



## Research Article

### Comorbid Schizophrenia and Cannabis Use Disorder in South Africa: Perspectives of the Mental Health Care Users (MHCUs) on Relapses

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#### Abstract

Incidents of users with comorbid schizophrenia and cannabis use disorder experiencing a relapse; have been a cyclic phenomenon for decades in most health facilities admitting users with such diagnoses. Studies have shown that cannabis use and non-adherence to treatment contribute to a relapse for comorbid schizophrenia and cannabis use disorder.

**Purpose:** To report on a study conducted to explore and describe the lived experiences of users with co-morbid schizophrenia and cannabis use disorder, who have experienced one or more relapse(s).

**Methods:** A qualitative, phenomenological approach, which is explorative, descriptive, contextual in nature was used. Data was collected using in-depth phenomenological interviews on purposively selected users with comorbid schizophrenia and cannabis use disorder that were a psychotic but had been admitted for a relapse at the time of data collection. Data was analysed using the series steps from Van Kaam's phenomenological approach.

**Results:** Three categories emerged from the findings of this study, namely: Effects of cannabis use that lead to a relapse, factors maintaining cannabis use and factors discouraging cannabis use. Fur-

thermore, these categories were each sub-divided into themes and sub-themes.

**Conclusion:** The findings of the study revealed that schizophrenia sufferers who used cannabis, experienced negative effects of cannabis use, leading to relapse(s). Those effects were of a psychological, physical and social nature. Furthermore, it was concluded that the interplay between factors that maintain cannabis use, and those that discourage cannabis use in the lived experiences of users determine whether a user will experience a relapse or not.

**Keywords:** Behavioural outcomes; Illness management strategies; Mental health care user; Prevention; Quality of life; Relapse

#### Introduction

According to the diagnostic and statistical manual of mental disorders [1], schizophrenia is characterised by delusions, hallucinations, disorganised speech and behaviour, and other symptoms that cause social and occupational dysfunction. For a diagnosis to be made, symptoms must have been present for a period of six months and should include at least one month of active display of symptoms. Pon-nuchamy states that schizophrenia is associated with changes in all domains of social functioning [2].

Schizophrenia has positive and negative symptoms. The positive symptoms are characterized by delusions and hallucinations, positive thought disorder, grossly disorganized catatonic behaviour whilst negative symptoms are diminished emotional expression or volition [1]. According to the National Institute of Mental Health [3], symptoms associated with schizophrenia include hallucinations, delusions, negative symptoms (a person is emotionally disconnected) and disorganized thinking. Emsley et al., state that users with schizophrenia experience a relapse when treatment is discontinued [4]. Often, treatment is discontinued when users discontinue medication. On the other hand, users with cannabis psychosis show more bizarre behaviour, violence, more insight and less evidence of thought form [5].

Sadock's and Ruiz state that treatment and management of schizophrenia include antipsychotic medication such as Chlorpromazine, Clozapine, Risperidone, Olanzapine, Seroquel, Haloperidol and psychosocial treatment such as psychosocial interventions including psychotherapy [6]. This type of treatment is associated with improved outcomes. Schellack and Matlala, assert that schizophrenia is managed with pharmacological medication and psychosocial treatment, which promote and improve the quality of life of Mental Health Care Users (MHCUs) [7]. The Department of Health Standard Treatment Guidelines in South Africa - 2014 also support the management of schizophrenia with antipsychotic medication and psychosocial intervention.

As far as cannabis use is concerned, it has been noted that it can cause symptoms that mimic schizophrenia [8]. Studies done confirm that after taking cannabis, users experience sudden onset of confusion, associated with hallucinations and emotional lability [9]. Furthermore, studies also indicate that cannabis use triggers or worsen psychotic symptoms in people living with schizophrenia [10].

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It was also found that users diagnosed with schizophrenia are more likely to misuse cannabis than the general population [11]. These users are also known to smoke cannabis and find it difficult to quit. Dekker et al., found that using cannabis can worsen the symptoms of schizophrenia and decrease the effectiveness of schizophrenia treatment [12].

Some studies by Melka et al., contend that the genes that cause the development of schizophrenia may also increase the likelihood of cannabis use [13]. It is important to however note that cannabis may not cause schizophrenia but users with schizophrenia find it pleasant to smoke it [6]. This is also in line with the findings of Proal et al., who found that people with schizophrenia tend to have an increased risk to smoking cannabis [14]. Hill argues that early use of cannabis is a contributing factor to psychiatric illnesses [15]. This finding is also supported by the findings of Dekker et al., who found that there is a positive relationship between schizophrenia and vulnerability to cannabis use [12]. Bossong, et al., also found that the cannabinoids found in cannabis releases dopamine and it triggers psychosis in people with schizophrenia [16]. For Cooney et al., people with schizophrenia who smoke cannabis experience impairment in white matter tissue changes in the brain, which activates psychosis [17].

According to Miettunen et al., people with schizophrenia tend to relapse and be re-admitted and this is often associated with poor adherence to treatment and use of cannabis [18]. This is also supported by Koskinen, et al., [19] as well as Zammit et al., [20] who found that the use of cannabis by people suffering from schizophrenia may lead to an increase in psychotic relapses. It was also a finding by Carra and Johnson, and Costain that schizophrenic patients using and abusing cannabis may experience impairment in their daily and social functioning and suffer from delusions and hallucinations [21,22]. This finding also supports the findings of Perez, et al., that revealed use frequent use of cannabis amongst users with schizophrenia has negative effects [23].

The effects of cannabis use on schizophrenia have also been reported in a South African study by Parshotam and Joubert who state that users diagnosed with schizophrenia and using cannabis, use the psychiatric facility more frequently [24]. While Peltzer, et al., contend that there has been a demand on treatment for drug users of cannabis from 1997 to 2001 [25].

In South Africa, mental and behavioural disorders constitute 0, 4 percent cause of death in comparison with certain infectious and parasitic diseases, which make up 22, 6 percent of the causes of death (World Health Organization-2013). According to the South African Depression and Anxiety Group (SADAG) on schizophrenia facts and statistics it has been reported that the incidence of schizophrenia is about 1 out of 100 people [26].

A South African Epidemiology Network on drug use study conducted by Parry et al., [27] suggests that dagga (cannabis) is regarded as an 85 percent mainly male-used substance. Another study done by the South African Community Epidemiology Network on Drug use from July to December 2014 compiled in all nine regions by 26. Dada et al., reports that cannabis is the primary substance of abuse by the majority of users who are younger than twenty years except in the North West Province [28].

The European Drug Report - 2014 reports that at 73.6 million, cannabis remains number 1 amongst all illicit drugs known to be

used, compared to other drugs such as cocaine (14.1 million), amphetamines (11.4 million) and ecstasy (10.6 million). In South Africa, Morojele et al., reports that cannabis is the third most frequently used drug amongst learners and its effects can last a lifetime; the highest most illicit drug used in the province of Gauteng from the period January to June 2013 at 40 percent [29]. According to Sadock and Sadock users with schizophrenia have a high probability of being re-admitted in a psychiatric facility following a discharge [30].

Based on the MHCUs' histories, the researchers' observation and the literature reviewed as articulated above, it is not easy to differentiate symptoms of schizophrenia from those of cannabis use, as it has been noted that cannabis use can cause symptoms that mimic schizophrenia, according to Massod and Sailaja [8]. However, cannabis use exacerbates schizophrenia symptoms and reduces treatment compliance.

The National Mental Health Framework and Strategic Plan in South Africa – (2013-2020) supports a need to provide action plans on mental health services to improve the mental health care status of the country. The major challenge lies in finding ways to motivate cannabis users suffering from schizophrenia (or vice versa) to discontinue using it [31].

Intervention strategies utilized by MHCP, for example, psycho-education and psychological therapies, may be considered less effective in reducing relapse [22]. Kazadi, et al., finds that risks of relapse of the MHCUs may be reduced when a Mental Health Care Practitioner (MHCP) identifies factors that increase a relapse [32]. Gregg et al., suggests that a MHCP should aim at facilitating behaviour change and specific interventions in an attempt for users to reduce or give up their cannabis use [33].

## Materials and Methods

### The study setting

The study was conducted at a regional psychiatric facility in one of the Metros in the Gauteng Province of South Africa. In-depth interviews were conducted in the substance rehabilitation unit counselling room of this facility, specially prepared for that purpose. The room was a comfortable, well-ventilated space which was free from noise.

### Study design and study population

A qualitative, phenomenological approach which is exploratory, descriptive and contextual in nature was used to explore and describe the lived experiences of users with comorbid schizophrenia and cannabis use disorder who had experienced one or more relapse(s). The findings were used to develop a relapse-prevention model, which is not the focus of this paper.

The study population was selected purposively, and included all users with a comorbid diagnosis of schizophrenia and cannabis use disorder, who have experienced one or more relapse(s). The diagnosis of relapse among schizophrenia sufferers abusing cannabis, as well as the classification was made by the attending psychiatrist. A sample was selected based on the following inclusion criteria: schizophrenia sufferer using cannabis, who is 18yrs or older, who has experienced one or more relapse(s) and who was a psychotic at the time the interviews were conducted.

Users who were psychotic, younger than 18 years old, and users diagnosed with conditions other than the comorbid schizophrenia and cannabis use disorder were excluded (Table 1).

Criterion	Characteristics	Frequency
Gender	Female	1
	Male	13
Age	20-25	7
	26-29	4
	30-40	3

**Table 1:** Demographic information of participants.

## Data Collection

Data was collected using in-depth phenomenological interviews. This data collection method was coupled with other forms of data collection, such as observation and field notes, in order to provide rich data and more information that might be pertinent to the study [34]. Saturation of data was reached by the 12<sup>th</sup> interview. Just to make sure no new themes emerged, the researcher continued with the interviews until fourteen participants had been interviewed, with no new themes emerging.

## Data management and analysis

All fourteen interviews were transcribed verbatim and the transcripts kept under lock and key. No identifying information appeared on the transcripts. Rather, codenames were used. The transcripts were subsequently shared with a qualitative research expert, who analysed the data independently. The data was analysed using the series of steps from Van Kaam’s phenomenological approach, after which the researcher and the independent coder met for consensus discussions.

## Results and Literature Control

Three categories emerged from the findings of this study, namely: Effects of cannabis use that led to a relapse, factors maintaining cannabis use and factors discouraging cannabis use. These categories were further sub-divided into seven themes, each with sub-themes as indicated in the table below. In the presentation of these findings, a few verbatim quotations will be used to support the themes and sub-themes identified (Table 2).

### Category 1: Effects of cannabis use that led to a relapse

Themes identified under this category included psychological effects of cannabis use; physical effects of cannabis use; and social effects of cannabis use. The discussion of these themes will be highlighted by one or two direct quotations from the participants and supported with literature in places.

#### Psychological effects of cannabis use

The psychological effects of cannabis use were evident during relapse and were characterized by among others, cognitive and emotional symptoms of a psychosis. These symptoms of relapse are described below:

Categories	Themes	Sub-themes
Effects of cannabis that led to relapse symptoms	Psychological effects	Cognitive psychotic symptoms of relapse
		Emotional psychotic symptom of relapse
		Remorse
		Aggressive behaviour
		Addiction or craving
		Mood relaxant effects
	Physical effects	Energetic spurs
		Dizziness and headaches
		Weakness and fatigue
		Weight loss
		Appetite stimulation
	Social effects	Social isolation
		Antisocial behavior
Factors maintaining cannabis use	Social factors	Peer pressure
		Boredom and loneliness
		Non-compliance to treatment
		Escape from real world problems
		“Positive” effects of cannabis
Factors discouraging cannabis use	Institutional factors	Treatment compliance
		Rehabilitation
		Support from MHCP and community
	Internal factors	Burden of care
		Cannabis perceived as harmful (say no to cannabis campaign)
		Internal locus of control/commitment to heal
		Instrumental support/personal hygiene functional
	Improved lifestyle	Family refers user for support/treatment
		Meaningful activities, e.g., church, sports, relations
		Traditional healing

**Table 2:** Summary of findings.

### Cognitive psychotic symptoms of relapse

One of the symptoms that participants found particularly challenging was psychosis. They related experiences that were outside the individual’s normal mental status, such as seeing things that are not there and were unaware that they had relapsed. Users described their illness as madness. Bizarre behaviour was one of the negative symptoms related to schizophrenia, that they experienced. Below, are a few excerpts from their transcripts:

*“I will start to see things ... I will start seeing things, like I will have a vision or something wa bona (you see)” (P2)*

*“I’ve seen things those other peoples (sic) could not see, and heard things those other peoples (sic) could not hear. Which means I was starting to go mad and I even fight (sic) with my family.”(P5)*

### Emotional psychotic symptoms of relapse

Participants also reported having experienced some emotional effects displayed in various emotional responses following readmission due to a relapse. These emotional effects included the following:

## Remorse

The majority of users experienced remorse regarding readmission. They felt that it was a good thing for them to be readmitted because they would be given support and rehabilitation to stop smoking cannabis. Eight out of fourteen users mentioned that it was a bad experience to relapse, citing non-compliance to treatment, feelings of craving which exposed them to cannabis use.

Most of the participants expressed feelings of unhappiness for being re-admitted, and stated that staying away from cannabis could have prevented a relapse. Below are some of the statements they echoed:

*"I don't feel good, I feel like I...I...should have stopped it last year, but then I told myself that I am going to stop smoking dagga (cannabis), I should not be here. I am not happy in this place." (P5)*

*"Yeah, it is bad...especially since I've been diagnosed with this condition a long time ago, I am more experienced. So coming back and relapsed is a bad thing and it is demotivating." (P10)*

## Aggressive behaviour

The findings of the study revealed that most users found it difficult to control their anger outbursts. This aggressive behaviour was likely to occur when one could not understand certain situations or when one was hurt. This is in line with the definition of aggression by Sadock and Sadock - 2009 who see aggressive behaviour as an overt action intended to harm. Users also revealed that they became aggressive when they were upset [30]. This is what they had to say:

*"That's when one starts to be aggressive..." (P1)*

*"Hmmm... I'd say it was my moment of craziness because I ... when I was angry I... I smashed my mothers' car windows..." (P7)*

*"And then you feel hurt and sometimes you...you think, if I am angry, I feel like taking something and throwing it at you. You see that is no good..." (P13)*

## Addiction/craving

The findings of the study revealed that most participants reported that marijuana (cannabis) is harmful and is addictive. Wanting to quit smoking cannabis marks the difficulty of controlling the addiction feelings. They perceived cigarettes as a substance that can be more easily relinquished than cannabis. Some participants reported the desire to smoking cannabis but viewed craving as an uncomfortable feeling. Participants' perceptions of addiction and craving are reflected by the following utterances from the transcripts:

*"No yona (this cannabis) it's addictive, yes..." (P1)*

*"Yeah...I decided 'no, this thing is not good for my health' cause each and every morning I feel like I need it. Cigarettes are far much better than cannabis." (P6)*

*"Hmmmmm...what has happened is... in 2010, I started craving a lot...." (P7)*

## Mood relaxant effects

Six out of the fourteen users reported that cannabis was used to improve the mood because it made them feel relaxed and enabled them to socialize with their friends whenever they met. This is what they had to say:

*"You will still be in a relaxed mood; you won't feel like standing up or going to be with your friends maybe...for whatever reason you were going to meet them, you see." (P10)*

*"Cannabis makes me to relax and I was able to socialise with my friends." (P3)*

*"And then I will calm down now and then I could think clearly." (P14)*

Participants reported that cannabis was a mood relaxer and also made them to achieve some pleasure. This is in line with the findings of a study by Kolliakou, et al., who supported the notion that cannabis was used for getting relaxed [35].

## Physical effects of cannabis use

These include dizziness and headaches, weakness and fatigue, weight loss and appetite stimulant.

## Energetic spurs

Most users regarded cannabis as a high energetic booster and considered that it has a positive effect because they argued that one became very energetic and strong when under the influence of cannabis. Users' statements point to the fact that cannabis use is helpful in increasing their energy levels:

*"Zoll it...it makes you to work too hard...you feel like after smoking you can work... work ... you cannot sit still. If you sit still, you start to see things (referring to hallucinations) but if you work...you just work." (P2)*

*"You...you use cannabis and then you get extra energy that's what I can say." (P6)*

*"Hmmm...I...ok, I used to study while I was smoking marijuana (cannabis) and then I found out that I understand stuff...I become a high achiever. So I understand more than I understood if I did not smoke, and er...I would...I would remember more, but then gradually in my university years I realized that it had a negative effect than on my studies. I...I...I seemed to be forgetful and I forget (sic) many things. But in my high school years I...I could remember well and...yeah, I...I...after my dad passed away, I distanced myself away from my feelings. So right now I don't have any feelings, I don't get excited, I don't get any feelings." (P7).*

## Dizziness and headaches

Participants reported dizziness and headaches as one the physical effects of cannabis use or abuse.

The following excerpts describe their experiences:

*"Maybe you relapse, maybe let's say you ...you...you were smoking. Then you...You get dizzy...." (P1)*

*"Then it damages you because when you can... when you touch the nose you start feeling pain in here, in there...inside the head." (P2)*

## Weakness and fatigue

Some participants reported having experienced tiredness and weakness due to cannabis use or abuse, and a few excerpts from the transcripts appear below:

*"Yeah the health professionals giving me ehm ... moral support because, ah ...I was ... I ... I ... before I came here I was too weak even to walk; I ... I couldn't walk properly..." (P8)*

### Weight loss

Most participants reported weight loss due to cannabis use because whilst under the influence of cannabis, they can survive with only water and no food. For them, cannabis is a weight regulator. This is what they had to say:

*"You lose weight and hmm ... and hmm...your brains. It reduces your brains a lot."* (P9).

### Appetite stimulation

Two out of the fourteen participants reported that cannabis is an appetite stimulant. While the rest reported that when under the influence of cannabis, one can spend the whole day without eating. The stories contain the following excerpts:

*"It would make me eat a lot of food. That's what I can say; it gives you appetite."* (P5)

It is reported in a study done by Robson that cannabis and Delta-9-tetrahydrocannabinol are effective appetite stimulants [36].

### Social effects of cannabis use

These include social isolation and antisocial behaviour.

#### Social isolation

Five out of the fourteen participants reported that they find it difficult to socialize with people who do not smoke cannabis and this fact is making them feel isolated and on their own.

Social isolation becomes internal as reported by some of the participants because they prefer to be alone or be with people who are kind to them. This is reflected in the following storylines:

*"Yoh, the thing is when you smoke dagga you get to...to be isolated you don't want to live with people, you don't want to ... even your family you don't want them to ... to support you actually."* (P1)  
*"I like to be close to myself and don't talk to people."* (P3)

Participants also reported being stigmatized and discriminated against. It is expected that the community ostracized individuals with schizophrenia and cannabis use disorder due to the display of bizarre behaviour when in their psychotic state.

However, the findings of the study revealed that most of the participants were not subjected to social stigma, considering that the level of community understanding and supporting individuals with cannabis use is increasing. It was also found in other studies that such reaction by the community is due to lack of knowledge about mental illness [37]. The users are stigmatized because of the behaviour they display in the community due to mental illness.

Studies have also shown that people with schizophrenia who use cannabis experience a relapse which results in a disturbance in physical and social functioning of an individual [38].

#### Antisocial behaviour

The findings of the study revealed that, because of unemployment and symptoms of addiction as well as craving, users with schizophrenia resort to criminal activities for self-gratification such as stealing to earn money for them to buy cannabis and end with the display of aggressive behaviour. This is reflected in the storylines below:

*"Hmmm... I'd say it was my moment of craziness because when I was angry, I..I smashed my mothers' cars windows"* (P 7)

*"So ... on the 13th on Friday my mother came and told me that they withdraw the case of malicious damage to property."* (P 9).

*"And then you feel hurt sometimes you... you think, if I am angry I think I can take something and through it to beat you, you see that is no good..."* (P 13)

A study conducted by Budney and Hughes mentioned that individuals with mental illness experienced a feeling of irritability and aggressive outbursts as a result of their illness [39]. Hodgins & Lejoyeux et al., highlighted that aggressive outburst is common amongst people with schizophrenia and substance use [40,41]. The findings of the study also revealed that cannabis use causes physical symptoms. This is also supported by Robson, who also found that cannabis use produces unwanted effects, such as dizziness [36].

### Category 2: Factors maintaining cannabis use

Themes identified under this category were found to be all social in nature, and included peer pressure; boredom and loneliness; an escape from real-world problems; positive effects of cannabis; and non-compliance to treatment.

#### Peer pressure

The study revealed that most of the participants mentioned that a friend introduced them to cannabis. Taking pressure from friends is one of the most difficult elements that adolescents are confronted with in their daily lives. The participants stated that friends are smoking cannabis as a pastime due to lack of social activities in the community. Friends play a significant role in smoking cannabis as most of the participants mentioned that they smoke cannabis with friends. These narratives were concurrent descriptions of their social context:

*"I started because of my friends were smoking and giving me and I was wanting to be like them. So with cannabis you can...you can feel orait (alright) because it doesn't kill."* (Participant K)

*"Well, we (participant and friends) were actually hiding when we were smoking dagga. Sometimes we would go to the place where they sell dagga and smoke there. As soon as he (the seller) went to school he would come back with some dagga and our mother was not always around. But when she came back, she'd always smell that we were smoking, but she wouldn't say anything."* (Participant A)

Users clearly stated that peer pressure and being amongst friends who smoke cannabis increased the behaviour of smoking cannabis. Some users were aware of the adverse effects of cannabis on them, but they couldn't help themselves and continued using cannabis.

Some literature supports the notion that individuals used cannabis to belong to a peer group. A South African study done by Morojele et al., stated that peer pressure contributed to drug use. The users mentioned that cannabis is used as a pastime and time goes quickly when using cannabis.

#### Boredom and loneliness

Participants explained that the feeling of boredom and loneliness led to cannabis use, and that cannabis was used as a pastime. Some participants explained that they often experienced boredom, and hence resorted to dagga. Some started using cannabis at boarding school because they had nothing else to do. This is reflected in the following passages:

*"I started to use it at boarding school when we had nothing else to do." (Participant E)*

*"It is a pastime. The time goes quickly when you smoking dagga, yah." (Participant N)*

Cannabis is regarded as a recreational drug, used by a large number of youth since the 1970's. Patrick et al., study concurs that participants used cannabis to relax and relieve boredom.

### **An escape from real world problems**

Individuals with schizophrenia and cannabis use find it difficult to cope in a stressful environment, especially when parents are fighting. Their frustration exposes them to cannabis use and they believe its effects calm them down.

As such, it seems as if their primary coping mechanism is to escape from real world problems, as they have no other way to deal with their respective situations. In the context of the study, participants felt that they used cannabis as an escape from real world problems.

A participant mentioned that his father's abusive behaviour towards his mother made him start using cannabis. The following narratives support these experiences:

*"When I was still at school, I used to be all alone because my father wanted me to be alone without friends. He used to beat me up when I have lots of friends. That's why I used ganja (cannabis) to be my best friend." (Participant C)*

*"You...you see, the problem with cannabis this time...this time around is... since my friend passed away, I couldn't cope alone..." (Participant H)*

Studies confirm that people with schizophrenia are prone to use cannabis due to childhood trauma and this is significantly associated with experiencing psychotic symptoms. Environmental factors precipitate stress and drugs assist with alleviation of such symptoms.

According to Akdeniz et al., it is agreed that stress related to individuals being exposed to environmental factors on a risky population group may impact on the brain functional structure in response to prolonged exposure to social stress.

### **"Positive" effects of cannabis**

Participants in this study mentioned that cannabis makes them feel better when they experience a low mood. They also indicated that cannabis makes them relax. Cannabis is perceived as harmless and makes one perform exceptionally well. This is reflected in the following excerpts from the participant transcripts:

*"So when you use cannabis you become relaxed...yeah, you become relaxed and then you can be relaxed for maybe two hours or so..." (Participant J)*

*"Hmm...it is a little bit frustrating because I...I don't see the problem because I don't see much harm as people think it causes (sic). Yes, fine, people say it kills brain cells but I am still the same high performer that I was seven years or ten years ago." (Participant G)*

The findings of this study revealed that cannabis is reported to have "positive" effects. The World Drug Report – 2014 reports that worldwide, cannabis is perceived as low risk but increased treatment and hospitalization related to cannabis use has increased [42].

Participants in this study mentioned that cannabis could be used to derive pleasure. In a relatively recent research conducted, cannabis was used for social enhancement [12]. Most participants in this study mentioned that they used cannabis to get rid of unpleasant effects of medication.

This type of experience is confirmed by another study done by Bimerew et al., which people with schizophrenia use substances to reduce unpleasant effects of anti-psychotic drugs. The studies conducted by Perez et al., reported that cannabis use was related to social activities, relaxation and getting high. Griffiths refers to feelings of high as mood modification [23]. The person experiences an arousing buzz, feels like de-stressing or escape.

### **Non-compliance to treatment**

Participants reported they did not take their medication when at home. Most participants stated that they stopped taking medication when they used illicit drugs fearing that the medication cannot be taken adjunct with drugs.

*"Ahm...I relapse I don't drink my medication sometimes. I can't check the time to drink my medication. It stops me from...uhm...drinking beer and smoking." (Participant C)*

*"I don't feel so good to come back because I did not use (sic) to take medication. I forgot." (Participant I)*

A person with schizophrenia tends to have adherence problems because of cognitive impairment. A study conducted in South Africa revealed that high rates of relapse are related to treatment discontinuation [4].

The finding in this context is confirmed by a study done in Sri Lanka on users with schizophrenia using cannabis, the study concluded that treatment non-compliance triggers a relapse.

### **Category 3: Factors discouraging cannabis use**

Themes identified under this category were found to be related to institutional factors, internal factors or improved lifestyle. They are discussed below.

#### **Institutional factors**

Systems, policies and procedures within institutions often discourage cannabis use. Similarly, users experienced support from the MHCP's particularly from doctors and nurses during admission. This would not have been possible, if MHCP's did not follow the rules and regulations of the institution. Findings related to treatment compliance, rehabilitation and support from the MHCP's and available community structures are discussed below.

#### **Treatment compliance**

Some participants indicated that when they are at home they take their medication as prescribed. Participants mentioned that they take medication well but the main deterrent of not taking their medication is absence of food at home. Some indicated that they experience unpleasant side-effects from medication. They contend that an injection is helpful with compliance. It is supported by the following storyline:

*"Yeah, since the nurses here give us medication at regular intervals as prescribed, I feel that my illness has improved. When at home, I did*

not take my medication regularly because sometimes there would be nothing to eat, and I have to take my medication with food.”

“When I am here at the hospital, I take my medication properly.” (Participant D)

A demand for treatment of drug users has been reported in a study done in South Africa by Peltzer, et al., [25]. It is reported that treatment during admission is viewed as helpful because of the education that accompanies the issuing of this treatment.

Some participants mentioned that an injection was helpful in terms of adherence. Studies confirmed that adherence to treatment requires a prolonged effect of medication, administering an injection for users with schizophrenia may provide a positive treatment response.

### Rehabilitation

It is known that rehabilitation provides benefits to individuals especially when they are willing to change. Similarly, participants in this study reported that rehabilitation in the psychiatric facility was helpful in terms of education on the dangers of cannabis use. The quotations below support this notion:

“... It means that I've learnt my lesson. Here they teach you, they... they don't only help you they teach you how to take care of yourself. (Participant A)

“In hospitals there is enough rehab, and the rehab program here...I think it is very beneficial for me.” (Participant G)

The users agreed that rehabilitation is helpful in terms of preventing a relapse. They mentioned that rehabilitation is beneficial and the education about the dangers of cannabis on their brain is also useful. Most participants had positive perceptions about the support they receive from the MHCPs', especially nurses and doctors.

### Support from the MHCP and community support

During a relapse state, users are often re-admitted to a psychiatric setting and they receive support from MHCP's. The users mentioned that the care and support in a psychiatric facility by nurses and doctors is very good. In the primary health care facility, there is a psychologist yet some users still don't know what services are rendered by such MHCP's. Both the doctors and nurses only do consultations and are unable to give support. Some reports were as follows:

“No. the support is very good like ehm... You see in the past when I relapsed and I was re-admitted.” (Participant J)

“The nurses, the doctors are supportive. I must say, sister Mapoyisa is the best nurse ever on this planet; there is no one better than her. She will always try to help; she always tries her best.” (Participant M)

“Nahh, they work perfect from the clinic. There are psychologists; but people don't always attend. They are just afraid to go to the clinic because they are still not informative (sic)” (Participant C)

“Yes I used to attend at a local health facility. I find a Professional Nurse there and then I go to the doctor, and then the doctor would be nice and give me the medication and then say good bye.” (Participant F)

In the context of the study, the participants experienced more support from the MHCP's, especially at the regional psychiatric health facility as opposed to the community clinics. It is significant to note

that the education and support of users is beneficial in terms of relapse prevention. Studies support that adequate preventative measures should be implemented by health care providers.

In South Africa, a study conducted to determine the increased length of stay versus reduced length of stay, concluded that less preparation for discharge was a cause for a high re-admission rate. Based on this, it is therefore important that the community health care services for users with psychiatric illnesses and substance abuse disorder be strengthened to reduce the high re-admission rate to psychiatric health facilities.

### Internal factors

The participants realized that cannabis is a problem as it is harmful to their bodies, and a burden of care. Their internal locus of control, allowed them to commit to change and to feel that they will never use cannabis.

### Burden of care

Schizophrenia is a serious mental disorder to both the user and family. The disease is chronic and results in a disabling behavior. The users acknowledge that the illness contributes towards poor self-care and that they are unable to manage their own personal hygiene. This is reflected in the following narratives:

“Uhm Aaaah another thing is that when you are taking marijuana you don't want to bath...nor do anything, but just sit and not go to work.” (Participant A)

“You know...you don't worry about brushing your hair or putting on make-up or wearing shoes. On some days you know...on a Saturday (for example), you would just stay in your pyjamas the whole day. Why should you care...it's like you could worry about nothing, you know...that's not good.” (Participant L)

A study conducted in South Africa in Mpumalanga province on caregivers caring for individuals with schizophrenia confirmed that caregivers experienced care as stressful and unpleasant. Another study conducted by Zahid and Ohaeri reported that the burden of care amongst schizophrenic sufferers with constant relapses was a norm and was significantly associated with disruptive behaviour.

In Egypt the burden of care of families caring for an individual user with schizophrenia, was higher when avoiding problem-solving, than in those seeking social support and utilizing coping strategies. A study conducted in Nigeria by Igberase et al., confirmed that caregivers of users with schizophrenia experienced an immense burden of care.

### Cannabis perceived as harmful (“Say no to cannabis” campaigns)

Most users perceived cannabis as a problem and felt that they wanted to quit smoking cannabis. Feelings of wanting to change were strong amongst the participants. They felt that cannabis retards their lives. The majority of users perceived cannabis as a problem that causes a relapse. Therefore, they felt strongly that they needed to quit cannabis use, whilst only a few condoned its use. Most of the participants stated that noting that cannabis is not good for them; they really want to turn their lives around. Cannabis was seen as a cause of illness. Most participants stated that cannabis is harmful to their brain. This is reflected in excerpts below:

*"Hmmm...you know, like...you...you know this thing is not good for your health. It's cruel. So I need to stop"* (Participant F)

*"No...I'm...I'm ready to leave my...er...I am ready to forget about marijuana. I don't want to smoke it anymore because it damages my brain..."* (Participant H)

It was encouraging to hear most of the participants vowing to stop using cannabis as evidence have shown that cannabis use does increase the risk of developing a psychosis. It was also evident from interviews with participants in this study as they perceived cannabis as harmful to their brains. Studies have confirmed that teenagers who smoked cannabis at a young age are likely to develop psychosis. Other studies also suggest that cannabis induces positive symptoms. Pierre et al., report that psychosis is related to greater amounts of cannabinoids containing Tetrahydrocannabinol (THC) and cause a psychosis relapse. Volkow reports that cannabis can worsen psychotic symptoms in people with schizophrenia, with symptoms such as hallucinations, paranoia and disorganized thinking.

A prospective study confirmed that cannabis use poses a risk for psychosis in psychosis-free persons and those known to be vulnerable to psychotic disorders. The World Health Organization also acknowledges that cannabis in schizophrenia causes psychosis. According to some studies, the more cannabis is used, the more likely it is that a person develops a psychotic illness. Previous studies done confirmed that schizophrenia patients using cannabis presented with a significantly higher degree of delusions and hallucinations than those who did not. The World Health Organization acknowledges that cannabis in schizophrenia causes psychosis.

#### **Internal locus of control (Commitment to heal/change)**

Participants expressed a feeling of wanting to change and quit smoking cannabis. They realized that dagga is causing a relapse and it is time to change. Most of the participants felt that attending a rehabilitation program is the best action to change from bad behaviour of smoking cannabis. These are some of the excerpts extracted from the participants' transcripts:

*"I can...I think I can stop smoking dagga...forever!"* (sounding emphatic). (Participant D)

*"Nah, I don't want to come back here...in...in the clinic like... like again for another relapse. So maybe I can come back for something else, maybe if I was hit by a car or something, wabona...(you see)." (Participant B)*

*"When I stopped zoll (dagga), I didn't drink medicine and there was no problem. When I see (sic) that there was no problem I smoked zoll again to see what will happen if I smoked it, and nothing happened. I kept smoking it and in the end, it brought me back to X (stating the name of the facility). So now, I can say with certainty that dagga is the one that is causing problems for me, which means I must stop smoking dagga and I tell you I am not gonna smoke it anymore."* (Participant E)

*"You see. That's why I have the common sense that if I am out of here I won't smoke ganja again. You see?"* (Participant M)

*"But now I am getting old. I don't want to...I don't want to spend my life thinking about cannabis; I want to have a baby."* (Participant N)

A change in behaviour was observed in the findings of this study. Most participants expressed feelings of wanting to be 'a better person' and finding something to do in life. They believe all people aspire for good things in life.

In a study conducted amongst youngsters in Cape Town South Africa, most participants agreed that cutting down on cannabis and cigarettes would be helpful and they were aware of negative impacts of substance use on mental disorders.

#### **Instrumental support (personal hygiene/functionality)**

Most participants mentioned that their family is supportive in terms of reminding them to take medication. They further indicated that families/relatives were concerned about the use of cannabis and wished they could stop. Families were seen as open about explaining the dangers of cannabis and users view family bringing them fruit (and not dagga) when they are in the hospital, as positive and supportive. This is confirmed by the following descriptions:

*"Uhm, they are taking care of me when I'm here in the hospital."* (Participant A)

*"...my brother and my sister, but most of all my ouma (grandmother) with whom I stay. She is the one who cares after (sic) me; she is the one who reminds me 'you've got to take your medication...you've got to take your medication,' and stuff like that."* (Participant F)

*"My family is supporting me. They ... they come here every week; they visit me every week here and they give me their support. They are also encouraging me to leave the dagga-smoking and the liquor"* (Participant H)

*"No my mother is very much supportive, she was here over the weekend and we talked a lot about my way forward. So I've got a positive support from my family."* (Participant J)

In the context of this study, users viewed family visiting them when they are sick as being supportive and hence, they really want to show appreciation by stopping the use of cannabis once they get discharged. As to whether they will keep their word regarding this, is another thing. Some studies assert that parental warmth and disapproval of drug use assist in stopping the use of drugs. The quality of time spent with one's children minimises the use of alcohol or drugs. Increased parenting reduces negative behaviour such as cannabis use and alcohol use. Participants in this study experienced family as supportive during their illness episodes, whilst they also ensured supervision of taking medication.

These results are supported by a study conducted in Japan with 121 users and their families who revealed that family often supported the users with medication-taking as well as handling their condition.

#### **Improved lifestyle**

Change in lifestyle by quitting cannabis use was seen as the best solution to change. Their family was referred to be supportive when they experienced a relapse which was helpful yet some users perceived it negatively especially when they sought assistance of police.

#### **Family referrals for support (treatment/ police support)**

Participants viewed police intervention during their relapse, as negative. They did not appreciate a re-admission. They perceived police intervention as embarrassing, which makes them want to change their lifestyle. On the other hand, they did not appreciate the response by family/relatives in seeking police intervention, and as such, regarded it as negative. The following supports this narrative:

*“They called the police ... the police took me to Kalafong.” (referring to a local hospital). That was embarrassing (Participant E)*  
*“Because now he took me to Kalafong...and I was eventually brought me here, but he didn’t come to see me anymore...” (Participant M)*

The Mental Health Care Act No 17 of 2002, Section 40 prescribes to police to assist the community when their families are in distress and to take users to a psychiatric facility. The South African Community Epidemiology Network on Drug Use (SACENDU) reports that there is a slight decrease in referrals from self/family or friends to treatment centres and most referrals were coming from courts or correctional services [43]. According to Arendt and Jorgensen a higher prevalence of psychiatric disorders amongst cannabis users than other drugs, has been noted.

A case control study conducted between January 2004 and Dec 2004 on schizophrenic patients with comorbid misuse of cannabis was done. The results show that they had a higher prevalence of relapses and more contacts with the psychiatric service including the police, than users suffering from other psychiatric conditions.

#### Meaningful activities (sport/church/relations)

Participants were discouraged from cannabis use by getting involved in meaningful activities such as taking part in church activities and sports. Spirituality was seen as a way to psychological recovery. The users mentioned that when they are involved in playing games, watching movies or visiting someone who does not smoke cannabis was a correct strategy to stay away from cannabis use. The following narratives have been extracted from their excerpts:

*“Uhm first thing is...is that we play cricket, the second thing is that there’s a church choir practice to attend.” (Participant A)*

*“Me, when I’m at home I just watching TV. When it is boring, I just go there to other guy that doesn’t like smoking cannabis, wabona (you see).” (Participant B)*

To enable users to get out of the behaviour of using cannabis, they seem to have a need to do meaningful activities. A study conducted in India supports that mentally ill users view spiritual help as a way of coping with schizophrenia. Borrás et al., agree that religion influences attitude and treatment adherence.

#### Traditional healing

Cultural practices in the South African context are respected a lot. As such, due to varying cultural expressions and interpretations of mental illness, traditional healing is among the many practices that people resort to, when in distress. Some participants sought assistance from traditional healers. They felt that if they consulted a traditional healer, it might help with quitting the smoking cannabis. The following excerpts are said as follows:

*“There was a time that I strongly felt that I have to see a traditional healer because I ... I felt in my spirit that I am not ok...” (Participant G)*

*“I went to my family and told them that if they don’t have money, they should let me know and I will go and find a job to get money to er... er...buy a goat and alcohol for the ritual. (Participant M)*

Goats are generally used by traditional healers to perform rituals, and beer to appease the ancestors.

This notion is supported by a Nigerian study that revealed that the first contact of users during the course of illness was with traditional healers due to socio-cultural beliefs. Symptoms of schizophrenia can be perceived as spiritual problems and therefore require spiritual and traditional intervention. A study of 360 users revealed that traditional healing is the best method for the treatment of mental and physical ailments.

#### Discussion

Cannabis use has been viewed as a risk factor for the emergence of psychosis in individuals without a psychosis background. The findings of the study revealed that participants who are schizophrenia sufferers, reported symptoms of acute psychotic episodes when under the influence of cannabis. These findings are in line with Hall and Zammit et al., findings that reported that cannabis smoking is a risk factor of psychosis for people with a comorbid diagnosis of schizophrenia and cannabis use disorder [44,20]. Co-morbidity of schizophrenia and cannabis use disorder in this study was associated with poor treatment compliance leading to high rates of relapses. According to the National Drug and Alcohol Research Centre - 2011 and the United Nations Office on Drugs and Crime (UNODC), cannabis was the most widely used drug by 125 and 203 million people worldwide in 2009 [45]. Given the evidence based on those studies, it is clear that cannabis and schizophrenia co-occur and suggest a causal relationship [46].

Some participants expressed feelings of unhappiness and perceived a relapse as being due to bad behaviour and this was demotivating. Participants also reported that re-admission was a bad thing and that constituted to their unhappiness. This is supported by the findings of Vijayalakshmi, et al., that revealed that treatment non-adherence was associated with multiple re-admissions [47]. This was exacerbated by most of the participants being unable to control their anger outbursts when under the influence of cannabis. The term “aggression” is an overt action intended to harm [30]. This aggressive behaviour was likely to occur when a user finds himself/herself in a situation where one does not understand what is going on around him/her, or when one was feeling hurt and even though sometimes unprovoked. In this study, the participants reported similar sentiments.

This study’s findings are also supported by the findings of Budney and Hughes [39]. Their findings revealed that individuals with mental illness experienced a feeling of irritability and aggressive outbursts as a result of their illness. Hodgins, Lejoyeux et al., also found that aggressive outbursts are common amongst people with schizophrenia and using marijuana (cannabis), even though the common belief is that cannabis is non-addictive [40,41]. Addiction is described as an inability to control drug use, and interferes with life functioning (National Institute on Drug Use (NIDA)) [48]. Drug dependence is a harmful consequence of the repeated use of a substance whereby a person needs a higher dose to achieve the substance’s effects. Swendsen et al., attest to the fact that mental disorders are associated with substance use dependence [49]. For Nocon et al., regular use of cannabis is associated with a dependence syndrome [50]. Filbey et al., also found that marijuana elicited cues of greater craving in heavy in chronic users [51]. According to Gray, craving is an intense desire to use a substance which is often associated with dependence [52]. Gray understands of craving support the findings of the study where users explained that they experienced craving more often, especially

when they see people smoking. Sayette et al., also found that craving is a psychological urge to use a drug and occurs when medication is discontinued or stimulate recreational activity(ies) [53]. Craving may also stimulate smoking followed by relapse during a quit attempt [54]. It is also documented that marijuana elicits greater craving in heavy chronic users [51].

Psychology teaches us that thoughts and feelings are psychological processes. Cravings experienced by users stimulated an intense need to smoke every day. Larimer et al., describe cravings as the need for an immediate gratification [55]. The findings of their study revealed that craving was a predictor of relapse amongst users with schizophrenia and cannabis use disorder, findings which are in line with the findings of Schnell et al., [56]. From the findings of this study it is suggested that the Mental Health Care Practitioners' (MHCP's) role should include the development of strategies and psycho-educational programs that will help manage craving, as well as train users with comorbid schizophrenia and cannabis use disorder, on anti-craving skills.

The findings of the study also revealed among other things, that cannabis use increases energy levels. These findings are in line with the World Drug Report - 2011 that purports that cannabis enhances activity levels and increases confidence [57]. In another study conducted by Buadze et al., it was found that users considered cannabis as a therapeutic aid and reported positive effects of energy [58]. A recent study conducted in South Africa by Parshotam and Joubert, also highlighted similar findings [24].

However, some other studies found contrary results that show that cannabis is detrimental for schizophrenia, and users consider cannabis as harmless with disadvantages such as exacerbating positive symptoms of psychosis [9]. The findings of the study also revealed that substance use was perceived to be an important factor to trigger one's mood to the relaxation point. Participants reported that they used cannabis to relax and get pleasure. These findings are in line with the findings of Hayman and Sinha, which state that people with schizophrenia use cannabis for stress relief [59]. This was also highlighted by Johns, who found that cannabis has a psychological response which includes a feeling of detachment and relaxation [5]. A self-reported paper by Kolliakou et al., on reasons for cannabis use by users with psychosis also alluded to the fact that cannabis is used for reasons of getting high or relaxing [35].

Apart from psychological problems, participants reported cannabis use as a contributing factor to other physical problems such as weakness and fatigue. This study also found that users experienced weakness and fatigue. This is also supported by the findings of Fer-vaha et al., which revealed positive symptoms of schizophrenia experienced by users and that marijuana causes adverse effects such as diminished psychomotor performance [60,61].

Rais et al., however, found that cannabis use causes unwanted positive and negative symptoms of psychosis and render users unable to be aware of their surroundings [62]. While desire not to eat was perceived as normal, unfortunately it was due to their psychotic state [62]. The findings of the study also revealed that users experienced weight loss and appetite stimulation. This is in line with the findings of Hirst et al., and Robson observing that delta-9-tetrahydrocannabinol a substance found in cannabis, when administered in humans, stimulate appetite [63,36].

The findings of this study revealed that only a few participants experienced internal stigma because most of the time they did not feel comfortable when people were talking about their illness, instead of being supportive and sympathetic towards them. The researcher believes that perhaps people were talking about the users' lives because of lack of knowledge about mental health and mental illness. This sad situation led the users to display bizarre behaviours while unknowingly stimulating stigmatization in the process.

However, the study found that most of the participants were not subjected to any social stigma since the community's level of understanding and support for cannabis users was gradually increasing. They revealed that the only time they experienced stigma was through social structures that denied them access to employment. Hence, they found themselves being unemployed and struggling to fend for themselves.

The main aim of the study was to explore and describe the lived experiences of users with co-morbid schizophrenia and cannabis use disorder who have experienced one or more relapse(s), in order to develop an evidence-based relapse-prevention model. The discussion above has achieved that aim, and the model referred to, was also subsequently developed, but is not the focus of this paper.

## Conclusion and Recommendations

Based on the study findings, it is concluded that schizophrenia sufferers who used cannabis, experienced the negative effects of cannabis use, leading to relapse(s). Those effects were of a psychological, physical and social nature. They experienced among other things, aggressive outbursts, addiction/craving, weight loss, appetite stimulation, and social isolation, especially when under the influence of cannabis. Furthermore, it is concluded that factors maintaining cannabis use were found to exacerbate their mental condition, whilst factors discouraging cannabis use, moderated their condition and behaviour. The researcher therefore recommends that enhancing coping skills, cognitive behaviour management and lifestyle modification and strong support systems are essential intervention strategies in relapse prevention. Another recommendation is that based on the findings, a relapse-prevention model of for users suffering from comorbid schizophrenia and cannabis use disorder experiencing a relapse, be developed. This model has been developed, and is discussed in a separate paper.

## Conflict of Interest

The authors declare that no conflict of interest with respect to the research study, authorship, and/or publication of this article exists. The study was self-funded.

## References

1. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders DSM-V (5th edn). American Psychiatric Association, USA.
2. Ponnuchamy L (2015) Social Adjustment of Persons with Schizophrenia in Rural Areas - An Intervention Study. *International Journal of Psychosocial Rehabilitation* 19: 34-46.
3. National Institute of Mental Health (2007) Schizophrenia. National Institute of Mental Health, USA.
4. Emsley R, Chiliza B, Asmal L, Harvey BH (2013) The nature of relapse in schizophrenia. *BMC Psychiatry* 13: 50.

5. Johns A (2001) Psychiatric effects of cannabis. *Br J Psychiatry* 178: 116-122.
6. Sadock BJ, Sadock VA, Ruiz P (2015) Synopsis of psychiatry. Behavioral Sciences Clinical Psychiatry. Wolters Kluwer: Philadelphia, USA.
7. Schellack N, Matlala M (2014) Providing an overview of antipsychotic drugs: is schizophrenia a psychiatric challenge? *SAPJ* 81: 28-33.
8. Masood AK, Sailaja A (2009) Cannabis-Induced Bipolar Disorder with Psychotic Features A Case Report. *Psychiatry (Edgmont)* 6: 44-48.
9. Radhakrishnan R, Wilkinson ST, D'Souza DC (2014) Gone to Pot - A Review of the Association between Cannabis and Psychosis. *Front Psychiatry* 5: 54.
10. D'Souza DC, Abi-Saab WM, Madonick S, Forselius-Bielen K, Doersch A, et al. (2005) Delta-9-tetrahydrocannabinol effects in schizophrenia: implications for cognition, psychosis, and addiction. *Biol Psychiatry* 57: 594-608.
11. Volkow ND (2009) Substance Use Disorders in Schizophrenia-Clinical Implications of Comorbidity. *Schizophr Bull* 35: 469-472.
12. Dekker N, Linszen DH, De Haan L (2009) Reasons for cannabis use and effects of cannabis use as reported by patients with psychotic disorders. *Psychopathology* 42: 350-360.
13. Melka MG, Castellani CA, O'Reilly R, Singh SM (2015) Insights into origin of DNA methylation differences between monozygotic twins discordant for schizophrenia. *J Mol Psychiatry* 3: 7.
14. Proal AC, Fleming J, Galvez-Buccolini JA, Delisi LE (2013) A controlled family study of cannabis users with and without psychosis. *Schizophr Res* 152: 283-288.
15. Hill MN (2014) Clearing the smoke: What do we know about adolescent cannabis use and schizophrenia? *J Psychiatry Neurosci* 39: 75-77.
16. Bossong MG, van Berckel BN, Boellaard R, Zuurman L, Schuit RC, et al. (2009) Delta 9-tetrahydrocannabinol induces dopamine release in the human striatum. *Neuropsychopharmacology* 34: 759-766.
17. Cooney J, Bernier D, Tibbo PG (2014) White matter changes in early phase schizophrenia and cannabis use: An update and systematic review of diffusion tensor imaging studies. *Schizophr Res* 156: 137-142.
18. Miettunen J, Lauronen E, Veijola J, Koponen H, Saarento O, et al. (2006) Patterns of psychiatric hospitalizations in schizophrenic psychoses within the Northern Finland 1966 Birth Cohort. *Nord J Psychiatry* 60: 286-293.
19. Koskinen J, Löhönen J, Koponen H, Isohanni M, Miettunen J (2010) Rate of cannabis use disorders in clinical samples of patients with schizophrenia: a meta-analysis. *Schizophr Bull* 36: 1115-1130.
20. Zammit S, Moore TH, Lingford-Hughes A, Barnes TR, Jones PB, et al. (2008) Effects of cannabis use on outcomes of psychotic disorders: systematic review. *Br J Psychiatry* 193: 357-363.
21. Carra G, Johnson S (2009) Variations in rates of comorbid substance use in psychosis between mental health settings and geographical areas in the UK. A systematic review. *Soc Psychiatry Psychiatr Epidemiol* 44: 429-447.
22. Costain WF (2008) The effects of cannabis abuse on the symptoms of schizophrenia: Patient perspective. *Int J Ment Health Nurs* 17: 227-235.
23. Gómez Pérez L, Santacana AM, Bergé Baquero D, Pérez-Solá V (2014) Reasons and subjective effects of cannabis use among people with psychotic disorder: Systematic review. *Actas Esp Psiquiatr* 42: 83-90.
24. Parshotam RK, Joubert PM (2015) Views of schizophrenia patients on the effects of cannabis on their mental health. *South African Journal of Psychiatry* 22: 590.
25. Peltzer K1, Ramlagan S, Johnson BD, Phaswana-Mafuya N (2010) Illicit drug use and treatment in South Africa: a review. *Subst Use Misuse* 45: 2221-2243.
26. South African Depression and Anxiety Group (2016) Schizophrenia. South African Depression and Anxiety Group, Johannesburg, South Africa.
27. Parry CD, Bhana A, Plüddemann A, Myers B, Siegfried N, et al. (2002) The South African Community Epidemiology Network on Drug Use (SACENDU): description, findings (1997-99) and policy implications. *Addiction* 97: 969-976.
28. Dada S, Burnhams NH, Erasmus J, Parry C, Bhana A, et al. (2015) South African Community Epidemiology Network on Drug Use (SACENDU): update: alcohol and drug abuse trends: November 2015: January - June 2015 (Phase 38). Human Sciences Research Council, South Africa.
29. Morojele N, Myers B, Townsend B, Lombard I, Pluddeman C, Carney T, et al. (2013) Survey on substance use, risk behaviors and mental health among grade 8-10 learners in schools in schools in Western Cape Province, 2011. South African Medical Research Council, South Africa.
30. Sadock BJ, Sadock V (2007) Study guide and self-examination review in psychiatry (8thedn). Lippincott Williams Wilkins, A Wolter Kluwer Business, Philadelphia, USA.
31. Buckner JD, Zvolensky MJ, Ecker AH (2013) Cannabis use during a voluntary quit attempt: an analysis from ecological momentary assessment. *Drug Alcohol Depend* 132: 610-616.
32. Kazadi NJB, Moosa MYH, Jeena FY (2008) Factors associated with relapse in schizophrenia. *South African Journal of psychiatry* 14: 158.
33. Gregg L, Barrowclough C, Haddock G (2009) Development and validation of a scale for assessing reasons for substance use in schizophrenia: the ReSUS scale. *Addict Behav* 34: 830-837.
34. Creswell JW (2014) Research Design. Qualitative and quantitative, & mixed methods and approaches (4thedn). SAGE, USA.
35. Kolliakou A, Joseph C, Ismail K, Atakan Z, Murray RM (2011) Why do patients with psychosis use cannabis and are they ready to change their use? *Int J Dev Neurosci* 29: 335-346.
36. Robson P (2001) Therapeutic aspects of cannabis and cannabinoids. *Br J Psychiatry* 178: 107-115.
37. Henderson C, Evans-Lacko S, Thornicroft G (2013) Mental Illness Stigma, Help Seeking, and Public Health Programs. *Am J Public Health* 103: 777-780.
38. Boyer L, Millier A, Perthame E, Aballea S, Auquier P, et al. (2013) Quality of life is predictive of relapse in schizophrenia. *BMC Psychiatry* 13: 15.
39. Budney AJ, Hughes JR (2006) The cannabis withdrawal syndrome. *Curr Opin Psychiatry* 19: 233-238.
40. Hodgins S (2008) Violent behaviors among people with schizophrenia: A framework for investigations of causes, and effective treatment, and prevention. *Philos Trans R Soc Lond B Biol Sci* 363: 2505-2518.
41. Lejoyeux M, Nivoli F, Basquin A, Petit A, Chalvin F, et al. (2013) An investigation of factors increasing the risk of aggressive behavior among schizophrenic patients. *Front Psychiatry* 4: 97.
42. United Nations office on drugs and crime (UNODC) (2014) World Drug report. United Nations office on Drugs and Crime, Vienna, Austria.
43. Dada S, Harker-Burnhams N, Williams Y, Parry C, Bhana A, et al. Monitoring alcohol and drug abuse treatment admissions in South Africa: January- June 2013: Phase 34: SACENDU report back meetings. Human Sciences Research Council, South Africa.

44. Hall W (2014) What has research over the past two decades revealed about the adverse health effects of recreational cannabis use? *Addiction* 10:19-35.
45. Ritter, A, Lancaster, K, Grech K, Reuter P (2011) An Assessment of Illicit Drug Policy in Australia (1985 to 2010): Themes and Trends. National Drug and Alcohol Research Centre, Australia.
46. Degenhardt L, Hall W, Lynskey M (2003) Testing hypotheses about the relationship between cannabis use and psychosis. *Drug Alcohol Depend* 71: 37-48.
47. Vijayalashmi D, Reddy KV, Sallam MA, Himakar P (2015) A Study of Factors Associated with Readmissions At A government Psychiatric Hospital. *Journal of Dental and Medical Sciences* 14: 35-43.
48. National Institute on Drug Abuse (2010) Is there a link between marijuana use and psychiatric disorders? National Institute on Drug Abuse, USA.
49. Swendsen J, Conway KP, Degenhardt L, Glantz M, Jin R, et al. (2010) Mental disorders as risk factors for substance use, abuse and dependence: Results from the 10-year follow-up of the National Comorbidity Survey. *Addiction* 105: 1117-1128.
50. Nocon A, Wittchen H, Pfister H, Zimmermann P, Lieb R (2006) Dependence symptoms in young cannabis users? A prospective epidemiological study. *J Psychiatr Res* 40: 394-403.
51. Filbey FM, Schacht JP, Myers US, Chavez RS, Hutchison KE (2009) Marijuana craving in the brain. *Proc Natl Acad Sci USA* 106: 13016-13021.
52. Gray KM (2007) Marijuana use, withdrawal, and craving in adolescents. *Psychiatric times* 24 : 57.
53. Sayette MA, Shiffman S, Tiffany ST, Niaura RS, Martin CS, et al. (2000) The measurement of drug craving. *Addiction* 2: 189-210.
54. Allen SS, Bade T, Hatsukami D, Center B (2008) Craving, withdrawal, and smoking urges on days immediately prior to smoking relapse. *Nicotine Tob Res* 10: 35-45.
55. Larimer ME, Palmer RS, Marlatt GA (1999) Relapse prevention. An overview of Marlatt's cognitive-behavioral model. *Alcohol Res Health* 23: 151-160.
56. Schnell T, Becker T, Thiel MC, Gouzoulis-Mayfrank E (2013) Craving in patients with schizophrenia and cannabis use disorders. *Can J Psychiatry* 58: 646-649.
57. United Nations office on Drugs and Crime (2011) World Drug Report – 2011: Cannabis use and psychosis. United Nations office on Drugs and Crime, Vienna, Austria.
58. Buadze A, Stohler, R, Schulze B, Schaub M, Liebreinz M (2010) Do patients think cannabis causes schizophrenia? - A qualitative study on the causal beliefs of cannabis using patients with schizophrenia. *Harm Reduct J* 7: 22.
59. Hyman SM, Sinha R (2009) Stress-related factors in cannabis use and misuse: implications for prevention and treatment. *J Subst Abuse Treat* 36: 400-413.
60. Fervaha G, Agid O, Takeuchi H, Foussias G, Remington G (2016) Life satisfaction and happiness among young adults with schizophrenia. *Psychiatry Res* 242: 174-179.
61. Bosker WM, Karschner EL, Lee D, Goodwin RS, Hirvonen J, et al. (2013) Psychomotor function in chronic daily Cannabis smokers during sustained abstinence. *PLoS One* 8: 53127.
62. Rais M, Cahn W, Van Haren N, Schnack H, Caspers E, et al. (2008) Excessive brain volume loss over time in cannabis-using first-episode schizophrenia patients. *Am J Psychiatry* 165: 490-496.
63. Hirst RA, Lambert DG, Notcutt WG (1998) Pharmacology and potential therapeutic uses of cannabis. *Br J Anaesth* 81: 77-84.



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