

Clinical Barriers in Treating Patients with Schizophrenia Who Use Cannabis

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ABSTRACT

Within the past two decades, psychiatric clinics have seen an increase in the number of patients with schizophrenia who use cannabis. Studies have demonstrated the drug's exacerbating effects on schizophrenia symptoms and treatment, posing a challenge to clinicians who treat this patient population. However, insight into the perspectives and needs of these clinicians remains absent within the existing literature. To provide them a voice, this study utilized surveying and interviewing with a mixed quantitative and qualitative design to evaluate and analyze the perspectives, concerns, and needs of clinicians who treat patients with schizophrenia who use cannabis. Participating clinicians ($n = 5$) were confident in understanding how cannabis use affects schizophrenia and their roles as providers. However, these clinicians were less confident in the effectiveness of existing treatments, education, and literature on the subject. Additionally, participants voiced concerns about issues such as the limitations of existing literature on this patient population, the lack of established guidelines and protocols for treating this patient population, and the absence of educational resources and materials for both clinicians and patients. Overall, the number of voiced concerns and the high variation between clinicians strongly imply the necessity of these clinicians' perspectives within research on this patient population. Increased involvement of medical professionals within the literature on cannabis use in schizophrenia should hopefully serve to implement and improve the resources that these clinicians need to make a lasting positive change in patients with schizophrenia who use cannabis.

Introduction

In the realm of psychiatry, schizophrenia is one of the most pervasive psychiatric disorders to study and treat. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5), used by most clinicians to formally diagnose patients with mental disorders, states that schizophrenia is denoted by "abnormalities in one or more of the following five domains: delusions, hallucinations, disorganized thinking (speech), grossly disorganized or abnormal motor behavior...and negative symptoms" (American Psychiatric Association, 2013). Considering the intrusiveness and disability caused by the disorder, schizophrenia is often designated as a high priority in psychiatric treatment centers, requiring long-term treatments that may persist outside the clinic. However, accompanying a large population of patients with schizophrenia are barriers to positive treatment outcomes, primarily substance abuse disorders (around 47% of schizophrenia patients) (Khokhar et al., 2018; Regier et al., 1984; Swofford et al., 1996). Comorbid (occurring simultaneously) substance abuse disorders (SUDs) dramatically worsen treatment outcomes, often leading to the exacerbation of disabling symptoms (Dixon, 1999; Rosen et al., 2008), treatment complications, and a reduction of patients' quality of life. With its recent decriminalization and legalization in the United States, cannabis has received special focus.

The consensus concerning cannabis use in schizophrenia is that it too exacerbates symptoms of schizophrenia and complicates treatment. Moreover, the lack of consideration of clinicians' perspectives in the current literature on cannabis use in patients with schizophrenia has caused uncertainties and concerns in clinicians

treating the relevant patient population. While progress has been made in terms of understanding how cannabis interacts with schizophrenia and how to treat the comorbidity, there remains a gap in integration and knowledge of this subfield at the clinical level. Therefore, a study aiming to identify clinical barriers in treating this patient population could help clarify and resolve current uncertainties and concerns, leading to more mutual progress within this field. Once the factors of clinicians' roles in treating patients with schizophrenia who use cannabis are well-understood, uncertainties and concerns specific to clinicians can be effectively factored into future research and help generate more useful and effective literature for these clinicians.

Literature Review

Cannabis Use in Patients with Schizophrenia

As previously suggested, cannabis use disorder is one of the most common dually diagnosed substance use disorders in patients with schizophrenia (Hjorthøj, 2019). Although the complications associated with cannabis use are similar to those documented in other substance abuse disorders, cannabis use varies in terms of its psychological and physiological effects and has therefore been isolated in the literature. Furthermore, the severity of cannabis use's effects on patients with schizophrenia relative to other comorbid SUDs makes cannabis use even more interesting to clinicians and researchers alike. The exact neurobiological interactions between cannabis and schizophrenia are not well understood; however, the effects of cannabis on chemical pathways in the brain suggest a connection via neurotransmitter manipulation (Burns, 2013; D'Souza et al., 2005; Jager et al., 2010; Shrivastava et al., 2014; Solowij & Michie, 2007). Concerning the causes of cannabis use, Khantzian's self-medication hypothesis (discussed later) is most relevant. In simple terms, cannabis is often falsely attributed as a formidable treatment for symptoms of schizophrenia, leading patients with schizophrenia to use it erroneously. While it may afford short-term relief of symptoms of schizophrenia, the long-term result often involves psychotic relapse (Schoeler et al., 2016), worsening of symptoms, rehospitalization (Hides et al., 2006), and other products of dependence (Schultz et al., 2015), further contributing to a cycle of abuse, poor treatment outcomes, and worsened schizophrenia (Hjorthøj, 2009).

Reasons for Cannabis Use in Patients with Schizophrenia

While there are a multitude of reasons for which patients with schizophrenia may use or abuse cannabis, the consensus is that cannabis helps patients manage schizophrenia and its harmful symptoms. Nonetheless, multiple theories with varying support posit different reasons and causes of cannabis use in patients with schizophrenia, including both genetic and environmental factors. Pertaining most directly to the cannabis use in schizophrenia itself is Khantzian's self-medication hypothesis. Khantzian's hypothesis connects substance abuse (especially cannabis abuse) to a misdirected urge to reduce symptoms of schizophrenia (Khantzian, 1985, 1997). Though earlier studies initially found conflicting data with the hypothesis (Addington & Duchak, 1997), the theory is relevant when considering specific substance abuse disorders. Schizophrenia patients who use cannabis often cite the urge to appease both positive and negative symptoms of schizophrenia as a primary reason for their chronic use of cannabis (Mane et al., 2015). Additionally, recent neurobiological research has reconfirmed the validity of Khantzian's theory in relation to substance abuse (Awad & Voruganti, 2015). However, often unknown to patients is that cannabis use has been theorized as a heavy risk factor for exacerbated symptoms, resulting in a pervasive cycle of abuse that worsens long-term quality of life and complicates treatment pathways.

Clinical Barriers in Treating Patients with Schizophrenia Who Use Cannabis

Even with treatments studied and some in use in clinical settings, pervasive and obstructive boundaries remain in treating cannabis-using schizophrenia patients. Multiple factors of treatment effectiveness, including medication adherence, cravings, and treatment symptoms contribute to the resistance of schizophrenia against treatment. Comorbid cannabis use has been isolated due to its complex and incomplete pathophysiology and its role in the context of self-medication. Moreover, clinical research has identified long-term medication nonadherence as a primary direct obstruction to treatment outcomes as it perpetuates a cycle of substance abuse (Janssen et al., 2006; Lacro et al., 2002), psychotic relapse (Novick et al., 2009), and hospital readmission (Svarstad et al., 2001; Valenstein et al., 2002; Weiden et al., 2004). Prospective studies and clinical samples alike have investigated the role that cannabis use plays in medication adherence respective to treatment; the consensus posits that cannabis use during treatment is a strong predictor of medication nonadherence and vice versa, especially in cases of cannabis use where use for self-medication or relaxation is common (Ascher-Svanum et al., 2006; Higashi et al., 2013; Novick et al., 2010). Consequently, cannabis use repeatedly complicates treatment processes, resulting in uncertainties pertaining to the most effective treatments and the outcomes they may provide.

In addition to the barriers posed by cannabis use in schizophrenia, there remains a gap in the literature concerning the perspectives of the providers of this patient population. While progress has occurred in the technical aspects of the field, there remains an evident requirement for literature that accommodates and responds to the concerns and needs of clinics and individual clinicians. To date, no study has explicitly evaluated the perceptions and experiences of these clinicians, effectively leaving these crucial perspectives, experiences, and concerns excluded from the conversation. Furthermore, no studies have used research methods similar to those required to evaluate the perspectives and concerns of the relevant clinicians. Therefore, this study aimed to answer two questions:

1. How do professionals' understandings around treating patients with schizophrenia who use cannabis affect their perceptions, experiences, and treatment processes?
2. How do professionals alter their practices to account for more recent literature related to the treatment of patients with schizophrenia who use cannabis?

Again, this study intended to help clarify and evaluate current uncertainties and concerns in the field to generate general progress in treating this patient population.

Methods

Background

This study was designed as a phenomenological study with an exploratory approach to clinicians' perceptions and experiences; the phenomenon in question is the instance of cannabis use in patients with schizophrenia. Since the primary purpose of the study was to identify and evaluate perceptions and experiences, a non-experimental design was used rather than a variable-based experimental design. Due to complications in sample size and promoting participation, only non-probability sampling was utilized. Convenience sampling utilizing people I knew helped collect a few preliminary participants, after which snowball sampling was used to reach more potential participants. Clinics that treat this patient population were contacted by email and phone to help further spread information about the study. All participants were requested to forward an interest form to eligible colleagues that may have been interested in participation. The only requirement to participate was that the prospective participant was a medical professional who had experience working with patients with schizophrenia who use cannabis. These methods helped establish the credibility of my study by using clinicians who were previously well-established within their workplace for communication. These sampling methods yielded a sampling size of 5 participants ($n = 5$). Anyone who demonstrated interest in the interview was offered one; however, only 3 participants were ultimately interviewed.

Multiple online resources were used to complete the study processes. All emails were sent using Gmail services for simplicity and organization. Interest forms on Google Forms were sent to prospective participants and eligible clinics and healthcare groups during participant recruitment. Additionally, the interest form was disseminated throughout psychiatry and psychology social groups on Facebook, Twitter, and Reddit. Consent forms detailing the role and rights of participants and study context were created, uploaded to the online document service TeacherMade for signature collection purposes, and sent out to interested participants via Gmail. Once validated, consent forms were stored within a secure Google Drive folder. Surveys were created on Google Forms and sent to participants who completed the consenting process. Survey data was ported to Google Sheets from Google Forms and analyzed within the software. All 3 interviews were conducted over Zoom. All data about the study was stored within spreadsheets within a single central Google Drive folder. All analysis was conducted within a Google Sheets file with multiple sheets included.

Investigation

To fully gauge perceptions and experiences, my study employed a typical surveying and interviewing process that invited both closed-ended and open-ended responses. The combination of surveying and interviewing ensured that sufficient quantitative and qualitative data (conducted concurrently within the survey) was provided for analysis toward each point of inquiry within the research questions. The survey utilized a Likert-type scale with points ranging from 1 (completely disagree) to 5 (completely agree). This scale was used to gauge participants' level of agreement with a variety of statements concerning topics such as confidence in knowledge, the effectiveness of treatment, the usefulness of education, and the frequency of literature updates. The Likert scale was efficient for this purpose as it allowed qualitative responses to be translated into quantitative data for statistical analysis and, thereby, more comparable results. The remainder of the survey and the entire interview utilized open-ended questions, allowing the participant to describe and explain their perceptions and experiences in-depth. Each close-ended question utilizing the Likert Scale had an open-ended section for explanations, while 2 other questions were fully open-ended. Some interview questions were asked to all participants (structured) while others were individualized based on the participant's answers to the survey questions (probing and follow-up). This interview structure allowed for data that were comparable between participants yet individual to their previous answers.

Many steps were taken to ensure that my study was in line with research ethics. While anonymity could not be provided due to the nature of data collection and analysis, data confidentiality was ensured. No personal information such as names was included in the data set used for analysis. However, some personal information was recorded in documents and files in private Google Drive folders for study purposes and organization. As for participant knowledge, all participants were debriefed in-text and verbally before the survey and interview, respectively. Additionally, all participants were assured that their participation was voluntary, that they had no obligation to answer any certain question, and that they could end their participation in the study if they so wished without any repercussions. However, the initial debrief was vague and general to limit response bias. After their role in the study was completed, participants were debriefed about the study to a greater extent.

Analysis

To generate data that both described and compared the various aspects of these perceptions and experiences, both quantitative and qualitative analyses were utilized. Quantitative analysis was utilized to quantify closed-ended survey questions on the Likert Scale. Likert scale responses were quantified as follows: (1) completely disagree, (2) disagree, (3) neutral/unsure, (4) agree, and (5) completely agree. The mean, median, and standard deviation of each question (displayed in the tables in the Results Section) helped gauge degrees of agreement

among participants, indicate similarities and differences between participants, and make various connections across the data. They also helped prevent researcher bias by limiting any misconstruing of survey responses. Furthermore, two sample calculations were conducted manually for each statistical measure to ensure that Google Sheets' formulas yielded valid and reliable calculations.

Qualitative analysis was utilized to condense and make sense of textual data to help answer the research question. Descriptive and in-vivo coding was utilized to isolate important key terms and phrases from the surveys and interviews. Thereafter, focused coding and axial coding were used to determine the frequency of each key term or phrase within the data and to categorize each code into categories and smaller subcategories, respectively. Descriptive and in-vivo codes were ascribed to questions based on topic, and the survey questions themselves were categorized based on their focus (e.g., education). Relevant codes and their categories are displayed in tables in the Results. These key terms and phrases and their categorization identified factors the statistical measures generated by quantitative analysis; interviews were utilized specifically for this purpose. These mixed methods provided various means of answering the research question and, therefore, a detailed discussion.

Results

This study found that the lack of data and understanding for this patient population affects clinicians' roles in multiple ways, complicating their role as providers and leading to uncertainty and concern. Several concerns were raised throughout the study, demonstrating the urgent need for clinicians' perspectives within the field's literature. Secondly, clinics and clinicians have scarcely altered their practices to accommodate recent literature, conveying that the existing literature is less applicable and has generated less progress than ideal. The following sections examine the data that demonstrate these uncertainties and concerns.

Quantitative Survey Analysis

The majority ($n = 4$) of participants ($n = 5$) self-reported as Psychiatric Mental Health Nurse Practitioners (PMHNP) with experience in both inpatient and outpatient facilities. Scores for each of the fifteen Likert scale questions on the survey were statistically analyzed to evaluate each question's general level of agreement. These scores were collected and analyzed concurrently with qualitative data from the survey and evaluated conjunctively, described later. The correspondence of a mean value to a Likert Scale rating of agreement is guided by Table 1 below. The fifteen questions on the survey have been ordered into two categories based on the topic of the question: Confidence and Effectiveness or Education and Literature.

Table 1. Likert Scale Mean Ranges

Level of Agreement	Range
Completely Agree	4.20 - 5.00
Agree	3.40 - 4.19
Neither/Unsure	2.60 - 3.39
Disagree	1.80 - 2.59

Completely Disagree	1.00 - 1.79
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Confidence and Effectiveness

5 questions on the survey were grouped into the Confidence and Effectiveness category. Questions in the Confidence subcategory asked participants about their confidence in understanding the effects of cannabis use on schizophrenia and in treating patients with schizophrenia who use cannabis. Questions in the Effectiveness subcategory asked participants about the effectiveness of their treatment(s) of the relevant patient population. The questions and statistical measures of the responses are listed in Table 2.

Table 2. Statistical Measures of Survey Questions in Confidence and Effectiveness Category

Question	Mean	σ	Median
I am confident in my understanding of how cannabis use interacts with schizophrenia.	4.00; Agree	0.707	4.00; Agree
I am confident in my understanding of how to treat patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	3.40; Agree	0.548	3.00; Neither/Unsure
My treatment of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder has been effective in improving long-term quality of life.	3.00; Neither/Unsure	1.225	3.00; Neither/Unsure
My place of work's treatment of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder has been effective in improving long-term quality of life.	2.60; Neither/Unsure	1.140	3.00; Neither/Unsure
Overall, I am confident in treating patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	3.40; Agree	0.894	4.00; Agree

Education and Literature

7 questions on the survey were grouped into the Education and Literature category. However, only 5 of the questions in the Education and Literature category were quantitative Likert-scale questions, the other two being completely open-ended. Questions in the Education subcategory asked participants about the scope and perceived usefulness of their formal education pertaining to this patient population. Questions in the Literature subcategory asked participants about the frequency at which they update themselves with literature concerning cannabis use in patients with schizophrenia and how, if at all, they have altered their practices to accommodate new data. The questions and statistical measures of their responses are listed in Table 3.

Table 3. Statistical Measures of Survey Questions in Education and Literature Category

Question	Mean	σ	Median
I received useful professional or post-professional education regarding the treatment of patients with dual diagnoses including a psychiatric disorder.	3.80; Agree	1.304	3.00; Neither/Unsure
I received useful professional or post-professional education regarding the treatment of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	3.00; Neither/Unsure	1.225	3.00; Neither/Unsure
My place of work ensures that I am equipped to care for patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	3.40; Agree	1.140	3.00; Neither/Unsure
I regularly (at least bi-annually) update myself with recent literature concerning the treatment of care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	3.20; Neither/Unsure	1.643	2.00; Disagree
My place of work regularly (at least every 5 years) updates itself with recent literature concerning the treatment or care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	2.00; Disagree	1.225	2.00; Disagree

Qualitative Survey Analysis

For all Likert-scale closed-ended questions, participants were asked to briefly explain their response. While not all participants provided an explanation for each of their answers ($n = 3$ to $n = 5$), their responses helped provide explanations for the quantitative scores above for each corresponding question. Since these responses corresponded to specific survey questions, they were categorized and presented as such. However, responses to the two open-ended questions were included as well.

Confidence and Effectiveness

Similar to the closed-ended questions, free-response questions in the Confidence and Effectiveness category aimed to provide explanations for clinicians' respective levels of confidence and for the treatments they used.

Key terms, their frequencies, and categories corresponding to survey questions in the Confidence and Effectiveness category are listed in Table 4. Due to the prevalence of codes that were spotted only once in the survey data, only key terms relevant to the question's topic are included in the table.

Table 4. Confidence and Effectiveness Survey Descriptors

Questions	Key Terms	Frequency	Category
I am confident in my understanding of how cannabis use interacts with schizophrenia.	Increased risk/symptoms	<i>n</i> = 5, 100%	Treatment
	Decreased medication efficacy	<i>n</i> = 1, 20%	Effectiveness
	Younger age of psychosis onset	<i>n</i> = 1, 20%	Treatment
	Possible decreased symptoms	<i>n</i> = 1, 20%	Treatment
	New field	<i>n</i> = 1, 20%	Literature
I am confident in my understanding of how to treat patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Abstinence	<i>n</i> = 1, 20%	Treatment
	Treatment as usual	<i>n</i> = 1, 20%	Treatment
	Substance abuse therapy	<i>n</i> = 1, 20%	Treatment
	CBD treatment	<i>n</i> = 1, 20%	Treatment
	Subjective	<i>n</i> = 1, 20%	Effectiveness
My treatment of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder has been effective in improving long-term quality of life.	Too short-term	<i>n</i> = 2, 40%	Effectiveness
	No monitoring	<i>n</i> = 2, 40%	Treatment
	Unsure	<i>n</i> = 1, 20%	Effectiveness
	Effective	<i>n</i> = 1, 20%	Effectiveness
	Difficult to improve	<i>n</i> = 1, 20%	Effectiveness
My place of work's treatment of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder has been effective in improving long-term quality of life.	Improved short-term	<i>n</i> = 1, 33%/20%	Effectiveness
	Too short-term	<i>n</i> = 1, 33%/20%	Effectiveness
	No guidelines	<i>n</i> = 1, 33%/20%	Treatment

Overall, I am confident in treating patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Lacking data/understanding	$n = 2,$ 50%/40%	Literature
	Uncertainty	$n = 1,$ 25%/20%	Effectiveness

For frequency percentages, the first number is the percentage of respondents to the individual question who used the corresponding key term in their response. The second number is the percentage of respondents to the entire survey who used the corresponding key term in their response (if any).

Education and Literature

Similar to the closed-ended questions, free-response questions in the Education and Literature category aimed to provide explanations for clinicians' respective degrees of education and the roles of literature within this patient population. However, an additional 2 free-response questions asked participants how they and their workplaces have changed their practices to accommodate recent literature. Key terms, their frequencies, and categories are listed in Table 5. Due to the prevalence of codes that were spotted only once in the survey data, only key terms relevant to the question's topic are included in the table. Additionally, Table 5 lists whether participants and their workplaces changed their practices as communicated by their responses to the free-response questions.

Table 5. Education and Literature Survey Descriptors

Questions	Key Terms	Frequency	Category
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I received useful professional or post-professional education regarding the treatment of patients with dual diagnoses including a psychiatric disorder.	Lit update	$n = 3, 75\%/60\%$	Literature
	Conferences	$n = 2, 50\%/40\%$	Education
	Lacking formal education/training	$n = 1, 25\%/20\%$	Education
	Secondary education	$n = 1, 25\%/20\%$	Education
	Workplace discussion	$n = 1, 25\%/20\%$	Education
	Bias	$n = 1, 25\%/20\%$	Education
I received useful professional or post-professional education regarding the treatment of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Formal education	$n = 1, 20\%$	Education
	Conferences	$n = 1, 20\%$	Education
	Secondary education	$n = 1, 20\%$	Education
	Lacking workplace education/training	$n = 1, 20\%$	Education
	General cannabis info	$n = 1, 20\%$	Literature
	Stigma	$n = 1, 20\%$	Education
My place of work ensures that I am equipped to care for patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Lacking data/understanding	$n = 1, 25\%/20\%$	Literature
	No guidelines	$n = 1, 25\%/20\%$	Treatment
	Lacking workplace education/training	$n = 1, 25\%/20\%$	Education
I regularly (at least bi-annually) update myself with recent literature concerning the treatment of care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Lit. update	$n = 1, 25\%/20\%$	Literature
	Conferences	$n = 1, 25\%/20\%$	Education
	Secondary education	$n = 1, 25\%/20\%$	Education
	Other priorities	$n = 1, 25\%/20\%$	Treatment
My place of work regularly (at least every 5 years) updates itself with recent literature concerning the treatment or care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Clinician responsibility	$n = 1, 25\%/20\%$	Treatment
	Expensive	$n = 1, 25\%/20\%$	External barriers
	Lacking workplace education/training	$n = 1, 25\%/20\%$	Education

How have you altered your practices to accommodate for more recent literature (published since 2019) concerning care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder? If you have not, describe how you currently approach care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	Treatment as usual	$n = 2, 40\%$	Treatment
	Risks and benefits	$n = 2, 40\%$	Treatment
	Abstinence	$n = 1, 20\%$	Treatment
	Patient education	$n = 1, 20\%$	Education
	Patient choice/empowerment	$n = 1, 20\%$	Treatment
	Lacking data/understanding	$n = 1, 20\%$	Literature
How has your place of work altered its practices to accommodate for more recent literature (published since 2016) concerning care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder? If it has not or if you are not sure, describe how it currently approaches care of patients with schizophrenia who use cannabis or have been diagnosed with cannabis use disorder.	No method change	$n = 2, 50\%/40\%$	Treatment
	Treatment as usual	$n = 1, 25\%/20\%$	Treatment
	Patient education	$n = 1, 25\%/20\%$	Education
	Clinician responsibility	$n = 1, 25\%/20\%$	Treatment
	Risks and benefits	$n = 1, 25\%/20\%$	Treatment

For frequency percentages, the first number is the percentage of respondents to the individual question who used the corresponding key term in their response. The second number is the percentage of respondents to the entire survey who used the corresponding key term in their response (if any).

Qualitative Interview Analysis

Of the 5 total participants, 3 participated in the interview. Each interview was between 30 and 45 minutes long, providing an abundance of data. Like the survey questions, transcribed segments were split into different categories based on their focus. However, 4 new subcategories (treatment, knowledge, external barriers, and systemic change) were used to group key terms and phrases from the interviews. To keep categories simple, the Treatment subcategory will join the Confidence and Effectiveness category, the Knowledge subcategory will join the Education and Literature category, and the External Barriers and Systemic Change subcategories will become their own category. Overall, 128 separate key terms and phrases were identified and isolated from the transcribed interview data.

Confidence, Effectiveness, and Treatment

There were 67 key terms and phrases grouped into the Confidence, Effectiveness, and Treatment category. The most common subcategory was Treatment, with 56 key terms and phrases grouped into the subcategory. Following Treatment were the Effectiveness and Confidence subcategories with 8 and 3 key terms and phrases, respectively. However, of these 67 key terms and phrases, less than a quarter ($n = 15$) were spotted in interview transcripts three or more times. With their relative frequency and significance, these key terms and phrases, their frequency, and their subcategory are listed in Table 6.

Table 6. Confidence, Effectiveness, and Treatment Descriptors

Key Term/Phrase	Frequency	Subcategory
Patient choice/empowerment	8	Treatment
Evidence-based practice	6	Treatment
No guidelines/protocols	5	Treatment
Therapeutic benefits	5	Treatment
Patient-specific approach	4	Treatment
Abstinence	4	Treatment
Treatment attrition	4	Treatment
Provider-patient relationship	4	Treatment
Lacking resources	3	Treatment
Small sample	3	Treatment
Increased CU	3	Treatment
Lacking follow-up	3	Effectiveness
Too short-term	3	Effectiveness
Motivation	3	Effectiveness
Increased confidence	3	Confidence

Education, Literature, and Knowledge

There were 42 key terms and phrases grouped into the Education, Literature, and Knowledge category. The most common subcategory was Education, with 16 key terms and phrases grouped into the subcategory. Following Education were the Literature and Knowledge subcategories with 14 and 12 key terms and phrases, respectively. However, of these 42 key terms and phrases, only about a fifth ($n = 8$) were spotted in interview transcripts three or more times. Similar to Table 6, these key terms and phrases, their frequency, and their subcategory are listed in Table 7.

Table 7. Education, Literature, and Knowledge Descriptors

Key Terms/Phrases	Frequency	Subcategory
Lacking data/understanding	12	Knowledge
Patient education	8	Education
Conferences	4	Education
Clinical perspectives	4	Knowledge
Clinician responsibility	4	Knowledge

General substance abuse education	3	Education
Secondary education	3	Education
Randomized controlled trials (RCTs)	3	Literature

External Barriers and Systemic Change

There were 19 key terms and phrases grouped into the External Barriers & Systemic Change category. The most common subcategory was External Barriers, with 14 key terms and phrases grouped into the subcategory. Only 5 key terms and phrases fit into the Systemic Change subcategory. However, of these 19 total key terms and phrases, none were spotted in interview transcripts three or more times. Therefore, to adjust for relative frequency and significance, only key terms and phrases spotted two times are isolated. Moreover, of the 19 key terms and phrases in this category, about a fourth ($n = 5$) were spotted in interview transcripts two times. Similar to Tables 6 and 7, these key terms and phrases, their frequency, and their subcategory are listed in Table 8.

Table 8. External Barriers and Systemic Change Descriptors

Key Terms/Phrases	Frequency	Subcategory
Financial barriers	2	External Barriers
Lacking treatment access	2	External Barriers
Increasing cannabis access	2	External Barriers
Legal use	2	Systemic Change
Healthcare reform	2	Systemic Change

Discussion

Confidence, Effectiveness, and Treatment

As supported by the statistical measures of the confidence category, there likely exists among clinicians a general understanding of how cannabis use interacts with schizophrenia and how to treat this patient population. All participants demonstrated the basic understanding that cannabis use increases the risk of developing symptoms of schizophrenia. However, some participants additionally cited concerns such as decreased medication efficacy and younger age of psychosis onset, supporting the works of Hides et al. and Schoeler et al., respectively. Curiously, one participant stated that they had also treated patients for whom cannabis use safely decreased symptoms and was therefore utilized in their treatment plan. Nonetheless, the primary consensus was that cannabis use in patients with schizophrenia is a net negative that exacerbates the schizophrenia condition and obstructs treatment effectiveness, as supported by existing literature.

The descriptors corresponding to treatment-centered questions communicated that there is relatively high variation between clinicians, clinics, and the treatments used for each patient. Participants reportedly utilize a range of treatments tailored to each patient, including substance abuse therapy, abstinence, and even treatment with safer cannabis compounds. Such treatment variation reflects larger uncertainty and infancy of

the field, with current literature undecided on a singular accepted “best treatment” (Hjorthøj, 2009; Schultz, 2015). Furthermore, participants generally agreed that clinicians are responsible for their understanding of how to treat this patient population, leaving room for clinicians to update themselves at varied frequencies. As one clinician put it, there are good clinicians and there are bad clinicians; one must enjoy their occupation to be interested in improving.

Interestingly, while participants generally agreed that they were confident in their understanding of how to treat this patient population, there was less consensus on the effectiveness of such treatment. Key terms and phrases suggest that the absence of established treatment guidelines and other barriers such as short-term treatment and infrequent follow-up conjunctively make the treatment outcomes sometimes impossible to be certain of. Furthermore, there was lower average confidence in the effectiveness of participants’ workplaces’ treatment of this patient population compared to individual clinicians’ treatment. In addition to barriers causing low individual confidence in effectiveness, participants cited inadequate workplace resources or structure as reasons for their lack of confidence in their workplaces’ treatment effectiveness. Some stated that their clinics’ lack of focus on destructive cannabis use creates a “revolving door” for patients, affording little long-term improvement among patients. Overall, while participants were generally confident in their treatment of this patient population, barriers such as lacking evidence, general uncertainty, and other aspects of treatment remain of concern.

Education, Literature, and Knowledge

The unmistakable consensus among participants was that there was lacking data and understanding in a variety of aspects of treating this patient population. Most commonly, lacking data and understanding was cited as a factor in clinicians’ confidence in treating and formulating common practices for this patient population, linking to the relatively high frequency of the “no guidelines/protocol” descriptor; limited evidence obstructs the ability to agree upon a set of treatments. Furthermore, a lack of data and understanding may be a cause of the gap between the education on dual diagnoses and education regarding cannabis use in schizophrenia. Whereas patients generally agreed that their education on the former was adequate, there was uncertainty in the latter and high statistical variation in both. When discussing their formal education, participants stated they received formal education on general substance use in patients with schizophrenia and not cannabis specifically. While a lack of evidence may explain the lack of specific formal education, other concerns such as bias and general inadequacy suggest larger concerns in the quality of mental health professionals’ formal education.

Much more influential in participants’ understanding of how to treat this patient population was continuing medical education (CMEs). For example, participants commonly cited conferences as influential in guiding their practices. While the specific focuses of these conferences varied, they were used in participants’ explanations of confidence more than formal or workplace education. Additionally, most participants concurred that self-led literature reviews concerning cannabis use in schizophrenia also provided useful knowledge and helped guide treatment processes. However, statistics concerning literature updates within the workplace were relatively low when compared to that concerning individual clinicians; participants generally disagreed that their clinics had adequately updated their practices to accommodate new literature. While such may tie back to the previous suggestion that literature updates clinicians’ responsibility, other concerns such as inadequate workplace education suggest that such generally comes from the absence of treatment guidelines or a “best treatment,” as argued by Sherman et al. Nonetheless, without guidelines as discussed prior, most participants used established literature as only partial guides in patient-specific treatment.

External Barriers and Systematic Change

In addition to medical clinical barriers, there is a wide range of external barriers that patients face in receiving adequate treatment and that clinicians face in performing their work. Some participants cited lacking access to treatment due to barriers such as communication and transportation. More significantly, the high cost of psychiatric treatment often obstructs patients' ability to sustainably pay for the treatment they need to live comfortably. These barriers corroborate the beliefs of Dixon (1999) in that clinicians must be cognizant of external barriers to treatment. Furthermore, with cannabis use recently becoming legalized and destigmatized around the United States, the rate of cannabis use among patients with schizophrenia has increased, a trend seen in other countries such as Denmark (Hjorthøj et al., 2009). While destigmatization is helpful in that it promotes treatment-seeking behavior and improves motivation, it also facilitates entrapment into the cycle that cannabis use in schizophrenia can become. Overall, these external barriers and calls for systemic change suggest a need for a focus on this patient population outside the clinic.

Conclusion

This study intended to help clarify and evaluate current uncertainties, concerns, and practices in the field to help drive progress in treating this patient population. As expected given the infancy of the field of treating cannabis use in patients with schizophrenia, many clinicians' concerns relate to a lack of data and understanding. Important aspects of clinicians' role in treating this patient population are largely affected by this lack of data and understanding, typically reducing the possible extent and usefulness of these aspects or creating high degrees of variation between clinicians. Furthermore, this lack of data, understanding, and evidence has led to little to no alteration in the treatment of this patient population, with some clinicians utilizing methods used for general substance abuse and therefore not prioritizing cannabis use in schizophrenia as the danger it may be. Additionally, external barriers make consistent treatment even more unfeasible, presenting barriers beyond those caused by cannabis use in schizophrenia. Overall, such reveals the needs and practices of clinicians and will hopefully allow for more comprehensive and applicable studies in the literature on cannabis use in schizophrenia.

Implications

Most importantly, the number of concerns and the high amount of variation within clinical treatment strongly imply the necessity of clinicians' perspectives within research on this patient population. While research regarding the effects of cannabis on patients with schizophrenia may be effective in increasing clinicians' confidence in their understandings, other concerns such as inadequate education, inadequate finances and transportation, and the ineffectiveness of certain workplace structures in combating harmful cannabis use are issues that must be combated at the clinical level. These concerns readily restrict the ability of clinicians to treat this patient population and obscure the effectiveness of the treatments that are provided to them. While many clinicians have done their due diligence in updating themselves with recent literature, the current lack of focus on the clinical perspective in this literature ultimately limits its usefulness and applicability. Without such crucial perspectives, only little tangible progress can occur within treatment of this patient population. As already conveyed by current trends concerning destigmatization, legalization, and increased access to cannabis in the United States, the necessity of clinicians' perspectives in the literature of this field will only become more urgent and important as the incidence of cannabis use in patients with schizophrenia increases.

Future Research

The specificity of some clinicians' concerns suggests the necessity and significance of clinicians' perspectives within the developing field of cannabis use in patients with schizophrenia once the field has grown enough to accommodate them. Additionally, research concerning the specific aspects of clinicians' roles in treating this patient population should seek to identify the barriers that lead to low confidence, low perceived usefulness, and other concerns that may complicate such important aspects. Furthermore, in current research regarding treatment options and their efficacy, the clinical perspective concerning accepted treatment guidelines should be considered to guide clinicians in treating this patient population even in the absence of established guidelines. There seems to exist among clinicians general support for double-blind placebo-controlled randomized controlled trials that compare individual or combined treatments to placebos, so an increased focus on such studies may help produce alterations in treatment practices that improve effectiveness. Conjunctionally, such studies could also approach treatment attrition and follow-up rates to improve long-term effectiveness and afford patients the long-term quality of life that they are missing. Overall, to ensure that real progress is made within this field, the literature must consider the perceptions, experiences, and concerns of the very clinicians who treat this patient population every day.

Limitations

While reliable statistical measures and descriptors were generated from the data yielded from this study, the common perspectives and experiences of a relatively small sample size of 5 participants may not be completely shared by all clinicians treating this patient population. However, considering the more general concerns such as external and educational barriers, it is likely that many concerns shared in this study are echoed elsewhere, especially those concerning larger policy trends such as the decriminalization and legalization of cannabis in the United States. Additionally, because 4 of 5 participants self-reported themselves as Psychiatric-Mental Health Nurse Practitioners, the perspectives and experiences of these participants may be role-specific and may therefore not include those of other relevant clinical positions. However, because a large proportion of clinicians regularly treating this patient population are Psychiatric-Mental Health Nurse Practitioners, there again may be some consistency between the concerns of the participants in this study and the larger body of clinicians treating this patient population. These limitations likely do not detract from the results and implications of this study due to their generality and their high variation.

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