had limited access to other search engines and this reduced the number of papers that address the research topic. As a result, more access to literature could have produced more comprehensive findings.

## Recommendations

### *Students*

- Students should study more about marijuana to have scientific knowledge, and they should also consult professional counsellors when they fail to cope with life stressors to avoid using marijuana as a coping mechanism.
- It is recommended that students also avoid peers who use marijuana and lifestyles that expose them to marijuana. A more systematic intervention that is inclusive of students and their families would be most effective.

### *University Management*

- The management should consider holding annual drug and substance use education and awareness campaigns at the beginning of the year. This will help also first-entering students to be equipped with the right knowledge.
- The University should consider having a peer-led drug awareness programs that runs throughout the year; this could be facilitated through debates, talks and support groups.
- The Management should have psychological counselling exposure or presentation particularly during orientation week. This can be achieved in conjunction with psychological services, through various media platforms around the University environment.

### *Policy Makers*

- The researcher recommends the deployment of psychologists and or availability of psychological services together with rehab centres in every community.

- There should be widespread media exposure of the adverse health and psychological effects of drugs and substance use and abuse.
- School and community programs should include drug education. This will help educate children and parents about the adverse mental health effects of cannabis and other substances.

**Future research**

- The current study was only limited to university students. The researcher recommends that future studies consider including other populations.
- The researcher suggests that future studies consider students studying across different institutions, as this study considered only students studying at universities.
- Future studies should consider using a different research approach, such as mixed method, since the current study was limited to a scoping review of available literature.
- It is suggested that future studies be conducted over a longer period of time, as the current study was conducted within a limited period of time.
- The researcher recommends that future researchers relook the topic and the issues which were not covered and address these issues related to students' mental health and cannabis use.

**Implications of the study**

The study findings reveal that students are more permissive towards marijuana. The implication is that the mental health effects of cannabis are perceived as both adverse and favourable, although, students' use of cannabis is influenced by different factors as outlined above. Those who believe marijuana to having positive health effects are more permissive as compared to those who believe marijuana can result in mental health problems. The above

findings imply that students' need to be re-educated based on scientific knowledge. There are factors that influence students' perception of marijuana, with those who use as a result of peer influence and psychosocial stressors being more tolerant towards marijuana use.

It is important to establish reasons for use, as it may inform the appropriate intervention. It is also important to address the factors leading to marijuana use to inform the relevant intervention, and ultimately reduce cannabis use. In considering the factors that contribute towards marijuana use, the implication is that a lot of students face overwhelming psychosocial stressors. This implies a great need for the availability of psychological services around the University campus to empower students to develop effective coping mechanisms; students need to be taught effective coping strategies.

The findings suggest that there is insufficient support system available to students or enough exposure to availability of psychological services already in place. Peer influence as a factor implies that most of the student community favours the use of cannabis. The findings imply that there is a need to educate students about drugs and substances, in particular marijuana, in order to inform students' perception about cannabis.

These findings have important implications for the University management and student representatives, considering that the use of cannabis impacts on students' academic performance. However, the use of cannabis among university students can never be completely eradicated, however, creating an awareness environment around campuses regarding excessive us can minimise the level of abuse among students. In re-educating and informing students' opinion, there may be a reduction in cannabis use amongst the student community.

**Conclusion**

The use and abuse of drugs and other substances is a major public health concern in our societies. Marijuana use in particular amongst tertiary institutions has remained a problem, however, there are only a few studies done on this topic. Students in university campuses are

predominantly accepting of cannabis use despite its adverse health and psychological effects. There is a need to equip student with empirical knowledge regarding drug and substance abuse in order to restructure students' perception about cannabis and other drugs. The main contributing factors towards such use are psychosocial stressors and peer relations. Reasons for use ultimately influence one's view about the overall effects of marijuana. Exposure to available psychological services and effective coping strategies could help reduce the use of cannabis.

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# Appendix A
# Turnitin Report

A scoping review of the mental health of University students who use cannabis

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# Appendix B
# Mixed Method appraisal tool, version 2018

## Part I: Mixed Methods Appraisal Tool (MMAT), version 2018

| Category of study designs | Methodological quality criteria | Responses | | | |
|---|---|---|---|---|---|
| | | Yes | No | Can't tell | Comments |
| Screening questions (for all types) | S1. Are there clear research questions? | | | | |
| | S2. Do the collected data allow to address the research questions? | | | | |
| | *Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.* | | | | |
| 1. Qualitative | 1.1. Is the qualitative approach appropriate to answer the research question? | | | | |
| | 1.2. Are the qualitative data collection methods adequate to address the research question? | | | | |
| | 1.3. Are the findings adequately derived from the data? | | | | |
| | 1.4. Is the interpretation of results sufficiently substantiated by data? | | | | |
| | 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation? | | | | |
| 2. Quantitative randomized controlled trials | 2.1. Is randomization appropriately performed? | | | | |
| | 2.2. Are the groups comparable at baseline? | | | | |
| | 2.3. Are there complete outcome data? | | | | |
| | 2.4. Are outcome assessors blinded to the intervention provided? | | | | |
| | 2.5 Did the participants adhere to the assigned intervention? | | | | |
| 3. Quantitative non-randomized | 3.1. Are the participants representative of the target population? | | | | |
| | 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? | | | | |
| | 3.3. Are there complete outcome data? | | | | |
| | 3.4. Are the confounders accounted for in the design and analysis? | | | | |
| | 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? | | | | |
| 4. Quantitative descriptive | 4.1. Is the sampling strategy relevant to address the research question? | | | | |
| | 4.2. Is the sample representative of the target population? | | | | |
| | 4.3. Are the measurements appropriate? | | | | |
| | 4.4. Is the risk of nonresponse bias low? | | | | |
| | 4.5. Is the statistical analysis appropriate to answer the research question? | | | | |
| 5. Mixed methods | 5.1. Is there an adequate rationale for using a mixed methods design to address the research question? | | | | |
| | 5.2. Are the different components of the study effectively integrated to answer the research question? | | | | |
| | 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | | | | |
| | 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | | | | |
| | 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? | | | | |