Investigating the Clinical Decision-Making Process of Physicians in Rural Ontario: The Perspective and Attitudes on Medical Cannabis

by

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ABSTRACT

Investigating the Clinical Decision-Making Process of Physicians in Rural Ontario:

The Perspectives and Attitudes on Medical Cannabis

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This thesis examined the decision-making process of seven physicians from rural Ontario. An interpretivist approach was implemented to assess the challenges that physicians face when considering whether to prescribe medical cannabis to their patients. With its ambiguous status and the lack of research conducted on cannabis, the blurred boundaries between medical and illicit cannabis use produces complications for physicians. The findings suggest that the interviewed participants were highly interested in seeking medical cannabis information from various educational resources including anecdotal evidence from their patients, with minimal influence from personal stigma and bias. One of the participants expressed confidence when prescribing cannabis to their patients while the remaining participants were open-minded and willing to learn more about cannabis, and its effects, to prescribe it in the future. Further comparative studies are required to better understand the challenges of clinical decision-making between rural and urban physicians.
DEDICATION

For my son, Mikail.
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Allah: Thank you for everything you have given me. Please guide me along the straight path and help me to make the world a better place.

Research Participants: I would like to thank the seven physicians that participated in this study. I learned so much from them and I hope they were able to take something away from our conversations as well.

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LIST OF SYMBOLS, ABBREVIATIONS OR NOMENCLATURE

MMAR: Marihuana Medical Access Regulations

MMPR: Marihuana for Medical Purposes Regulations

ACMPR: Access to Cannabis for Medical Purposes Regulations

REB: Research Ethics Board
Chapter 1

Introduction

A popular topic being discussed in Canadian healthcare right now is medical cannabis. According to Health Canada (2018, p.2):

“In 2001, Health Canada introduced a regulatory framework for cannabis for medical purposes with the implementation of the “Marihuana [can be interchangeably spelled marijuana] Medical Access Regulations” (MMAR). The regulations allowed individuals who were authorized by their health care practitioner, or their designated person, to produce cannabis for their own medical use.”

Canadian policy on accessing cannabis then transitioned from the MMAR to the MMPR (Marihuana for Medical Purposes Regulations) in 2013, and finally settled on the ACMPR (Access to Cannabis for Medical Purposes Regulations) in August of 2016 (Health Canada, 2018). The ACMPR shifted the responsibility of decision-making from the government to the physicians to determine whether patients were eligible to use cannabis for medical purposes (Capler et. al, 2017). In October of 2018, Bill C-45 (The Cannabis Act) went into effect which legalized the use and purchase of cannabis for recreational purposes (Watson & Erickson, 2019). The blurred boundaries between
medical and illicit cannabis use produces complications for physicians due to the ambiguous status and lack of knowledge surrounding medical cannabis (Lewis & Sznitman; 2017). Physicians rely on evidence-based guidelines to assist them when prescribing and their attitudes toward medical cannabis have started to change as the increasing number of studies conducted continue to provide progressively more knowledge (Ko, Bober, Mindra & Moreau; 2016). Physicians are tasked with deciding whether to continue prescribing standard treatments that are familiar to them or switching to an alternative treatment that is gaining clinical validation, but not yet fully approved for the treatment of many medical conditions (Health Canada, 2018). As the patient demand for medical cannabis rapidly grows, the pressure weighs on the physician to make these difficult clinical decisions. Based on my experience as a medical doctor and clinical researcher, the stigma attached to prescribing cannabis is still present as physicians are either uncertain or not properly educated on the proper indications, dosing guidelines, benefits and risks associated with it.

This thesis will focus on the factors that are vital to the clinical decision-making process of rural physicians when they are confronted with difficult choices and challenges in their medical practice. First, it is important to understand the healthcare challenges that are present in rural areas. Rural residents suffer from higher levels of certain medical conditions compared to their urban counterparts. Subsequently, they are exposed to
chronic illnesses due to the lack of access to better healthcare and fewer treatment options. Rural physicians are faced with their own set of challenges as there are issues with physician recruitment and retention, and a lack of specialists which leads to a wider scope of practice and greater responsibility.

Second, there are many factors that shape a physician’s clinical decision-making model throughout their career. This study will delve into the variety of aspects that assist physicians or contribute to error in their medical practice such as professional experience, education and training, national and local guidelines, bias, etc. These factors play a crucial role in helping to explain the thought processes of physicians, how they prioritize these factors to analyze each medical case, and ultimately implementing a treatment plan to optimize patient care.

Third, this study will discuss in detail the impact of cannabis in Canada. From its history, to the lack of clinical research, to physician perspectives, to the arguments for and against its role as a therapeutic option for patients. This will be followed by identifying the implications of the medical purpose of cannabis on the clinical decision-making process of physicians in rural Ontario and throughout Canada.
1.1 Problem Statement

According to Bottorff, et al. (2013, p. 2), “even with the establishment of Health Canada’s Canada Medical Marihuana Access Regulations (MMAR) in 2001, stigma against CTP [cannabis for therapeutic purposes] users remains an issue.” Very few studies have been conducted which examine the perspectives of physicians on medical cannabis, and these studies have found that most physicians are skeptical towards medical cannabis (Zolotov, Vulfsons, Zarhin & Sznitman; 2018). No study has been completed which specifically focuses on the perspectives of rural physicians on the topic of cannabis. This skeptical perspective of physicians has complicated the clinical decision-making process as “recent changes in media reports and changing trends in social media propose a change in the attitudes towards cannabis (Zolotov et al., 2018, p.5).” Thus, rural physicians struggle to balance between the lack of firm evidence on medical cannabis and its growing demand from patients.

1.2 Purpose Statement

The purpose of this thesis is to better understand the clinical decision-making process that physicians from rural Ontario undergo when considering whether to prescribe medical cannabis to patients for the treatment of their medical condition. I will explore
the issues that physicians prioritize the most to guide them in their decision-making process.

1.3 Objectives

a) analyze the decision-making process that rural physicians go through when considering to prescribe medical cannabis to their patients.

b) determine the factors that encourage a physician to recommend the use of medical cannabis for treatment purposes.

c) determine the factors that discourage a physician from recommending medical cannabis for treatment purposes.

1.4 Significance

On a societal level, this research has the potential to increase knowledge and understanding of the clinical decision-making process that physicians go through when considering whether to prescribe medical cannabis. This knowledge can help to improve the physician-patient relationship and to better assist physicians when deciding whether they are comfortable prescribing new treatments such as medical cannabis. No study has been conducted to assess the clinical decision-making process of physicians from rural Ontario.
1.5 Assumptions

It was expected by the researcher that every physician interviewed had an opinion on medical cannabis. It was also assumed that physicians from rural settings would be less likely to prescribe medical cannabis due to lack of access to information and lack of experience and knowledge.

1.6 Limitations

Recruiting interview participants from rural Ontario for this study was a difficult task due to the demanding schedule of physicians and sensitive research focus on the topic of medical cannabis. After the interviews had been conducted and analyzed, it was surprising that all the participants had at least some experience prescribing medical cannabis or referring their patients to a cannabis clinic. This finding was unexpected and could be due to the physicians who participated having comfort and some knowledge on the topic of medical cannabis. There is a chance that physicians did not wish to participate in this study due to the topic of medical cannabis and the stigma attached to it. This could possibly mean this study’s participants do not appropriately represent the opinions of most physicians in rural Ontario. Thus, the results from this study may be skewed towards a more positive perspective and mindset on the potential therapeutic effects of medical cannabis.
1.7 Methodology

1.7.1 Study Design

This section discusses the study design, data collection and data analysis conducted throughout this research project. These methods were approved by the Research Ethics Board, REB # 18-10-012, (see Appendix 6) at the University of Guelph located in Ontario, Canada.

This investigation looked into the clinical decision-making process of seven physicians and the challenges they faced when considering to prescribe medical cannabis. The physicians interviewed for this study are currently practicing or have practiced in rural Ontario which may present a unique perspective compared to their urban counterparts. It is essential to analyze the challenges that rural physicians face and the conditions that may influence their clinical decision-making process in a variety of ways.

The goal of this thesis is to better understand the clinical decision-making process that physicians from rural Ontario undergo when considering whether to prescribe medical cannabis to patients for the treatment of their medical condition. Semi-structured interviews were conducted among physicians in rural health care settings such as hospitals, private practices and locations of the physicians choosing in Ontario. This
method of in-depth interviews was most effective as gathering information on the clinical
decision-making process of physicians and their personal attitudes, beliefs and
perspectives required a more detailed approach. This method allowed each physician to
discuss the issues in depth on medical cannabis that they deemed higher priority.
According to Olson, Young and Schulz (2016, p.555), qualitative research can help
“answer broader health-related questions rooted in social models of health, such as
power relationships and their dynamics, health and health-care communications,
complex decision-making, stigmatization-legitimization, and social
oppression/marginalization-acceptance processes.” Further research and education on
the clinical decision-making process of physicians can address these complex issues
and initiate a better understanding of the challenges most physicians face in their
clinical practice.

Participants were recruited for interviews (see Appendix 3 & 4) by Gateway Rural
Health Centre, a non-profit community health research centre located in Goderich,
Ontario. Interested participants gave a positive response and confirmed a meeting date
and location that worked best for both the researcher and the physician. For those
physicians who could not meet in person, phone interviews were conducted. Consent
and confidentiality forms were created and sent online and signed by the participant
before meeting (see Appendix 2). At the time of the meeting, consent was verbally
confirmed by the researcher before beginning the interview (see Appendix 5). The researcher asked questions and the participant answered with the participant free to withdraw from the interview at any time. After the conclusion of the interview, the researcher reminded the participant how the information collected would be used as stated in the consent form. The participant was free to withdraw any information they had given to the researcher at any time before the final draft of the thesis had been completed.
1.7.2 Conceptual Framework

This emergent framework was developed to guide myself during the research process. I started off by coming up with three major topics that I wanted to focus on: 1) the rural
challenges of healthcare; 2) the clinical decision-making process; and 3) the physician’s experience and perspective on cannabis.

I wanted to assess the impact of rural healthcare challenges on the clinical decision-making process of the physicians participating in this study. I identified four subcategories for these rural challenges: 1) poor physician recruitment and retention; 2) lack of access to specialists and resources; 3) higher rates of chronic illnesses in rural residents; and 4) the wider scope of rural practice which leads to the increase in responsibility.

The clinical decision-making process of the participants could be determined by several factors which could be evidence-based or affected by bias. I anticipated the following factors: Health Canada (national) guidelines, institutional or hospital regulations, academic research, and influence from peers, patients and media.

Finally, I wanted to tie together these rural healthcare challenges and the clinical decision-making process factors with the experience and perspectives of the participants on the topic of cannabis. I sought to understand each physician’s experience with cannabis by discussing their general thoughts on it, their history of
prescribing cannabis or referring patients to cannabis clinics, and the challenges of staying up to date with research.

I updated the conceptual framework during my research which allowed me to prioritize which subject matter felt most important. The framework also prevented me from straying in different directions that could have complicated my research and the goal I was trying to accomplish for this thesis.

1.7.3 Research Questions

The research questions were generated by analyzing the clinical decision-making process of rural physicians (see Appendix 1). The emerging conceptual framework (see Figure 1) was used as a guide to determine the factors that encouraged or discouraged a physician from prescribing medical cannabis. The first set of questions were based on the topic of rural practice, rural challenges and clinical decision-making. The second set of questions focused on medical cannabis with the line of questioning depending on whether the physician had prescribed or not. The questions used in the interviews can be found in the Appendix section.
Chapter 2

Literature Review

2.1 Introduction

According to Crepault (2018, p.220), “On June 19, 2018, the Canadian Parliament passed Bill C-45—the Cannabis Act—to legalize and regulate the production, distribution, and consumption of cannabis.” This law went into effect in October of 2018 and Canadians have legally been allowed to use and purchase cannabis for non-medical or recreational purposes since that time (Watson & Erickson, 2019). The legalization of recreational cannabis has created a dilemma for physicians due to high demand from patients who are intrigued by the therapeutic potential of cannabis. The stigma associated with cannabis users who are ‘just trying to get high’ has put physicians in an uncomfortable position to distinguish between the blurred boundaries of medicinal and recreational cannabis use (Capler et. al, 2017). But as the acceptance for cannabis continues to grow, physicians are also finding that legalization has the potential to differentiate the grey area between which patients are seeking cannabis for medicinal or recreational purposes (Collier, 2016).
The first section of the literature review will discuss rural health, the lack of health access in rural areas, rural physician practice and the challenges that these physicians face. Rural residents suffer higher rates of certain medical conditions when compared to their urban counterparts. The lack of access to better healthcare and resources exposes these residents to chronic illnesses and fewer treatment options. The lack of healthcare access for rural residents plays a significant role in rural physician practice and the challenges that they face, from physician recruitment and retention to increased responsibility and a wider scope of clinical practice. The second section will discuss clinical decision-making and the process that physicians go through to optimize the care they provide to their patients. There are models of clinical decision-making that physicians use which can be influenced by their experiences, biases, education, training, and sharing of knowledge amongst their peers and their patients. This section will also present three different examples of decision-making by physicians and their ability or inability to adapt to treatment guidelines and innovative measures. These examples will provide a platform to compare the decision-making processes and common themes of those studies with this thesis which will be focusing on medical cannabis and its integration into practice. The third section will go into depth on medical cannabis, its history, the lack of clinical research, physician perspectives, and the arguments for and against its role as a therapeutic option for patients. The fourth section will discuss the implications of medical cannabis on the clinical decision-making
process for physicians and the impact of its rapidly growing demand in the healthcare sector in rural Ontario and throughout Canada.

2.2 Rural Challenges

2.2.1 Rural Healthcare

The term “rural” can be defined in various ways. Statistics Canada (2018) states that “the rural area of Canada is the area that remains after the delineation of population centres using current census population data.” The rural population size of Canadian provinces can vary anywhere from 14% to 53% and Ontario’s rural population size was recently estimated to be 14.1% of the province’s total population (Statistics Canada, 2018a). According to Kulig & Williams (2011), this demographic is important to study as rural Canadians suffer from poorer health, shorter life expectancy and higher mortality rates in contrast to their urban counterparts. Kulig and Williams (2011) also found that rural residents suffered from higher levels of high blood pressure, and higher rates of obesity, arthritis/rheumatism, depression, accidents, suicide, and disability compared to urban residents. According to McDonald (2011), older rural residents are having to tackle their declining health issues with a lack of familial support as young adults are increasingly migrating to urban areas for more educational and employment opportunities. McDonald (2011, p.18) states that this “growing rural-urban gap may also
limit the government’s ability to ensure the delivery of adequate services in sparsely populated regions.” The lack of resources and manpower has led to further challenges for rural municipalities to collect the revenue required to fund the health services that their residents demand (McDonald, 2011). According to Bosco (2016, p.11), “different models have been implemented, addressing issues of patient access, alternative models of physician financial remuneration, multidisciplinary team approaches, and enhanced use of information technology [in rural Canada].” But policy makers and planners are unable to properly assess the results of these models due to the inconsistent information on physician demographics, services provided and workload, offered by the national and provincial databases. These wicked problems place both the physician and the patient at a disadvantage and display the health inequalities and lack of health access present in rural areas.

2.2.2 Rural Physician Practice

McDonald (2011) finds that older rural residents are less likely to visit a primary care physician or specialist in contrast to their urban counterparts due to geographic isolation and lack of access to health care services. According to Laurent (2004), the chief concern which rural Canadians face is the lack of access to health care providers and services due to difficulty in recruitment and retention of physicians. The most common reasons for these barriers in recruiting and retaining physicians, are differences in
lifestyle and geographic isolation (Laurent, 2004). According to Pepper, Sandefer and Gray (2010), the best way to recruit physicians to practice in rural areas is to find the physicians that grew up in similar areas and recruit students from rural areas into medical schools. Another important source of physician recruitment into rural areas comes from those physicians that have studied or practiced medicine abroad. According to Lockyer, Fidler, De Gara & Keefe (2010, p.323), there are common themes associated with the successful rural retention of local or international physicians. These physicians “were involved with the community and its people, valued the opportunities that the community afforded their children and themselves, took an interest in the well-being of colleagues, and had a supportive spouse content to live in a rural community.”

Laurent (2004) also states that the lack of physicians places an extra burden on the rural doctors, as they are forced to work longer hours, and provide a multitude of services such as on-call, emergency, hospital in-patient and childbirth care. According to Bosco (2016, p.14), “many [physicians] have acquired additional or enhanced skills including, but not limited to, the areas of general practice anesthesia, general practice surgery (including operative obstetrics), emergency medicine, palliative care, psychotherapy, oncology, and addictions medicine.”

According to Kulig & Williams (2011), there is a decline in availability and quality of health care support systems in rural areas all throughout Canada which is severely problematic when addressing general and specific medical conditions. The situation is
further aggravated as the lack of rural health care services triggers the migration of chronically unhealthy residents to urban areas in search of proper medical care (CIHI, 2006). As the distance to health care providers for rural residents increases, this “unevenness” of physician distribution continues to create a serious issue for both, the physicians and the patients of rural communities (Laurent, 2004). The Canadian government increased funding in medically underserved areas to address the geographic maldistribution of physicians with the passing of Title VII in 1976 (Krist, Johnson, Callahan, Woolf & Marsland, 2005). This action resulted in a significant improvement in the health care access inequalities present in rural areas. The rise of telehealth technologies have also provided great support to rural physicians as it can offer educational opportunities to stay up to date with the latest medical research and policy, as well as peer support to prevent professional isolation (Baskerville, 2009). According to Lockyer et. al (2010), it is also necessary for medical leaders to engage with physician recruits to act as mentors and assist these newcomers in the emotional, social and professional transitions of their settlement into rural areas. It is important to analyze the different challenges of rural physician practice and understand that it is not just a professional support issue, but a holistic issue that includes multiple factors such as geography, community, and family.
2.3 The Physician’s Clinical Decision-Making Process

2.3.1 The Importance of the Clinical Decision-Making Process

Physicians acquire clinical decision-making skills through years of practice, education and training, but the act of clinical decision-making is not systemically taught or part of medical curricula (Magnavita, 2016). According to Croskerry (2017, p. 9), “very few, if any, clinicians will have taken a decision-making course during their training. Courses explicitly aimed at promoting reasoning, problem solving, and decision-making are rare or non-existent in medical training.” Croskerry (2017) states that it is assumed that the knowledge acquisition of medical facts by a physician will automatically lead to stronger processes of thinking, and thus quality decision making. But knowledge alone is not sufficient enough for a physician to optimize clinical decision-making processes. Medical information is now available to everyone with internet access, but it is essential for physicians to hone their clinical decision-making skills to decipher which information is relevant and most suitable for each specific patient (Magnavita, 2016). Ideally, physicians achieve competency in their medical practice by keeping updated with current medical literature, frequently attending Continuing Medical Education (CME) programs, being open-minded to adopting and implementing newer practice methods and treatments, and constantly addressing their performance gaps by modifying their clinical practice patterns as required (Baskerville, 2009). According to Magnavita (2016, p. 28), “evidence-based practice represents the new era of
contemporary health care: combining the best available evidence with clinical expertise.” Physicians wish to obtain their research evidence from health service researchers via systematic reviews and research summaries that clearly identify the implications of these research findings on their clinical practice (Cohen, Levy, Castel & Karkabi, 2013). Physicians would most likely prefer their clinical decision making to be based on the best evidence available, but the complexities of medicine constantly place physicians in a position to practice autonomy and trust their own judgement (Magnavita, 2016). Complicating the clinical decision-making process even further, patients now have multimedia access to medical information, whether based on evidence or not, and can create an informed demand to influence the procedures or treatments their physician will provide to them (Baskerville, 2009). According to Zolotov et. al (2018), there has been a recent shift in media attitude towards medical cannabis which has generated patient demand for the product. It is the physician’s responsibility to stay up to date on the best practices on the topic of medical cannabis to optimize their clinical decision-making process.

2.3.2 Clinical Decision-Making Model

According to Magnavita (2016, p.9), the five key points to optimize the clinical decision-making process are: “(a) [having] access to high-quality empirical evidence, (b) developing clinical expertise, (c) using sound theoretical constructs, (d) including ethical considerations, and (e) [possessing a strong] foundation in decision theory.”
Access to information is essential, but how does the physician transfer this information into knowledge that can be properly applied into their clinical practice? Magnavita (2016) termed ‘evidence-based practice’ as the combination of clinical expertise with the best available evidence. Magnavita (2016) further extended the concept of ‘evidence-based practice’ to include: formulating theories to strengthen the analytic process, practicing decision theory to regularly challenge our beliefs, and preserving a system of checks and balances by maintaining a strong ethical framework. These additional factors are what a physician must consider when practicing with ‘autonomy’ as not every case is simple and can be solved with ‘evidence-based practice’. As illustrated by Figure 1, the first part where physician knowledge is essential is after meeting the patient and collecting the patient’s medical history. At this point, the clinical decision-making process is required to establish a differential diagnosis with a possible primary medical condition. Laboratory tests such as blood work (i.e. complete blood count) or imaging (i.e. x-ray) can confirm the suspected diagnosis. Once the diagnosis is confirmed, the next step in the clinical decision-making process is to make a therapeutic decision on whether a medical or surgical treatment is necessary. The final part of the clinical decision-making process focuses on patient follow-up and an assessment of the initial treatment. The physician determines at the time of follow-up if the initial treatment has provided an improvement of symptoms and should be continued, or if an alternative treatment or dosage of medication is required. With the existence of online health information websites such as WebMD, patients can acquire medical knowledge and
generate their own informed demand whether the therapeutic option is evidence-based or not (Baskerville, 2009). According to Magnavita (2016), these technological advancements have promoted a shared clinical decision-making process that combines the physician and patient perspectives in a collaborative effort. Furthermore, Magnavita (2016) states that computer technology and electronic health records (EHR) can enable the collection of aggregated patient data, analyze health trends and promote proactive management of the patient. Access to internet has also offered a network for physicians to work together and share knowledge amongst themselves which provides peer support and encouragement (Cohen, Levy, Castel & Karkabi, 2013). The physician and the patient having access to information plays a significant role in the clinical decision-making process.
2.3.3 Role of Experience

Clinical experience plays an important role in the clinical decision-making process of a physician. According to Zaleski (2011), most physicians base their clinical practice on modeling and prediction. Modeling and prediction methods are a simple way of identifying risk factors, signs and symptoms of medical conditions, anticipating the progression of the patient’s symptoms, and preventing the condition from getting worse.
by intervening in patient care before a negative event occurs (Zaleski, 2011). According to Gotzsche & Wulff (2007), clinical reasoning is considered ‘empirical’ when a physician bases their clinical decision off their past experiences. Clinical experience plays a crucial role in evidence-based practice and is essential to the practice of ‘autonomy’ by a physician. But basing clinical practice off only experience can lead to bias and, ultimately, inaccurate or poor decision-making (Miller, Spengler & Spengler, 2015). Patients now have internet access to medical information that physicians do, and it is the physician’s clinical experience, not merely the knowledge component, that assists them in the clinical decision-making process (Magnavita, 2016). Modeling and prediction methods have become easier to practice with the emergence of healthcare technology. In conclusion, clinical experience is vital to the clinical decision-making process. But a competent physician must be aware of all the factors, such as ethical issues and patient preferences, and remain cautious when basing decisions merely off their clinical experience.

2.3.4 Bias

Bias, whether conscious or subconscious, can deeply affect the clinical decision-making process of a physician. Aside from attaining sufficient knowledge, physicians can improve on their rationality by “identifying and avoiding or mitigating biases that impact decision-making; and being able to identify logical fallacies in [their] reasoning
Two types of biases in clinical decision-making are overconfidence and confirmation bias. Extremely confident physicians can gain increased credibility, as patients are more likely to prefer decision-makers who display a high degree of confidence (Miller, Spengler & Spengler, 2015). But this study also found that the statistical relationship between confidence and accuracy is small, and a physician with misplaced confidence can be a significant threat due to their poor clinical decision-making skills. Physicians may also display confirmation bias, as they may have a “tendency to seek confirming rather than disconfirming evidence of a clinical hypothesis (Miller, Spengler & Spengler, 2015, p.554).” Confirmation bias may promote physicians to continue practicing according to their knowledge and beliefs while ruling out alternative options that may be beneficial to their patient.

Two similar models of decision-making that are conducive to bias are ‘homophily’ and ‘groupthink’. According to Miller, Spengler & Spengler (2015), ‘homophily’ models theorize that physicians with similar personality traits and beliefs are more likely to be a part of the same professional network. ‘Groupthink’ within the same environment can cause physicians to “adapt their behavior to coexisting norms…avoiding the adoption of new innovative treatments…[ultimately] hampering the diffusion of scientific information (Cohen, Levy, Castel & Karkabi, 2013, p.497).” According to Croskerry (2017), the ‘what you see is all there is’ phenomena can prime physicians to make poor decisions due to
their confidence from previous experiences and basing their decision off minimal investigation. Once a physician possesses these biases, whether conscious or subconscious, it becomes difficult to modify these deeply rooted clinical practice patterns (Baskerville, 2009).

### 2.3.5 Learning from Historical Lessons

As a medical doctor, I believe it to be crucial to examine the potential for change in disease management by determining areas of weakness in the current delivery of health care from physicians to policymakers. According to Bourgeault, Dingwall & De Vries (2010, p.265), history can assist in learning "about the efficacy and impacts of interventions in the past; to avoid past mistakes or reinventing the wheel." There could possibly already be answers or lessons to be learned from the questions we ask today that have existed for many years and can be used as evidence for our current ways of thinking. According to in-depth interviews from Bourgeault, Dingwall & De Vries (2010), there are physicians who are reluctant to use certain evidence-based recommendations for psychotropic medications in an elder patient population that are in place at their institution. These physicians preferred to use their own instincts and experience that they gained throughout their relationship with the patients instead of relying on newly implemented medication guidelines (Bourgeault, Dingwall & De Vries, 2010). To summarize, although there are clinical guidelines in place established by medical
boards and institutions, some physicians practice autonomy by trusting the experience of their own clinical judgement over frequently updated policies or recommendations installed by these institutions.

### 2.3.6 The Struggle of Adopting and Implementing New Techniques and Treatments

Physicians are justifiably allowed to express hesitance and take a conservative approach when considering whether to implement newer techniques or treatments for their patients (Cairns & Kelly, 2017). According to Olson, Young and Schulz (2016, p.555), qualitative research can help “answer broader health-related questions rooted in social models of health, such as power relationships and their dynamics, health and health-care communications, complex decision-making, stigmatization-legitimization, and social oppression/marginalization-acceptance processes.” Few physicians will be willing to take a chance on the unknown, such as medical cannabis, without the support and backing of the administration and leaders of their respective institution. Further research and education on medical cannabis can answer these difficult questions of the unknown and possibly instigate a positive change towards the treatment of multiple medical conditions with a supported medicine. This section will present three different examples in which physicians have been unable to adjust to innovative methods or treatments that have proven to lead to better clinical practice: 1) The unclear guidelines
when prescribing ‘off-label’ medications; 2) The under-prescribing of Omega-3 capsules for patients with cardiovascular disease that has been FDA recommended; and 3) The failure to adopt to health information technology (HIT) and electronic health records (EHR) from paper-based notes.

1) Off-Label Prescribing

The first example displaying the inability of physicians to adopt innovative methods or treatments is on the topic of prescribing ‘off-label’ medications. According to Paul (2012), off-label products are those that are FDA approved and are being used for: 1) a different disease such as a blood pressure medication being used for migraines; 2) a different patient demographic such as an antidepressant medication that has only been studied on adults being used to treat children; and 3) a different dose such as using a higher dosage for a clinical diagnosis than that which is FDA approved. Paul (2012) states that approximately 21% of the most common medications are prescribed for off-label reasons that are unapproved by the FDA. During my time as a Clinical Coordinator across multiple nursing homes in Bronx, New York, an example of off-label medication use I initially perceived to be normal due to common practice was the prescribing of Seroquel for elderly patients with cases of dementia. But Seroquel has never been an FDA approved drug for the treatment of dementia. Paul (2012) found that nearly one out of every five (19%)
physicians that do prescribe Seroquel for this medical condition wrongfully believe it is approved, when in fact, it has an increased chance of causing death compared to a placebo in this patient population. This inappropriate treatment can lead to a difficult physician-patient relationship if physicians do not possess the correct information and can further stifle the clinical decision-making process.

On the other hand, off-label prescribing can offer patients an alternative or investigational therapy that they would not have otherwise received. According to Paul (2012), the most common physicians to prescribe off-label medications are specialists such as oncologists, psychologists and pediatricians; relying on their own personal judgement instead of institutional guidelines to assess the best treatment of their patients. The Canadian Pain Society has stated that cannabinoids could be used as a third-level therapy for chronic neuropathic pain (Moulin et. al, 2014). As medical cannabis research continues to show progress, its off-label prescribing may continue to expand with several conditions such as headaches, chemo-induced and diabetic neuropathy, depression, gastrointestinal diseases such as inflammatory bowel disease and Crohn's disease, seizures, multiple sclerosis, bipolar disorder, schizophrenia and even Alzheimer's dementia (National Academies of Sciences et. al, 2018). Further research can provide the evidence required to determine the benefits and adverse
effects of a medication and establish its place as either an approved frontline drug or alternative off-label therapy.

2) Dietary Supplement for the Prevention of Cardiovascular Disease

The second example of physician failure to adopt innovative methods or treatments is on the topic of prescribing a complementary or alternative medicine (CAM). In a study completed by Lesser (2011), he found that physicians were under-prescribing omega-3 capsules dietary supplements to their patients. Even though “the American Heart Association [AHA] recommends Omega-3 (n-3) dietary supplementation for the secondary prevention of cardiovascular disease (Lesser, 2011, p.4),” a survey found that physicians felt that they lacked sufficient education regarding Omega-3’s and expressed further desire to acquire more knowledge. Researchers in this study identified four key factors that physicians think of during their clinical decision-making process when selecting a medication for their patients: effectiveness, safety, clinical experience, and convenience. Based on my own personal experience during medical school, minimal attention was given to CAM such as dietary supplements and medical cannabis in the medical curricula. Lesser (2011) believed that physicians could become more knowledgeable on the topic of CAM which would further improve the communication and symmetry of the physician-patient relationship to collaboratively make the best clinical decision possible.
3) Health Information Technology (HIT) and Electronic Medical Records (EMR) from Paper-Based Notes

The third example of physician failure to adopt innovative methods or treatments is on the topic of health information technology (HIT) and electronic medical records (EMR). According to Hatton (2012), the slow rates of HIT adoption are detrimental to patient health as thousands of patients die on a yearly basis due to medical errors related to poor access to medical records. Hatton (2012) finds that these results stem from the inability of physicians to switch from paper-based records stored in a locked file cabinet to an EMR system which can be accessed from any computer remotely or at the office. Furthermore, Hatton (2012, p.95) states that achieving the goals of utilizing HIT “can potentially improve clinical outcomes for patients, increase physician productivity, and decrease healthcare costs.” This example on HIT is different from the first two as the previous examples were more focused on treatment and medications. But this example is just as important when identifying key factors in the clinical decision-making process for physicians and the impact this decision may have on their patients.

In conclusion, these examples display the possible ways that physicians can improve on their decision-making skills, but many have not made the adjustments. The adoption of HIT is beneficial for the patient’s health, the physician’s productivity, and is cost-effective overall (Hatton, 2012). And yet many physicians have not been able to switch
from a paper-based to an electronic record-keeping system. Even though the AHA has recommended Omega-3 dietary supplements for patients with secondary cardiovascular disease, many physicians do not prescribe these supplements due to lack of knowledge and clinical experience with this CAM (Lesser, 2011). If physicians do not feel comfortable prescribing a treatment that is recommended according to guidelines, then how are so many physicians prescribing ‘off-label’ medications? Are physicians prescribing ‘off-label’ medications due to confidence from clinical experience and autonomy? Or are these physicians lacking knowledge and not keeping updated on current research or guidelines? The examples presented in this section reveal some of the challenges that physician’s face in their decision-making process, and the next section will address the impact of cannabis on this process.

2.4 Cannabis

2.4.1 History of Cannabis in Canada

In the early 1920’s, Canada’s growing concern of drug use influenced the government to place cannabis on the list of restricted drugs (Carstairs, 2018). According to Ko et. al, (2016, p.736), “widespread prohibitive legislation banning the use of cannabis-based medicines occurred across the world [during this time].” Canada was the first to act against cannabis amongst another nations, but the strange part was that opium was not
prohibited, even though its illegal use was considered more prominent at the time (Carstairs, 2018). In the 1960’s, as cannabis became the most popular recreational drug of choice, drug law enforcement arrested thousands of middle-class youth who were the primary users (Fischer, Kuganesan & Room, 2015). In 1969, this harsh penalty prompted the movement to decriminalize cannabis use to punishment by fines instead of jail time (Carstairs, 2018). According to Health Canada (2018), Canadian policy on accessing cannabis then transitioned from the inadequate versions of MMAR (Marihuana Medical Access Regulations) in 2001 and MMPR (Marihuana for Medical Purposes Regulations) in 2013, to finally settling on the ACMPR (Access to Cannabis for Medical Purposes Regulations) in August of 2016. The ACMPR has shifted the decision-making onus of determining cannabis for medical purposes eligibility from the government to the physician (Capler et. al, 2017).

Canada has one of the highest rates of cannabis use in the world with approximately 10-15% of all adults and 20-30% of young adults currently using (Fischer, Kuganesan & Room, 2015). According to Cooper (2017), there are over 130,000 Canadian patients currently using medical cannabis which stresses the importance for physicians to be able to supervise the access their patients have to cannabis. This high population of patients using cannabis requires a proper set of guidelines to assist physicians who choose to prescribe cannabis. A strong physician-patient relationship can ensure the
safe and appropriate use of medical cannabis and promote positive aspects such as “risk reduction, monitoring of drug interactions, opiate substitution opportunities and education about occupational health and driving safety (Cooper, 2017, p.927).” Patients have endured complicated processes when obtaining cannabis for therapeutic purposes (CTP) from legal sources with the assistance of their physician or getting their supply from unregulated dispensaries (Capler et. al, 2017). An additional 100,000 to 200,000 patients receive their cannabis supply from one of more than 175 unregulated dispensaries throughout Canada, which further displays the lack of important physician-patient relationships needed to encourage safe and appropriate use of cannabis (Capler et. al, 2017).

2.4.2 Medical Cannabis: An Example of Healthcare Innovation?

Recent research on cannabis has found that it can be used medically for the treatment of chronic pain, headaches, chemo-induced and diabetic neuropathy, chemo-induced nausea and vomiting in cancer patients, depression, gastrointestinal diseases such as inflammatory bowel disease and Crohn’s disease, seizures, multiple sclerosis, bipolar disorder, schizophrenia and even Alzheimer’s dementia (National Academies of Sciences et. al, 2018). According to Capler et al. (2017), recent evidence is proposing that the benefits and side effects of cannabis can vary depending on the ratios of the cannabinoids, Δ9-tetrahydrocannabinial (THC) and cannabidiol (CBD). Most physicians
do not know the difference between THC and CBD and that only the THC component can create the ‘high’ effect in cannabis users (Rubin, 2017). Obtaining further proof and knowledge on these factors influencing the effects of cannabis can lead to an increase in support from physicians. According to Ko et al. (2016, p.736), “75% of opioid-dependent medical cannabis users reported experiencing “a lot or almost complete overall relief” from opioid dependency.” Prescribing cannabis over opioids can be a legitimate argument now with the fight against the opiate crisis dominating the national and political headlines (Hill & Saxon, 2018). In my opinion, innovative research can provide further understanding on if and how medical cannabis can assist in the treatment of chronic diseases, multiple comorbidities and provide support for the end-of-life care of seniors. According to Olson, Young and Schulz (2016, p.555), “qualitative research helps answer broader health-related questions rooted in social models of health, such as power relationships and their dynamics, health and health-care communications, complex decision-making, stigmatization-legitimization, and social oppression/marginalization-acceptance processes.” Physicians require medical cannabis to gain more credibility to reduce their uncertainty as the need for establishing evidence-based guidelines grows (Ko et al., 2016). According to Bourgeault, Dingwall & De Vries (2010, p. 62), there are “three types of uncertainty: (1) Uncertainty stemming from gaps in their knowledge; (2) Uncertainty created by the limits of medical knowledge per se; (3) Uncertainty resulting from the difficulty of distinguishing the first from the second.” In my opinion, this study will create a better understanding of the perspectives
and beliefs of physicians surrounding medical cannabis and discover the reasons for confidence in those who prescribe, and uncertainty for those who do not prescribe.

2.4.3 Lack of Cannabis Research

During my medical training, I was never educated on the topic of medical cannabis and the endocannabinoid system. Because of this lack of knowledge, I refrained from considering cannabis as a legitimate treatment option for ill patients. According to Carlini, Garrett & Carter, (2017, p.85), “health care providers may be reluctant to discuss cannabis use with their patients, due to lack of knowledge and training, uncertainty about legal issues, and concern about abuse or dependence.” Dr. Sanjay Gupta, CNN Chief Medical Correspondent, famously retracted his position of being against cannabis when he said,

“…surely, they (the US Drug Enforcement Agency) must have quality reasoning as to why marijuana is in the category of the most dangerous drugs that have ‘no accepted medicinal use and a high potential for abuse.’ They didn’t have the science to support that claim, and I now know that when it comes to marijuana neither of those things are true (Weed, 2013, Aug 11).”

According to Carlini et al. (2017), the Schedule 1 classification created a legal barrier to clinical research of medical cannabis in the United States due to restricted federal funding and access to the drug. In the same study, it was found that only 6.5% of
clinicians who had never written authorizations for medical cannabis felt comfortable enough to do so. These clinicians identified the following common themes that could possibly increase their comfort level in recommending medical cannabis:

- Education programs for health care providers
- More clinical data
- More research proving effectiveness
- Algorithms for recommending medical cannabis
- Endorsed clinical guidelines
- Change in cannabis federal legal status

Cannabis research has been severely lacking as negative perceptions and regulatory hurdles continue to stagnate research progress and decrease any available funding (Cairns & Kelly, 2017).

According to Ko et al. (2016, p.739),

Canada suffers from “an overall lack of investigation, which prevents physicians from making informed decisions to best improve the risk-benefit relationships of medical cannabis in their patients. Many colleges recommend that Canadian physicians treat medical cannabis as they would any other prescribed narcotic drug.”
In order for physicians to feel comfortable when prescribing cannabis for a number of important therapeutic possibilities, further research is necessary to strengthen efficacy evidence (Cairns & Kelly, 2017). According to Capler et. al (2017), it is essential to identify and address the knowledge gaps on medical cannabis that can support future research, prescribing guidelines and education to better assist physicians in the clinical decision-making process. Furthermore, there is minimal literature available discussing the beliefs, attitudes and clinical decision-making processes of physicians when considering whether to prescribe medical cannabis to their patients or not, especially in rural areas.

### 2.4.4 Current Approved Uses of Cannabis

Cannabis has been found to provide relief to a wide spectrum of medical conditions. According to Moulin et al. (2014), the Canadian Pain Society stated that cannabinoids could be used as a third-level therapy for chronic neuropathic pain. Nabiximols (Sativex) provide a confirmed benefit for a variety of chronic pain syndromes and has been approved in 30 countries (Baron, Lucas, Eades, & Hogue, 2018). According to Baron et al. (2018, p.2), “supporting evidence also exists for cannabis/cannabinoids in the treatment of migraine and/or chronic migraine, cluster headache, chronic headaches, medication overuse headache, idiopathic intracranial hypertension, and multiple sclerosis associated trigeminal neuralgia.” On June 25, 2018, Epidolex, the first plant-based and
highly purified cannabidiol (CBD), was approved by the FDA for the treatment of seizures associated with Lennox-Gastaut syndrome or Dravet syndrome in patients two years of age or older (Lazaridis, Eraikhuemen, Williams & Lovince, 2019). The World Health Organization declared that “CBD exhibits no evidence for abuse or dependence potential… [and] there is no evidence of public health related problems associated with the use of pure CBD (Grinspoon, 2019).” This finding could be a major breakthrough and provide a solution on how to deal with the current opioid crisis. According to a study conducted by Piper et al. (2017, p.571), “respondents that regularly used opioid pain medications…over three-quarters (76.7%) indicated that they reduced their use slightly or a lot since they began using MC [medical cannabis].” In the same study, similar results were seen which reduced medications for anxiety (71.8%), migraines (66.7%), and sleep (65.2%) after using medical cannabis. Further research needs to be done to confirm the different uses, benefits, risks, and long-term effects of cannabis, especially CBD, for the treatment of specific conditions. In my opinion, as more evidence on cannabis is collected, it will be of great interest to monitor how this information will affect the perspectives, attitudes and practices of clinicians.

2.4.5 Arguments Against Cannabis

In 1961, The United Nations “ratified the legal status of cannabis as an illicit drug with no therapeutic potential, thereby eradicating the medical use of cannabis (Ebert et. al,
Since then, medical cannabis research has been conducted to display the various positive and negative effects to assess its therapeutic potential. According to Cairns & Kelly (2017), the difficult part of evaluating the efficacy of cannabis for certain medical conditions is assessing if there is a lack of evidence supporting its use, or if that proof has not been achieved due to negative perceptions and regulatory hurdles. The stigma associated with cannabis users who are ‘just trying to get high’ has put physicians in an uncomfortable position to distinguish between the blurred boundaries of medicinal and recreational cannabis use (Capler et. al, 2017).

According to Thompson and Koenen (2011), the quality and concentration of medical cannabis can vary widely due to the inconsistent ratio of tetrahydrocannabinol (THC) to cannabidiol (CBD). Thompson and Koenen (2011) state that a proper assessment of the risks of medical cannabis becomes exponentially more difficult once factors such as quality control, purity, and potential contaminants are added to the list of complications. This study also found that a standardized “system has been tried and has largely failed in Canada…[with] fewer than 14% of medical cannabis users in Canada [obtaining] their drug through Health Canada, preferring to purchase it from so-called compassion clubs and illicit suppliers (Thompson & Koenen, 2011, p.461).” Due to the lack of a standardized system and with minimal guidelines to turn to, physicians are left to fend for themselves, through personal research and anecdotal evidence from patients, for
information on the dosage, indications, and contraindications of medical cannabis (Rubin, 2017). According to Evanoff, Quan, Dufault, Awad & Bierut (2017), there is a growing discrepancy between the policy guidelines and physician training, whether in medical school or post-graduate training, on the topic of medical cannabis. One survey of over 200 Canadian physicians revealed that most physicians do not possess adequate knowledge on medical cannabis and that they want more education and guidelines to assist them when making clinical decisions (Physicians Speak Out, 2014). As the evidence on medical cannabis continues to expand, it remains difficult for physicians to move forward or change their minds without the full support and guidance of peers and leaders in the medical community.

2.4.6 Physician Perspectives on Cannabis

In the 19th century, Sir William Osler, the famous Canadian physician, determined that cannabis was the most satisfactory medication for the treatment of migraines (Ko et. al, 2016). But in recent times, Canadian physicians have justifiably raised plenty of doubts and questions when it comes to their concerns regarding medical cannabis treatment and their role as ‘gatekeepers’ in the decision-making process (Fischer, Kuganesan & Room, 2015). According to an article titled ‘Physicians Speak Out’ (2014, p.23), some key questions from physicians include:

- “Who refers?”
• Who qualifies?
• How safe is it?
• Who is legally responsible?
• How much evidence is required?
• Where are the guidelines?
• What is the best delivery mechanism?
• What conditions are appropriate?
• Who ensures adherence and follow-up?

How are physicians expected to prescribe an unstable treatment like medical cannabis when there is varying efficacy and minimal literature to help establish the precise therapeutic dosage for each medical condition (Ebert et. al, 2015)? A study conducted amongst physicians from Colorado, the earliest state in America to support medical cannabis use, found that most physicians still believe there is potentially more harm to this treatment than health benefit (Kondrad & Reid, 2013). These harms include “adverse effects such as dizziness, anxiety, paranoia, memory loss and concentration difficulties, as well as other physical symptoms like dry mouth, ataxia, blurry vision and lack of coordination (Ebert, et. al, 2015, p.438).” Furthermore, some physicians believe people who are not sick are seeking legal protection for their recreational use of
According to Sullivan (2012, October 11), the Canadian Medical Association conducted a survey on 607 physicians which found that:

- “64% of respondents are worried that patients who request medical marijuana actually want it for recreational purposes.
- 57% believe they do not have enough information on the risks and benefits of using the drug for medicinal purposes.
- 56% reported they have insufficient information about the appropriate use of marijuana for medicinal purposes.”

This study also demonstrated Canadian physicians with positive perspectives on medical cannabis who believed it had an “undeservedly bad reputation” and fewer side effects compared to other medications currently being prescribed for the same medical indications. But whether physicians have positive or negative views on medical cannabis, they mostly agree that there is a lack of research and prescribing guidelines to assist their clinical decision-making process (Physicians Speak Out, 2014).

cannabis which can complicate the patient-physician relationship (Kondrad & Reid, 2013).
2.5 Implications for Rural Ontario

This study has multiple implications that can affect rural physician practice, the clinical decision-making process, and medical cannabis policy on a municipal and national level. Recruiting and retaining physicians in rural areas is the most critical component as the number of rural physicians in Canada has proportionately continued to decrease. According to Mitra, Gowans, Wright, Brenneis & Scott (2018), one out of every seven physicians will abandon their rural practice within the next two years. This study determined that physician interest in rural family medicine at matriculation was the strongest predictor of rural practice. Other factors played an important role in physician recruitment and retention such as “a [previous] rural background…being in a relationship, having a societal orientation, and expressing a desire for a varied scope of practice (Mitra et. al, 2018, p.595).” The next important implication for rural Ontario is determining how physicians are affected in their clinical decision-making process. What are some solutions that could assist rural physicians in their practice? Baskerville (2009) states that evidence-based practice and continuing medical education (CME) can improve the decision-making process and policy formulation with the assistance of telehealth and facilitation of care management. These educational tools and collaborative efforts can centralize data sharing opportunities, prioritize government health policies, align educational curricula with these policies, and promote further coordination between governments, medical schools, and physician groups (Bosco, 2016). It is also critical to empower rural physicians so that they can “act as advocates
to ensure that they facilitate or lead in obtaining the resources...to address [their] rural health care needs (Bosco, 2016, p.1).” The implications associated with rural physician practice and the clinical decision-making process can further guide the current discussion on the use of medical cannabis for therapeutic purposes. As cannabis research improves and physician knowledge expands with the help of scientific proof, government policy will be able to provide clearer guidelines on medical cannabis which will lead to evidence-based practice in the future (Capler et. al, 2017).

2.6 Conclusion

This chapter links together the evident relationships found between rural health and lack of health access, rural physician practice, the clinical decision-making process, the impact of cannabis, and the overall implication of these findings for rural Ontario. With the emergence of the internet as a tool to provide patients with medical information, it becomes even more important for physicians to stay updated on newer research (Magnavita, 2016). The clinical decision-making process is now a collaborative effort where the patient can share their own knowledge with the physician to decide on the optimal management of their health. In Canada, cannabis has recently become a medication of interest which has generated an informed patient demand for the product. This pressure from patients has created a dilemma for physicians who are seeking knowledge on cannabis, but there is a lack of official treatment guidelines and a lack of
evidence from clinical research trials (Cohen, Levy, Castel & Karkabi, 2013). This study aims to analyze the clinical decision-making process that physicians from rural Ontario go through when deciding if medical cannabis is an appropriate therapeutic option for their patient.
Chapter 3

Methodology

This chapter will be presented in two parts. The first part will discuss the methodological decisions utilized for this research and justify why an interpretivist approach was implemented. The second part will describe the research process and the practical steps taken in detail.

3.1 Methodological Decisions

An interpretivist approach was used for this qualitative study. Within the boundaries of interpretivism, phenomenology and social constructivism play an important role (Dudovskiy, 2019). The ‘phenomenon’ being the rise in potential of medical cannabis use as a therapeutic option for patients. The lack of understanding surrounding this phenomenon is due to the lack of clinical trials and prescribing guidelines available to physicians which makes the potential impact of medical cannabis unclear. The ‘social construct’ being the patient demand of medical cannabis created by the anecdotal evidence from patients who have experienced benefits from the drug, which has led to physicians experiencing challenges as the ‘gatekeeper’ to this medicine. The participating physicians in this study have their own unique clinical
experiences when it comes to prescribing cannabis that have defined their attitudes and perspectives on the topic. The meanings that these physicians have attached to this ‘empirically observed phenomena’ are precisely what justifies an interpretivist approach most suitable for this study (Elliott, Fairweather, Olson & Pampaka, 2016).

The goal with the interpretivist approach is to establish the typical clinical scenario each physician faces when considering to prescribe medical cannabis, the challenges that are present, and the clinical decision-making process that leads to a subsequent action. According to Dudovksiy, 2019, p.1), the “primary data generated in interpretivist studies cannot be generalized since data is heavily impacted by personal viewpoint and values.” The weakness of the interpretivist approach is that it is subjective in nature and can lead to researcher bias, which subsequently can affect the reliability of the data. Conversely, the greater level of depth in the data collected and analyzed from this approach can achieve higher validity.

Interviews are a commonly used method of data collection for the interpretivist approach. According to Seidman (2006, p.9), “at the root of in-depth interviewing is an interest in understanding the lived experience of other people and the meaning they make of that experience.” I knew that the process of recruiting participants, getting access and contacting them, interviewing them, transcribing the data, and analyzing the
data would be quite time-consuming. But I also understood that interviewing participants would be the optimal method to utilize the interpretivist approach.

Thematic analysis is a flexible research tool which I used that is closely tied with interpretivism. It was essential to identify themes from the interview data from the interviews to efficiently organize and describe the data set (Braun & Clarke, 2006). The interview questions were constructed specifically to assess the level of knowledge and experience of physicians on the topic of medical cannabis, the influence of rural challenges in healthcare, and ultimately, how these factors affected their clinical decision-making process. These themes categorize the data from the interviews with the research question in mind and present patterns or meaning to the data set for further analysis (Braun & Clarke, 2006).
3.2 Practical Steps

3.2.1 Why Cannabis?

I am a physician by training and have great interest on the topic of healthcare. It took me an entire semester to realize which topic I wanted to delve into specifically. With the landscape of cannabis changing in Canada due to its legalization of recreational use, I was genuinely intrigued by the impact of medical cannabis on physicians. Furthermore, I was curious to know if physicians were comfortable with prescribing a complicated medication with minimal therapeutic guidelines to support their decision-making process.

3.2.2 Recruiting Participants

The only specific criteria for research participants was that they had to be a physician from rural Ontario. The physicians were recruited from different rural parts of Ontario with the assistance of Gateway Centre of Excellence in Rural Health (see Appendix 4, which is a community-driven centre for rural health research located in Goderich, Ontario. The recruitment and interview process took place over four months from December 2018 to March 2019. Gateway attempted to recruit participants by communicating with chief of staffs and physicians who worked at hospitals affiliated with them. Once a physician expressed interest in participating in the study, Gateway
distributed a letter of invitation on my behalf (see Appendix 3). After confirmation of participation, the physician and I determined a time and method of communication via phone call or in-person for the interview that was most convenient for the both of us.

3.2.3 Informed Consent

A consent and confidentiality form was provided to the participant days prior to the interview to better understand their rights and the objectives of the study (see Appendix 2). Before starting the interview, I verbally went over the consent form to ensure each participant understood their rights and the objectives of the study (see Appendix 5). Participants verbalized their consent via audio recording.

3.2.4 Interviews

Once consent was given by the participant, they were interviewed in a semi-structured format while being asked open-ended questions. This format was helpful in providing a thematic framework for the interview, but also allowed for the physician to remain flexible in dictating the direction and priority of the key talking points. Five of the interviews were conducted via phone call and the other two were conducted in-person at the clinical setting of each physician. Interviews ranged between 15 to 45 minutes. Interviewing participants of different backgrounds and diverse professional experiences
helped provide the study with a variety of perspectives and attitudes. The professional status of the physicians interviewed ranged from recently completing their post-graduate training to entering retirement. No further interviews were conducted after the seventh physician due to reaching saturation of the common analytic themes. Due to the small number of participants, the physicians have been de-identified, by not using their names or locations, to remain anonymous for this study.

3.2.5 Development of Interview Questions

The interview questions were developed with the guidance of the conceptual framework from Chapter 1 (see Figure 1). The initial approach was to focus on the typical clinical decision-making process of each participant. This was accomplished by discussing and prioritizing the different factors that influence the process such as knowledge, experience, bias, and clinical environment. This initial questioning was then followed up with a discussion on the rural challenges that the participants face and how these challenges affect the clinical decision-making process. This part of questioning focused on rural challenges such as the difficulties of recruitment and retention of rural physicians, and the lack of access to specialists and resources. Finally, the first two topics allowed for a smooth transition to discuss the impact of medical cannabis on the clinical decision-making process of these rural physicians. The questions on medical cannabis focused on how comfortable the participant was in prescribing cannabis or
referring patients to cannabis clinics, how much knowledge and experience they had, and the effects of legalization of recreational cannabis on their clinical decision-making process. The questions asked during the interviews have been provided in Appendix 1.

### 3.2.6 Data Recording, Storage & Deletion

The interviews and verbalization of consent were recorded and stored using the Audacity application on my password-protected laptop, and a battery-charged digital recording device. Utilizing two different recording devices ensured that an interview would be recorded properly by at least one device in case the other failed. I transferred the interviews recorded on the digital recording device back on to my password-protected laptop. I then permanently deleted all files on the digital recording device. Once the thesis has been submitted and approved, all data obtained from the interviews will be permanently deleted from my laptop.

### 3.2.7 Data Analysis

After conducting the interviews, I transcribed each of the seven interviews on to separate Microsoft Word files on my password-protected laptop. After transcribing the interviews, I read through all the transcripts to familiarize myself with the data.
As I was reading the interviews, I made notes and collected the quotes that I deemed important. During this time, I created nodes based on my interpretation of the information. The major themes consisted of 1) Rural Healthcare, 2) Clinical Decision-Making, and 3) Medical Cannabis. The transcript data was then uploaded to NVIVO 12 for coding with the quotes being categorized into each node accordingly. Subthemes developed from these major themes. ‘Rural Healthcare’ was divided into participant profiles, rural health challenges, and diversity of practice. ‘Clinical Decision-Making’ was divided into models, knowledge and evidence-based practice, clinical setting, and technology. Finally, ‘Medical Cannabis’ was divided into research and knowledge, prescribing or referring, and legalization of recreational use. By staying organized and appropriately coding the interviews, finding and analyzing quotes from the interviews became a much simpler task.

In conclusion, this chapter displays the methodological decisions utilized for this research, how an interpretive approach was most appropriate, and the detailed description of the steps taken to complete this research.
Chapter 4

Findings

This section will present the information that was collected during the interviews of seven physicians from rural Ontario. The research question revolved around analyzing the clinical decision-making process of rural physicians and determining the factors that encouraged a physician to prescribe medical cannabis or discouraged a physician from prescribing medical cannabis. Part 1 of the interviews focused on the major theme titled ‘Rural Healthcare’ with the following subthemes: 1) Participant Profiles; 2) Rural Health Challenges; and 3) Diversity of Practice. Part 1 discusses rural healthcare and the challenges associated with practicing in rural settings compared to urban. Part 2 of the interviews focused on the major theme titled ‘Clinical Decision-Making’ and was divided into the following subthemes: 1) Models; 2) Knowledge and Evidence-Based Practice; 3) Clinical Setting; and 4) Technology. Part 2 of the interview talks about the art of clinical decision-making and what are the factors that assist or influence this process. Part 3 of the interviews focused on the major theme titled ‘Medical Cannabis’ which branched to the following subthemes: 1) Research and Knowledge; 2) Prescribing or Referring; and 3) Legalization of Recreational Use. Part 3 of the interview discusses
medical cannabis with the line of questioning depending on whether the physician had prescribed or not and how much knowledge they had on the topic.

4.1 Rural Healthcare

4.1.1 Participant Profiles

The physicians interviewed had varying experiences from their time as medical school students to their post-graduate residency training. Residency training for these physicians included rural rotations which, ultimately, was a major determining factor for their recruitment and retention in rural hospitals.

<table>
<thead>
<tr>
<th>Medical School</th>
<th>Residency Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>Ottawa</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>McMaster</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>Western Ontario</td>
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<tr>
<td>Hamilton</td>
<td>McGill</td>
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<tr>
<td>Montreal</td>
<td>McGill</td>
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<tr>
<td>Ottawa</td>
<td>Ottawa</td>
</tr>
<tr>
<td>Egypt</td>
<td>Western Ontario</td>
</tr>
</tbody>
</table>

Table 1: Training Location of Interviewed Physicians
Description of Participant | Amount
--- | ---
Males | 4
Females | 3
Family Physicians | 6
Psychiatrist | 1
Raised in Canada | 4
Raised Abroad | 3
Practicing in Western Ontario | 4
Practicing in Eastern Ontario | 3
Past Urban Clinical Experience | 4
No/Minimal Urban Clinical Experience | 3

Table 2: Participant Profiles

### 4.1.2 Physician Recruitment & Retention

One of the interview participants discussed how his rural rotation encouraged him to practice in a rural area:

I did a rotating internship in Ottawa. I met the founder of [a rural] clinic. He was doing training in Obstetrics & Gynecology and that was my first rotation. I was actually going to do Ophthalmology. I had previously been accepted in the US, in Cincinnati, Ohio, and decided to stay here [at the rural practice] two years and things worked out.
With support from his mentor, this physician found the guidance required to adapt to a rural location that he had not initially intended on settling in.

Three of the interview participants had graduated medical school from programs outside of Canada. Their post-graduate training was vital in influencing them to practice medicine in rural areas. Two of the international participants mentioned why they decided to practice in a rural area:

I chose [this rural area] to practice because of my return of service agreement with The Ontario Ministry of Health and Long-Term Care (MOHLTC) in underserved areas.

This [rural] area is related to The Family Health Organization [an initiative under the Ontario Medical Association and MOHLTC], where you take responsibility for a group of patients and you get a fee paid for your service under those demographics.

The MOHLTC is the organization that oversees all healthcare for the province of Ontario. The ministry has formed this initiative to motivate international medical graduates to practice medicine and settle down in rural areas.
4.1.3 Rural Health Challenges

There are multiple challenges to providing adequate health care to rural areas and optimizing the practice of rural physicians. This part of the results section will address the health disparity of rural residents, the diversity of practice and demanding toll on rural physicians, and the lack of access and resources in rural areas.

One of the physicians interviewed discussed how rural medicine and access to resources had evolved during their fifty years of practice:

I think it is still a challenge. Medicine has improved tremendously. Anaesthesiology has improved tremendously. When I started doing Anaesthesia and obstetrics, epidurals were a rare occurrence with nitrous oxide. Our hospital is not large with 30 or 40 beds. And we deliver close between 800 or 900 babies yearly. Our obstetric unit is by far the busiest. And we have 24-hour epidural service. And that wasn't the case when I first started. You see marked development in that field and progression as there should be. And our Hospital has more VBACS [vaginal birth after cesarean section] in general because we have four obstetricians who were comfortable watching. And their C-section rate is lower than most hospitals. And we get some praise for that. So, things have changed, and the hospital is [not far] from the Ottawa Heart Institute. We have a good relationship and anybody with coronary syndrome or STEMI [ST Elevation
Myocardial Infarction] can go to the Heart Institute as long as it is within 3 hours or so. The rest of the patients we watch and listen for five days, some of them for a little longer. As long as they are stable, we send them over to get stents. Things have definitely improved but in rural medicine there are still needs.

This physician had a positive outlook on the advancements in rural medicine and witnessed significant progress at his local hospital and clinic.

Two of the interviewed physicians discussed their clinical practice findings when asked about the topic of substance abuse in rural areas:

I just don’t have a great sense of the urban issues because I’ve been outside of the urban areas for a long time. I certainly have noticed that we have higher rates of certain substance abuse problems at least kind of locally.

In my practice I might be very biased. I honestly did not notice that I had any more patients with depression or drug abuse than any other practice. I noticed very little drug abuse. Now, mind you, I am older, and my practice is older. So, this might not be a valid observation. But I did not prescribe any benzos or opioids. I actually thought that rural living was cleaner and easier than living in the city where there’s more stress, more issues with traffic, more issues with higher cost-of-living, more tendency to have
availability of illicit drugs.

These two physicians had different views on how substance abuse affected the patient population of their local region. One of the physicians mention how he did not prescribe his patients any benzos or opioids which are medications that could possibly lead to drug dependence and potentially future drug abuse.

4.1.4 Diversity of Practice

The interviewed physicians discussed how the ‘diversity of practice’ in rural medicine broadened the scope of their practice with positive and negative aspects. The participants mostly worked in multiple community settings to provide their services to patients in need:

Definitely the scope of practice is more in rural areas. I work in a hospital and do home visits and palliative care.

It's because I'm interested [in the diversity of rural practice]. Many physicians don't do it. I'm not sure, if I was in [an urban area], if I would be able to do home visits. But here, a rural area is a small community and it's easier for me to do home visits.
Being close to the community enabled these two physicians to offer care to patients in different settings such as the local hospital, their private clinic and the patient’s home if necessary. This flexibility of practice might not be possible in a larger urban community.

One physician detailed the degree of difficulty in rural hospitals as family physicians must deal with a broader range of clinical issues that extend beyond standard family medicine care:

I think that's what rural medicine demands. You have to be aggressive. You have to learn, and you have to keep learning. It's very rewarding to do this, but it's also demanding. At times very difficult when, in a rural hospital, you have one general internist and one cardiologist. You have to do a lot of internal medicine and handle a lot of difficult things. From ketoacidosis and pancreatitis. All sorts of stuff that family physicians in [urban] areas don’t handle. Urosepsis and rapid atrial fibrillation are things we have to deal with.

This physician provides a few examples of medical conditions that are typically covered by a physician who specializes in internal medicine. But the lack of access to specialists and resources forces this physician to diversify his skillset to adjust to the hurdles of rural medicine.
Another physician expresses the diversity of his clinical practice which he believes is the typical family medicine experience:

I cannot say that I have a special competency in different areas. But as you know that family medicine is very wide, and you touch very different topics on a daily basis. Personally, I have a lot of interest in psychiatry and pain management. But I find my practice to be non-specific and it is really a general practice. I think my experience is more or less a typical family medicine experience. Maybe it depends on where you live. Traditionally, maybe the thing lacking in my practice is doing obstetrics but that is my own choice. I think traditionally family physician's especially in rural areas are more involved in obstetrics and neonatal care.

This physician mentions his interest in being involved in psychiatric care and pain management, but he also has made a personal choice to not be involved in obstetrical care. The wide spectrum of these medical fields displays the number of specialties that a family physician must have some basic knowledge on to guide them in their daily clinical practice.

One physician, who is currently working in both urban and rural settings, expressed how the diversity of rural family practice was a motivating factor in her staying committed to a rural setting:
I found this location based on the fact that it offered obstetrics. But the skillset here requires diversity to work rurally. And that's what keeps me here as well. In an urban center, what's interesting is that recently there was an article, in Quebec, about being a ‘follow-up ologist’. Is that what we are becoming? Is it just to follow-up things? I don't feel that way when I am working in rural areas.

This physician showed growing concern for the direction of urban healthcare where she felt most of the patients from urban areas were constantly going to see the physician for ‘follow-up’ care. These check-ups can become redundant which has created disinterest in urban healthcare for this physician.

According to one physician, as important as diversity of practice is, a focused practice in one field is still required in these rural settings:

I think that diversity of practice is a big part. But the diversity needs to include some focused practice. Because if I was working in [a neighboring city], for example just 15 minutes away, they lost their obstetrics care, in which case if I had been involved in that community, I would have left that community. So, it still needs to have enough support of the secondary care to keep my interest. Here, we have 4 GP’s and anesthetists. And should surgery be something that decreases, I don't know whether they would continue working here either.
This physician recognizes the importance of professional support at her hospital. She gives an example of a nearby rural hospital that suffered from a lack of resources and the physicians needed to provide sufficient healthcare services. These deficiencies led to the obstetrics department being shut down which reduced the chances of recruiting and retaining future physicians.

4.1.5 Lack of Access & Resources

The interview participants shared their concerns on the lack of professional support and resources that they experienced in their respective rural practices. One physician identified the lack of a chronic pain specialist in his area:

There's a lack of certain specialists. For example, one of the potential indications for at least cannabis is the chronic pain issue. So, we have very few chronic pain specialists that work in rural areas. So, I think that means family physicians need to take on this particular issue. And there's various levels of comfort with that. I do think that is a barrier for people in rural areas. It is because of the nature of the population and a lot of people still don't have access to family physicians and medical care here either. If that isn't around, that makes it again more challenging to deal with these particular issues and problems.
Without the proper education and knowledge on chronic pain issues, and the lack of a specialist, this physician has been placed at a significant disadvantage to figure out how to deal with these issues on his own.

On top of the lack of access to specialists, one physician notes the lack of access to diagnostic procedures compared to urban areas:

That's the nature of the issue of rural medicine. Access to specialists and access to diagnostic procedures are more difficult to obtain than they are in the city. So, you have to adapt and do the best you can. Sometimes it's very daunting but you learn.

This physician recognizes that it can be overwhelming to adapt to these clinical situations where resources may not be available.

Two of the interview participants discuss how the lack of access to specialists and resources affect the timetable for a patient when waiting for a diagnostic test or treatment:

In our hospital we have a radiologist who comes twice weekly. We don't get any dermatologist for at least 6 months for something like pemphigus vulgaris. Basic arthroplasty, if you're lucky it will take 3 or 4 months [to receive care], if unlucky up to 18 months. It's access that's a major issue.
We do have specialists. The access is far from being satisfactory, but it is not like it is impossible to be seen eventually by someone. Most likely the patient will be seen but it's about the time frame.

Even when rural residents have access to certain specialists and resources, the amount of time it takes to be seen by the specialist and treated is significantly longer compared to that of urban residents.

4.2 Clinical Decision-Making

There are multiple factors that physicians consider in their clinical decision-making process. This section will discuss the role and the impact of the following factors: 1) the models of clinical decision-making; 2) knowledge and evidence-based practice; 3) the clinical setting; and 4) technology.

4.2.1 Models of Clinical Decision-Making

The physicians interviewed for this study discussed their own models of clinical decision-making and primarily emphasized the importance of clinical experience:

Experience is the number one priority of decision-making if I had to choose one factor [of importance].
Clinical decision-making depends on your level of experience and how much second opinion that is available to you. In a scenario where you have a high level of experience and comfort to deal with that problem, you don't really refer, and you deal with the problem yourself. On the other side, if you don't have any idea, you have to refer to the specialist regardless of the waiting period.

One participant observed how difficult it was for them to keep up with, and adjust to, national guideline changes of medications and the role that this challenge played on their clinical decision-making process:

I think adjustments take time. I don't think it's necessarily easy to adjust to medication changes. I think that you have to be aware of the side effects and you have to make sure there are no contraindications. We have to be aware of those things and I think that comes with experience.

One participant expressed how knowledge is an important factor in decision-making, but it is essential to gain experience by applying that knowledge to increase confidence in decision-making:

I base my decision-making mostly from my experience. Just because you have knowledge doesn't mean you are comfortable to utilize that knowledge. If you have the experience, it's more likely you feel more comfortable to suggest or recommend to that patient. Then after
discussing everything with the patient, you can guide them to make the decision.

Another participant trained medical students going through residency and discussed the importance of teaching them how to apply their clinical knowledge:

   Experience is a part of it. They say medicine is the most artful of the sciences and the most scientific of the arts. You learn the medicine in medical school and residency. And most of the residents I see are very adaptive at making a diagnosis and having clinical knowledge. The application of that knowledge though is what I try to teach them. I try to teach them the art of medicine as much as the science of medicine because they're equipped with the science of medicine, but the art and the general application of medicine is where I find weaknesses. In the pharmacological aspects and the appropriate prescription of antibiotics, that's where most of the work needs to be done.

This physician believes that most of his students possess sufficient clinical knowledge but need to strengthen their applied knowledge when assessing pharmacological options for their patients.

One physician provided an example of his general clinical decision-making process, followed by a detailed description of their clinical decision-making process when considering medical cannabis as a therapeutic option for their patient:
In general, you make the diagnosis. You look at the person's age. For example, I have got an 86-year-old male with diabetes, congestive heart failure, and atrial fibrillation. I'm worried about getting his [Hemoglobin] A1C down to 7% or less. So, you look at the general condition. You look at the safety of the medications. And you look at how compliant the patient is. I try to discuss healthy ways of living and so on.

For a patient who requests medical cannabis, I'll do a general history, a physical exam, and then check for any history of psychiatric or psychological problems, such as depression or any psychosis. Any family history of bipolar disease or schizophrenia. I also go into the use of alcohol, smoking and the use of recreational drugs. I will do a drug screening test generally on these people. The risk factors of age. Under 25, I really don't encourage regular cannabis use. I talk about family history or any psychosis and whether they are using cannabis recreationally. Whether they are actively using any other drugs. If there's any other particular issues, for example, if they are smokers and if they have COPD. But there are issues with cannabis smoking. I tell them that the risks are dangerous and that they shouldn't drive within four hours after smoking. If they eat cannabis cookies, edibles last longer and are more slowly absorbed. I warn them of adverse effects such as nausea.
and vomiting, etc. And check if they are fit for cannabis use and if other medications have not helped.

This physician presents a generalized and medical cannabis-specific clinical decision-making model that guides him to make the best decision for his patient. Chapter 4.3 will describe the impact of medical cannabis on the clinical decision-making process in more detail.

**4.2.2 Knowledge & Evidence-Based Practice**

The interviewed physicians prioritized knowledge on current research to assist them in practicing evidence-based medicine:

> For research, various resources are helpful. I use RX files and Up-to-Date and references quite frequently with my prescribing. Then there are courses that I have attended which influence. I’m sure there are aspects where media also influences me.

Medical journals and articles can be found online which provide the easiest access to information and the most recent published evidence. This physician also attends medical conferences and Continuing Medical Education (CME) courses to stay updated on current research.

But even with access to information and changing guidelines, one participant expressed the difficulties of keeping updated on every topic:
To be up-to-date with changing guidelines and new medications, it's an ongoing battle that everyone is going through and you learn sometimes what is the best way. When you learn from a colleague or a specialist or sometimes a patient, they tell you something that you didn't know about. You cannot create a system where you can be on top of things all the time on all the topics. It gets easier if you have a focused practice. If you're only focusing on marijuana, you can actually be on top of things. But it is not realistic to know everything in a timely fashion. Eventually, you know about things and apply that to your practice. But it is hard to be avant-garde on every single topic.

This physician mentions the importance of having professional support from his peers, as well as input from his patients.

According to one participant, physicians can follow the guidelines and support their clinical decision-making with evidence-based practice, but it is ultimately the patient's decision-making that matters:

We always try to follow the guidelines here in Canada. But not always can the guidelines be incorporated. You have to talk to the patient and if the patient doesn't want something, even if you want them to, you could recognize these guidelines, but the patient makes the final decision. So, you have to find that common goal of what can you do for the patient and
their best interest.

This participant recognizes the shared decision-making process that physicians and patients must go through together. The goal is to exchange knowledge and evidence to optimize treatment options for the patient.

### 4.2.3 Clinical Setting

A physician’s clinical decision-making process is heavily influenced by their environment. Whether they are working in a clinical setting which is rural or urban, hospital-based or a private practice, the environment plays a major role in the way a physician practices medicine.

The interviewed physicians discussed the impact of clinical setting on their clinical decision-making. One physician believed he and his colleagues had a much higher workload with many more patients in comparison to urban physicians:

> The clinic work is much busier [in rural areas] because you’re seeing many more people. My practice was around 2,000 people. I think the average in Ontario is around 1400. A couple of my colleagues have around 2,400 people.

One participant describes how being part of a smaller and more intimate group of physicians at a rural hospital reduces the chance of conflict and work issues that are typically present in larger practices:
In a rural setting, you get to impact decision making a little more. Because the red tape becomes a difficult challenge in bigger cities. Here, there are fewer voices so, locally, you can have a bigger impact. I also do feel like we’re also not in silos. So, the doctors who work emergency are also the doctors who work on the floor, so we have a general understanding that we need to help out when there is an overflow situation. It is not just somebody else’s problems. It’s all of our problems.

This physician expresses how she has more freedom to make an impact on decision-making due to the strong professional relationship with her fellow colleagues. She continues to compare her current rural practice with the urban practice she also intermittently works at:

    There are important aspects of rural practice. Even interprofessional, like the nurses, specialists and family doctors, tend to work well together. Sometimes, particularly in my obstetrics department in [urban area], I often feel like we are the nurses, the doctors, the obstetricians. And there isn’t necessarily a cohesiveness. But that is potentially specific to each particular location and not necessarily urban versus rural. And I’m also dealing with urban and rural within two different provinces as well which has two different healthcare systems. So, my experience could be different.
This physician appreciates the chemistry that her rural team has developed during their time working together. She presumes that this group dynamic might be different depending on the location and environment of every healthcare practice.

One of the international physicians analyzed the difference between her clinical experience in urban Bangladesh versus that of rural Canada:

In terms of practice, definitely the practice is different. Especially between countries. But if you're talking about prescribing or recommending treatment, I've worked as a resident doctor, which means that I have the knowledge base. So, my experience is based on my clinical work and that is relatively the same whether it's in Bangladesh or in [rural area in Canada].

This physician has gained knowledge and clinical experience from different clinical settings. She has followed these principles to optimize her clinical decision-making process even under dissimilar circumstances.

4.2.4 Technology

The growing presence of technology has helped bridge the gap in lack of access to information and resources which has been a major concern for rural areas. Two of the physicians interviewed mentioned the role of technology on their clinical decision-making:
Well, there aren't many rounds locally. Educational opportunities are provided via telehealth or where you are physically going to a conference. So, there is an easier access to content when you are living in the city.

There is a small change that has happened which is the introduction of the e-consult. That has been very useful to provide second opinions.

The internet has made it easier for these physicians to have access to information, through medical journals and articles, and learning opportunities to continue medical education via virtual conferences. Professional support and opinions of specialists are being obtained via e-consults which can address the lack of access to specialists in rural areas.

4.3 Medical Cannabis

4.3.1 Research & Knowledge

A physician can gain clinical knowledge on medical cannabis from multiple sources to assist them in their decision-making process. These sources include academic research from medical journals, personal experience through trial and error, guidelines from Health Canada, professional peers, and anecdotal evidence from the patients. The physicians interviewed for this study noted the variety of ways they gained knowledge on the topic of medical cannabis and its uses:
I look at UpToDate and Medscape. I look at online CME courses. These are the resources I look at.

There was a recent conference I attended which was pretty good, and I learned a lot from that. In the past year, there have been a fair amount of CME sessions that have popped out on cannabis and what CBD is used for. I do try to get a general sense of what it could be used for.

I have attended a few lectures and conferences specifically for further education on how to prescribe marijuana and other studies that are available surrounding the effectiveness and the evidence around the use of marijuana.

These physicians mainly received their information on medical cannabis from online resources and in-person lectures and conferences. These learning opportunities educate the physician on the most recent cannabis research. This access to information will assist the physician in their clinical decision-making process when dealing with patients interested in using medical cannabis.

One participant emphasized the challenge of considering medical cannabis as a therapeutic option due to the lack of evidence and awaits further research:

I don't have evidence-based information to back up a conversation on cannabis. It's not that I don't believe in it, but there is not enough research
done to see a benefit of cannabis. It's hard for me to just prescribe it really. I think that's the main challenge that we face. Hopefully, eventually research will cover most of the topics in a much more satisfactory way. It will give much more confirmation if it is truly beneficial for the use of cannabis. So, at least when I give consultations to the patient, it's not that I don't know if the evidence did show this or that.

While another participant expressed a growing confidence in medical cannabis as the research and knowledge on the topic continues to expand:

I do think now that more of a knowledge base has increased, particularly a more sophisticated understanding of it. With CBD, THC and the various breakdowns, the product has become more specific, in terms of its indications. It's important to know which derivatives are going to be more helpful for certain conditions and which ones are not going to be helpful or would have a negative effect. There is more knowledge coming. The new research has changed my opinion of it in the last few years. So, I do certainly think I would be much more open to it as a consideration and I just have to see a bit more data.

These two participants demonstrate that they are at different stages of acceptance towards the use of medical cannabis. The common theme being further research is
required to provide the physicians with more knowledge and confidence in their respective decision-making processes.

Two physicians identified the informed demand by patients with knowledge on cannabis as an important factor in sharing the clinical decision-making process:

Cannabis is very different from other medications because people have experience with street marijuana for years. From past experience, these patients have ideas of how it could be used and it’s not unusual that they may know more than some physicians.

The general public, their learning curve is growing really fast. They now use the term CBD more frequently. Some of them have impressed me by knowing more than I do about the different types and delivery mechanisms, such as oil and non-oil forms. Also, they have the luxury to experience street marijuana or marijuana from different sources, but you see I don’t have that experience. So, it is a learning curve that I hope we as physicians will be on the same page.

Patients now have access to most of the same medical information as the physician via online resources. The patient’s with experience using street cannabis can also provide anecdotal evidence on the various concerns that physicians have, from route of administration to dosing and side effects.
4.3.2 Prescribing & Referring

This section will present the physician experience of prescribing and referring cannabis, and the factors that they consider in their clinical decision-making process. Along with the numerous side effects of cannabis and its potential for substance abuse, “the varying efficacy and overall instability of cannabis [makes] it difficult to determine the precise therapeutic dosage of medical cannabis (Ebert et. al, p.440, 2015).”

The physicians interviewed discussed their prescribing and referring experiences with medical cannabis. One of the primary concerns was the effect that prescribing cannabis in a hospital setting could have on staff and patients:

Within my private practice I have more flexibility with individual patients. In the hospital practice, although the guidelines maybe the same, there is a much broader application that makes it more difficult to prescribe. There are other considerations, for example, in a hospital setting, you’ve got lots of other patients around, so I have to be conscious about what that specific patient is going to mean to the general population of people.

Hospital setting you cannot do it. It’s always in a clinical setting when I prescribe it for multiple reasons. Because in a hospital setting, a patient may stay and be there for a few days or weeks. There's no point in giving a treatment to a patient that might not work during their stay. Plus, I don't
think to smoke marijuana in the hospital, the nursing team or other patients will appreciate that. I did find one case in a long-term care setting and cannabis was not as useful. It was more for palliative care management. I did suggest cannabis to one family for a palliative care case, but they did not go for it.

These two physicians recognized the impact that prescribing cannabis in a hospital setting could have on not only their patient, but other patients and staff. This public discomfort is the reason these physicians prefer to prescribe cannabis in their private practice instead of the hospital.

But another physician sees cannabis as a potential therapy for pain management in the hospital setting due to narcotics causing much more constipation in bedridden patients:

Some patients are here at the hospital are admitted for pain control. So, it might be considered amongst the options. Since narcotics cause a lot of constipation, cannabis could be an option.
<table>
<thead>
<tr>
<th># Prescribed</th>
<th># Referred</th>
<th>Diagnosis</th>
<th>Hospital or Clinic</th>
</tr>
</thead>
<tbody>
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<td>12</td>
<td>Many</td>
<td>Chronic Pain</td>
<td>Clinic</td>
</tr>
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<td>Both, mostly clinic</td>
</tr>
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<td>Chronic Pain</td>
<td>Clinic</td>
</tr>
<tr>
<td>10-12</td>
<td>2</td>
<td>Chronic Pain, Seizures</td>
<td>Clinic</td>
</tr>
<tr>
<td>Cannabis: 4</td>
<td>Synthetic: 10-15</td>
<td>Chronic Pain</td>
<td>Both, mostly clinic</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Chronic Pain</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Many</td>
<td>Chronic Pain, Nausea, Cancer-related symptoms, Depression</td>
<td>Clinic</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>Chronic Pain, Psychiatric</td>
<td>Clinic</td>
</tr>
</tbody>
</table>

Table 3: Medical Cannabis Data from Interview Participants

Each physician has had unique experiences and challenges with prescribing medical cannabis to patients or referring them to cannabis clinics for further evaluation [see Table 3 above]. One physician described his experience:

I probably prescribed to a dozen patients over the last three or four years. So, fairly infrequently. It is out of my specific realm of practice. I would be very limited within my scope of practice with that. So, that was probably the reason that I would not prescribe it.

This physician has prescribed to approximately twelve patients but still does not feel comfortable prescribing due to his lack of knowledge and experience on cannabis.

One of the physicians had never prescribed cannabis and another had rarely prescribed, but they both felt comfortable referring their patients to cannabis clinics for further consultation:
I don't prescribe medical cannabis, but I have referred them to a couple of agencies in [urban city]. The Canadian Cannabis Clinic seems very thorough and good. And the people usually come back primarily on CBD oil and start a low-dose 0.2ml bid (twice daily). And they'll bump it up after 3 or 5 days to 0.5 ml. They try to maintain 0.5ml bid. That's kind of my experience with it. It's been a year or so since there has been big talk of cannabis legalization. So, it was not worth my effort to get involved as I was going to retire soon. I do the referrals because the cannabis clinics know a lot more about it than I do. I think they do a good screening job. I've been impressed by how thorough and relatively rapid the patient improvement has been within two to three weeks. And the cannabis clinics follow up as the patient has to go back every 2 to 3 months for refills.

I don't prescribe directly. I usually send people to the marijuana clinic. The most common referral centres are in [urban city]. I have them go for a consultation there, make sure that they are eligible in the first place, and have them follow-up in the marijuana clinics. I've done a couple of renewals in the hospital for patients that are already on it, but I've never prescribed.

One physician was on the verge of retiring from clinical practice, so he did not feel it was necessary to seek more knowledge on medical cannabis and its therapeutic uses.
The other physician simply felt more comfortable referring patients to cannabis clinics instead of getting involved in the decision-making process.

One physician had minimal experience in dealing with patients interested in medical cannabis, but she was eager to increase her knowledge on the topic to prescribe in the future:

I have refilled prescriptions for two patients who grow cannabis on their own through Health Canada and have existing treatment. I would love to prescribe. I just have to increase my knowledge about medical marijuana. And I have to put some time to learn and then I would be happy to prescribe.

One physician with experience prescribing medical cannabis to patients described some of its complications. From deciding on the appropriate strain, the appropriate initial and maintenance dosing, to the lack of proper follow-up:

I start with the lowest possible dose. I usually start with 0.5 or 1 gram per day and take it from there, but you don't have much control. It's not like other medications prescribed where you can monitor closely. As soon as you send the fax to the cannabis company, you are out of that interaction, with the patient having more control in terms of how much they take per
day. And the cannabis company is not like a pharmacy. The patient can see the amount. They will send a fax back saying that the patient requires a renewal, and you have to accept it or not accept it. You accept the fax once per year. And the type of marijuana a patient uses, usually I leave it to the cannabis company to decide. If the system changed and the physician had to play a much larger role in deciding the dosage and cannabis strains that the patient should use (whether it's an oil or not an oil, how we smoke it, etc.), you are going to find that we do not know a lot about that stuff. Some of us do more than others. But most physicians I know do not feel comfortable to prescribe. There is a learning curve. In a few years, we might be much more comfortable then what we feel right now. But I do not think I have the competency to manage the marijuana treatment. I think my role at that point is to advise the patient if marijuana might be of interest for that case or not. And if they wish to try marijuana and I feel like they may benefit from it, I may open the door to such treatment.

Even though this physician had some useful knowledge and the confidence to prescribe cannabis, he recognized that he is not an expert and that most of the decision-making is done in collaboration between the patient and the cannabis clinics. At this point in time, he understands that his role as a physician is to act as an advisor and guide patients to comprehend the therapeutic options available to them.
Only one of the interviewed physicians seemed relatively content with the Health Canada dosing guidelines for medical cannabis. Interestingly, she felt comfortable prescribing multiple medications together to reduce the dosing and side effects of individual medications that could occur if higher doses were given:

I would ask the patient how much they were smoking. I would use the Health Canada forms before when it wasn't legal. I would get the application online and back then patients were allowed up to 5 grams/day. Most of the time I was prescribing one gram or two grams a day. And I even prescribed Nabilone for one of the patients who was taking it so he wouldn't have to use as much pot.

I have prescribed Nabilone to four patients with some chronic pain. I think that it's probably helpful when I'm thinking in terms of cannabis vs. opioids. So, I don't have to use as many opioids when I'm prescribing naloxone. Not that most of the chronic pain medication that we use are particularly effective either when it comes to the GABA meds and opiates for chronic pain. TCA’s are pretty low in effectiveness as well. So, if we could spread it out that could possibly decrease some of the side effects of other medications.

This physician's biggest concern for chronic pain patients is the overuse of opioids and she has attempted to find ways to minimize its usage by evenly distributing other pain
medications. In her rural practice, she witnessed a larger number of patients with chronic pain which provided her with more opportunity to prescribe cannabis compared to her urban clinics:

In the rural setting, I think I prescribed cannabis more because there’s more chronic pain patients here that I experienced. I didn’t prescribe to the [urban city] patient population because I was mostly working with obstetric patients.

4.3.3 Legalization of Recreational Cannabis Use

Physicians have the potential to act on their role as gatekeepers to medical cannabis for their patients. Unfortunately, clinical decision-making becomes a puzzling process for physicians as patients have access to cannabis due to legalization of the recreational product.

Two of the interviewed physicians felt that legalization of recreational cannabis has had a beneficial impact and will assist in providing clarity and more clinical research:

I'm happy about legalization because we could actually start to get research. The only research I am aware of has been with synthetic Nabilone and side effects are unattainable from most of my patients. Previously, the only medication people were able to get from physicians was Nabilone. That was the only medication well studied. All of these
cannabis strains that are on the street are much higher in THC than anything that has been studied. So, that is my biggest concern. I think a lot of positive information has come from people who have already tried it and liked it. These are not necessarily well documented trials because it is hard to officially run trials. So, it's mostly a trial-and-error of anecdotal evidence to see what people are trying and seeing what works for them.

This physician recognized the difficulty of organizing clinical trials on medical cannabis and, up until recently, she had been relying on anecdotal evidence from the patients to guide her in the decision-making process.

While the next physician believes legalization of recreational cannabis has prevented the malingering of drug-seeking patients who request cannabis for medical purposes with the intention of using it recreationally:

I'm hopeful that since cannabis is now legal, in some ways people who want to use it recreationally will not necessarily have the need to try and get a prescription for medicinal. This would be an improvement on the current state of affairs. Because I think prior to that there were certain people that were inappropriately asking for medical marijuana who simply wanted to use it recreationally. So, I'm hoping with legalization that will diminish. Also, I think it will be very helpful and a lot easier to actually have some decent clinical trials with legalization offered and more rigorous,
scientific evidence as to what its particular indications are. So, I'm hopeful for a lot of that to occur.

One physician views legalization as an opportunity for patients to become more open-minded and think of cannabis as a medication that might be considered for therapeutic purposes:

I think legalization may make people more willing to try it and see if it affects them or not. People who are older are more willing to try it as an option. Right now, it's mostly people who have already been using and will continue to use. And now we will have better access to studies to see whether medical cannabis does anything.

Two physicians identified how the cost of recreational cannabis could possibly determine whether patients seek a cannabis prescription from their doctor or go directly to cannabis shops to purchase the product:

Cannabis is more accessible now. It is more comfortable getting it with legalization. There will be more control. Although, it remains to be seen whether the price on it will go up in the legalized clinics. Some of the users will find other ways to get it. Everything will depend on the cost and control of cannabis.

Since legalization, the number of requests I have received, and the
number of cases have been limited in my practice. A dozen cases overall. I think that it may drop even more after legalization which is expected in a way. People do not need to get it from you as much because they could buy and explore the treatment on their end. So, they don't need the hassle of coming to the physician where you are trying to convince them, or they’re trying to convince you, and whether they need the medication. They might not need to pay more. I'm not really aware of what the cost is at the marijuana stores.

Finally, two of the physicians concluded that the legalization of recreational cannabis had minimal impact on their clinical practice and the patients that seek cannabis from them.

### 4.4 Summary of Findings

This chapter has presented the major findings of this research. The in-depth interviews have captured a substantial amount of information which have been condensed to prioritize the key talking points. The participants mentioned some of the positives of rural healthcare which include a diversity of clinical practice skills due to increased responsibility, and a more intimate relationship with patients and colleagues. But this increased responsibility is due to the lack of access to resources and lack of professional help from specialists. These rural challenges have improved with the
assistance of telehealth and access to online medical articles and journals. The participants expressed how their clinical decision-making process is affected by multiple factors such as experience, knowledge, clinical setting, bias and technology. The conversation on rural healthcare and clinical decision-making process led the participants to talk about the challenges associated with medical cannabis. The participants were interested in prescribing cannabis but did not possess sufficient knowledge due to the lack of clinical trials and evidence. With patient demand rising and the legalization of recreational cannabis reducing stigma, the participants are seeking further proof to ensure the optimization of patient care.

The next chapter will discuss the findings in more detail and further analyze the results gathered from this research.
Chapter 5

Discussion

The following discussion, based on the findings, is divided into three major sections. The first part will discuss the challenges with rural healthcare identified by the participants; the second part will bring attention to the clinical decision-making process for physicians; and the third part which focuses on the growing demand of medical cannabis and how it affects the clinical decision-making process for rural physicians.

5.1 Challenges in Rural Healthcare

According to Kulig & Williams (2011), the disparity between rural and urban health is not only a Canadian problem, but a global one which has prompted the Canadian Health Commission to declare that “geography is a determinant of health.” The most serious problem for rural residents is the lack of access due to the distance away from not only physicians and specialists, but resources such as equipment and facilities, which reduces diagnostic and treatment options (Kulig & Williams, 2011). This lack of healthcare service further contributes to the poorer health of rural residents as the funding of services and resources continues to concentrate on more urban-centric areas.
(Laurent, 2004). Interestingly, the participating physicians did not recognize the health of rural residents to be ‘poorer’ and one physician believed rural residents lived a cleaner and healthier life in comparison to urban residents. Another physician noticed a high number of patients with substance abuse issues in his practice, but he was not sure if these numbers specifically applied to his local region or all rural areas. Does this mean one area is healthier and should focus more on preventive care management, and the other area focus on substance abuse prevention and treatment programs? Each rural area has locally specific issues that should be assessed separately and resources should be allocated according to demand. Physicians can play a crucial role in guiding the process of resource distribution as they can advocate for their own needs and the needs of their patients.

Recruitment and retention of physicians to practice in rural areas is an important factor to help address the lack of access issue. According to Brooks, Walsh, Mardon, Lewis & Clawson (2002), an emphasis on longer rural rotations during post-graduate training prepares the medical students for a career in rural medicine and increases the chances of physician retention in rural areas. One of the interviewed physicians attributed his recruitment and retention, to practice in rural Ontario, to the positive rural rotation he experienced during his post-graduate training. As a young resident, he gained the support of the founder of the rural clinic that he rotated in, which provided mentorship
and guided him to become passionate about rural medicine. According to Lockyer et. al (2010), medical professionals believe that strong mentors can assist a physician when they first settle into a rural environment from an emotional, social and professional aspect. Two of the interviewed participants, international medical graduates, acknowledged that they were influenced to practice in their current rural practice due to their agreement with the MOHLTC. “Recruitment of international medical graduates (IMGs) into rural Canada has been a key strategy for physician human resource planning by many provinces and territories (Bosco, 2016, p.2).” These participants identified a positive rural rotation experience, strong mentorship, and being recruited as an international medical graduate as reasons for their decision to settle and practice medicine in a rural area.

Rural health challenges and deficiencies become drastically apparent when comparing rural and urban health challenges. Rural residents demand more from their local physicians due to the lack of professional support. This demand forces rural physicians to diversify their skillset and widen the scope of their clinical practice.

According to Kulig & Williams (2011, p.74):

“Given the relative absence of specialists in rural areas, some rural family doctors expand their scope of practice to fill some of the service gaps. More so than their urban
counterparts, rural family physicians work in emergency departments, admit patients to
hospitals, attend to patients in hospitals and during follow-up care, and deliver babies. It
is not surprising, therefore, to find considerable differences in how rural and urban
residents use physician services. Compared with urban residents, rural Canadians are
more reliant on family physicians but much less likely to use specialist services.”

The interview participants frequently mentioned the lack of specialists in rural areas as
the main reason that necessitates the expansion of their own clinical knowledge and
practice skillset. Adapting to these circumstances is essential as the availability and
quality of professional support continues to decline when addressing specific health
issues in these rural communities (Kulig & Williams, 2011). One physician identified
multiple medical conditions that are not typically handled by family physicians, but he
had no choice but to possess some basic knowledge on how to manage these patients
acutely before referring them to specialists. A lack of specialists can be viewed as a
challenge, but a few of the interviewed physicians felt quite comfortable in their
situation, and even enjoyed the ‘burden’ of longer work hours and diversity of practice
issues. Rural family practice can offer an intriguing opportunity for physicians seeking a
wider variety of clinical skills. This is in comparison with urban practice which some of
the participants considered to be more monotonous. One of the interviewed physicians,
who was practicing in both urban and rural settings, uniquely described urban practice
as being a ‘follow-up ologist’. This description presents urban practice as one that lacks
variety and can start to feel ordinary to the physician after years of practice. The interviewed participants mainly saw their patients in the hospital and private clinic settings. Some even provided continuity of care by making house visits when necessary which they felt developed a stronger relationship with their patients and the community. The participants believed this personal touch is what attracted them to rural practice more than urban practice.

While the interview participants have varying opinions on the lack of access to specialists and resources in rural areas, this deficiency greatly affects the health services rendered to the rural residents. Two of the physicians discussed how the length of waiting time for a diagnostic test or treatment was a great concern for their patients. This delay in receiving care may lead to worsening of one's medical condition, further complications, and prolonged recovery time once the patient has been treated (Kulig & Williams, 2011).

The lack of professional support rural physicians face includes fewer facilities, equipment and supplies, while being at a disadvantage when exploring educational and training opportunities due to the lack of programs and funding (Laurent, 2004). One of the interviewed physicians highlighted how a nearby rural town had lost their obstetrics department due to poor resources and funding. She appreciated the professional support she had been provided at her current hospital compared to other rural hospitals.
that may not have been able to provide a similar level of support. Diversity and a wider scope of clinical practice can create awareness on some of the positive and negative aspects for rural physicians. But the example given, where the obstetrics department was forced to shut down, displays how a focused practice or department, such as obstetrics and gynecology, is still required to attract, recruit and retain physicians in rural areas.

5.2 Clinical Decision-Making

According to Magnavita (2016, p.9), “[the] five pillars of effective decision-making…are

a) access to high-quality empirical evidence
b) developing clinical expertise
c) using sound theoretical constructs
d) including ethical considerations, and
e) foundation in decision theory.”

This model can act as a guide to help us better comprehend the decision-making process every physician goes through. Many of the interviewed physicians prioritized the importance of evidence-based practice and clinical experience on their decision-making process. Knowledge of evidence-based practice guidelines is crucial, but it is the application of this knowledge and an understanding in decision theory that plays a vital role for physicians (Magnavita, 2016). One participant based most of his clinical
decisions off his experience and stated, “just because you have knowledge doesn’t mean you are comfortable to utilize that knowledge.”

According to Baskerville (2009, p.11):

“Competent physicians are familiar and up-to-date with the literature, can critically appraise evidence, follow continuing medical education (CME) programs, implement new information before forgetting it, are aware of the gaps in their performance, and have the opportunity to implement behaviour changes to address the gaps.”

The participants identified online medical journals and articles as their main resource for continuing education and keeping updated on the latest health guidelines. Since medical conferences are typically held in urban-centric locations, the interview participants from rural areas expressed the inability to attend them and other CME programs. The lack of access to these learning opportunities for rural physicians places them at a disadvantage compared to their urban counterparts. If the knowledge needed for evidence-based practice is not gained and regularly maintained, the clinical decision-making process of rural physicians suffers due to the inability to optimize patient care.

One participant provided an example of his decision-making process for general medical conditions and his specific to medical cannabis decision-making process. The latter process was much more focused on the possible contraindications and side effects associated with cannabis. This physician emphasized the patient’s age,
psychological history, and history of illicit drug use, as the most serious variables when considering to prescribe medical cannabis. Evidence-based practice, clinical expertise, theoretical constructs, ethical considerations, and decision theory are the principles of effective decision-making that are being demonstrated in this example. One factor that is not considered in this example is the shared decision-making between the physician and the patient. Patients now have access to medical information via the internet and can influence physicians in their decision-making process on providing services that may or may not be evidence-based (Baskerville, 2009). One participant recognized that treating patients only according to evidence-based guidelines is not always possible as the patient makes the final decision. The patients can now generate an informed demand on a medication such as medical cannabis which has yet to produce concrete evidence-based guidelines due to the lack of research. It is the responsibility of the physician to collaborate with the patient to work towards a common goal with the patient's best interest in mind.

In the literature review chapter, I presented three different examples of decision-making for physicians. The first example was on the topic of ‘off-label’ prescribing where physicians prescribed a medication without following the appropriate national guidelines. ‘Off-label’ prescribing might be done intentionally with the physician practicing autonomy which is based on experience or experimentation. Unintentionally, the physician might not realize that a medication is classified as inappropriate for a
specific medical condition, a specific demographic such as children, or the wrongful dosing of a medication. The second example displayed the inability of physicians to adopt the habit of prescribing Omega-3 supplements to prevent secondary cardiovascular disease. Even though the national guidelines had been declared years before, physicians were unable to make the proper adjustment due to lack of knowledge and clinical experience. The third example discussed the inability of physicians to transfer from paper-based patient health records to electronic health records (EHR). EHR technology is substantially more efficient than paper-based records which can save time, money and lives. Even with this knowledge of the pronounced benefits of switching to EHR in their practice, many physicians have yet to make the necessary adjustment. These three examples present how the decision-making process of physicians can become set in their old ways and an adjustment is required to optimize their clinical practice and habits.

One of the interviewed physicians, who was practicing in both rural and urban settings intermittently, valued the positive environment that rural practice offered her. She identified excellent team chemistry with her colleagues and more freedom in clinical decision-making with less restrictions compared to urban practice where she felt a lack of cohesiveness. This physician was speaking from her own personal experience and was possibly telling the truth on the benefits of rural practice over urban practice. But one must consider potential bias as a limitation to the information collected from this
study as only rural physicians have been interviewed. Professional relationships that develop within clinical settings can perhaps influence the decision-making process of physicians. Once these peer relationships develop, a physician may adhere to coexisting norms to assimilate with their colleagues. This relationship, termed 'groupthink', may prevent the practice of autonomy and the kind of independent decision-making required to consider adopting new and innovative treatments (Cohen, Levy, Castel & Karkabi, 2013). The literature review chapter also discussed confirmation bias and overconfidence bias as two types of bias which could lead to poor decision-making. Confirmation bias is the tendency of physicians to seek out evidence that only confirms their current belief while minimalizing any counter argument against their belief. Overconfidence bias is displayed by physicians who believe confidence leads to accuracy in decision-making. This belief is false as studies have shown there is only a slight correlation between confidence and accuracy (Miller, Spengler & Spengler, 2015). One of the international physicians emphasized that it is the knowledge and clinical experience aspects of practice that physicians must adjust to in different clinical settings, but the clinical decision-making process should always stay the same. A positive clinical environment can lead to exchanging of knowledge and shared decision-making, but it is necessary for physicians to be aware of the consequences of ‘groupthink’ and the potential biases that may stem from it.
Advancements in computer technology and its infiltration into rural settings has played a vital role in providing aggregated data to inform decision-making for physicians (Magnavita, 2016). Many of the interviewed physicians recognized the importance of staying updated on current research via online medical journals and articles as their most valuable educational resource. Some of the participants expressed how there were minimal in-person learning opportunities and CME programs in their rural area. But the inability to attend medical conferences, which are mainly held in urban-centric areas, is no longer a detriment to the physician as many educational opportunities are now being provided virtually online. The participants identified telehealth and the e-consult as important educational tools to further reduce the lack of access to information and specialists in rural areas. These online resources can further assist the decision-making process of physicians and can potentially guide policy formulation to help improve the evidence-based practice of rural physicians (Baskerville, 2009). As mentioned earlier in the literature review, paper-based records of patients are being transferred to electronic health records to promote a more organized and efficient healthcare system. Technology will continue to play a major role in reducing the lack of access issue that has plagued rural physicians and their patients for many years.
5.3 Medical Cannabis

As new research on cannabis produces evidence that might increase physician support, the societal stigma associated with its recreational use blurs the boundaries between medicinal and nonmedicinal uses of cannabis which can confuse the decision-making process of physicians (Capler et. al, 2017). Most of the interview participants received their information on cannabis from academic journals and articles via websites such as UpToDate and Medscape. A few of the participants had also attended lectures and conferences to gain more knowledge on cannabis. But these in-person educational opportunities are usually held in urban-centric areas and distance can become a barrier for these physicians. The physicians identified telehealth and e-consults as important resources to obtain advice from specialists on topics like medical cannabis. As mentioned in the previous section, computer technology has increased access to information and resources for rural physicians.

Physicians view the therapeutic value of medical cannabis with varying levels of comfort. Their feelings range from hesitance and concern, due to the lack of clinical trials and evidence, to growing in confidence, due to the expansion of research and anecdotal evidence from patients. The participants that expressed concern regarding medical cannabis were waiting on further confirmation of its therapeutic benefits and that they outweigh its side effects. The participants that vocalized growing confidence in...
medical cannabis acknowledged that the rate of cannabis research has improved substantially in recent years. This research has provided physicians with a deeper knowledge and understanding of the different chemical compositions of medical cannabis, such as CBD and THC, and how these compositions can be prescribed in isolated strains or combined into diverse profiles for certain medical conditions. While the interviewed physicians demonstrated various stages of acceptance towards medical cannabis use, the need for further research to establish evidence-based practice was universally agreed upon.

But how are physicians expected to follow evidence-based guidelines for medical cannabis when patient demand overpowers the scientific proof available to physicians (Ebert et. al, 2015)? Two of the interview participants acknowledged the importance of the informed demand that patients can now generate. Due to the patient's own prior medical or illicit use of cannabis and the readily available online access to information, some patients possess more knowledge on medical cannabis than the physicians do. This increase in patient knowledge encourages a shared decision-making process where the physician and patient work in collaboration to determine what is best for the patient.

The participants produced various responses when asked about their decision-making process when prescribing cannabis to their patients or referring them to specialty
cannabis clinics. The following obstacles were identified by participants when considering to prescribe cannabis to patients or refer them to cannabis clinics: 1) the clinical setting, 2) lack of experience and knowledge, and 3) unclear guidelines.

First, as most of the participants work in a hospital setting, the biggest concern was the effect that patients taking cannabis would have on the other patients and staff. All seven participants felt more comfortable prescribing cannabis, or referring them to cannabis clinics, from their private clinic setting with only two participants having prescribed to patients in the hospital setting. What about the patients who have an approved cannabis prescription at home, but during a hospital admission are unable to continue with their prescription due to hospital policies? Exceptions could possibly be made for patients with certain medical conditions who are seeking pain management or palliative care.

Second, participants acknowledged that lack of knowledge and experience prescribing cannabis further complicates the clinical decision-making process. Each of the participants in this study prescribed cannabis less than twenty times with only four of the seven participants having referred over ten patients to cannabis clinics. According to Capler et. al (2017, p.1), “future research and physician education that address identified knowledge gaps may result in changes in clinical practice.” One participant who felt comfortable prescribing cannabis was mostly concerned with the overuse of opioids for pain management. She felt she had been successful in evenly distributing
the different pain medications a patient was on to minimize the possible side effects from each medication. The experience she gained when prescribing cannabis contributed to her own increase in knowledge and confidence on the effects of cannabis.

Finally, this lack of cannabis knowledge and prescribing experience is further compounded by the unclear prescribing guidelines for physicians. The participants felt much more comfortable referring their patients to cannabis clinics instead of trying to figure out the proper dosing and routes of administration for cannabis themselves. Only three participants were confident enough to prescribe cannabis to more than a couple of patients and it was mostly the synthetic version (Nabilone) that was prescribed. Natural cannabis is more complex with a wider variety of strains, each containing different chemical components, compared to the synthetic version. The unclear guidelines surrounding the different cannabis strains further complicates the decision-making process for physicians who are unsure of which strain can be used for which medical condition. All the participants prescribed cannabis or referred patients to cannabis clinics for the diagnosis of chronic pain as an alternative to prescribing opioids. The other medical indications included a few patients with Health Canada approved conditions such as seizures, nausea and cancer-related symptoms, and off-label indications such as anxiety, irritable bowel syndrome, depression, and mood disorders. In conclusion, six of the seven participants felt more comfortable referring their patients
and letting the cannabis clinics decide what was best for them. An interesting wrinkle on the decision-making process of physicians is the legalization of recreational cannabis in Canada. This process is complicated for the physicians as they are expected to play the role as gatekeeper to medical cannabis when the recreational product is readily available to the patients.

According to Thompson & Koenen (2011, p.461):

“Health Canada provides marijuana with standardized THC content that is subject to rigid quality control. Yet, fewer than 14% of medical cannabis users in Canada obtain their drug through Health Canada, preferring to purchase it from so-called compassion clubs and illicit suppliers.”

Two participants recognized that the legalization of recreational cannabis has produced a normalizing effect which has reduced the stigma associated with the drug. Patients are more interested to explore cannabis, whether they have tried it before or not, as a therapeutic option for their medical condition. This normalization will also encourage more clinical trials to increase scientific evidence to assist physicians in their decision-making. Another participant believed that the legalization of recreational cannabis had made it easier for him by decreasing the malingering of drug-seeking patients. Why would a drug-seeker go to the doctor for cannabis if they have easier access to the recreational product? Patients who ask their doctor if they are a candidate for cannabis
are more likely to genuinely need it for their medical condition. Two participants also identified the cost of cannabis as an important factor in determining whether patients obtain cannabis from their doctor or other suppliers such as dispensaries. It will be interesting to see if in the future the Canadian government offers cannabis as part of the patient’s health insurance plan for certain medical conditions.

5.4 Conclusion

Canada has been at the forefront of the conversation on medical cannabis since the introduction of the MMAR in 2001. This is when Health Canada began authorizing physicians to decide which patients were eligible to use it for therapeutic purposes (Health Canada, 2018). But the ambiguity and unclear guidelines on medical cannabis has continued to produce complications for physicians due to the lack of research and evidence needed to assist them in the clinical decision-making process (Lewis & Szmitman, 2017). This decision-making process is influenced by many different factors which have been discussed in the previous chapters. For the participants interviewed in this study, these factors include: 1) rural health challenges and lack of health access in these areas; 2) the models of decision-making and the impact of bias, stigma, education, training, and sharing of knowledge from peers and patients; and 3) the history of cannabis, what we know about cannabis and its effects, the lack of clinical research conducted on it, the physician perspectives on it with the arguments for and
against the use of cannabis as a therapeutic option, and the impact of the legalization of recreational cannabis.

For this qualitative study, I utilized an interpretivist approach to better understand how the rise of popularity of cannabis has affected physicians from rural Ontario. As patient demand of cannabis is currently greater than the scientific evidence available to assist the physicians, this unequal balance creates a dilemma for physicians by complicating the clinical decision-making process. The interpretivist approach was successful in generating a greater level of depth and information gathered via interview. The seven participants recruited and interviewed for this study voiced how practicing in rural areas had its own set of challenges. The perspectives of these physicians also helped assess which rural areas require further assistance by prioritizing the issues that they and their patients face most frequently. The participants mostly agreed with Kulig & Williams (2011) by identifying the most serious problem for rural residents is the lack of access to quality healthcare, due to the distance away from physicians and specialists, and lack of resources such as equipment and facilities which reduces diagnostic and treatment options (Kulig & Williams, 2011). But none of the participants felt that rural challenges affected their clinical decision-making process when considering to prescribe medical cannabis compared to an urban setting. All the participants referred their patients to specialty cannabis clinics which were not located too far from them. The ability of patients to access these cannabis clinics is what differentiates the struggle of rural
patients from seeing specialists for other medical purposes. It would have been interesting to investigate the clinical decision-making process of physicians in deeper rural or remote areas with less access to cannabis clinics. Only one participant had experience with medical cannabis in both urban and rural settings. She felt that these settings were relatively the same except she noticed a slightly higher demand for medical cannabis from rural patients. All the participants felt most comfortable referring patients to cannabis clinics to get their information on cannabis strains, the various routes of administration, and the proper dosing. Only one participant felt relatively comfortable to prescribe medical cannabis to her patients directly. This is compared to the other participants who were still concerned with the lack of scientific evidence and unclear guidelines.

5.5 Final Reflections

I came into this study with the assumption that physicians did not want to prescribe cannabis and that the stigma attached to it meant that they did not want to be a part of the referring process either. But my assumption was wrong as every participant had experience prescribing cannabis or was genuinely interested in learning more about it to assist their clinical practice. Another factor to consider is that during the recruitment process this study was promoted as an investigation of the clinical decision-making process of physicians and their perspectives and attitudes on medical cannabis. The
physicians who enrolled as participants for the study were possibly more comfortable
discussing cannabis as a therapeutic option. There is a chance that many physicians
did not enroll in the study due to stigma or disapproval of cannabis as a therapeutic
option. My intention was to recruit a fair number of participants with different
perspectives on medical cannabis to better represent the variety of views and talking
points. But I was only able to gather seven participants due to time constraints and
difficulty recruiting from a small target population of physicians from rural Ontario. More
research needs to be conducted to portray the differences between the clinical decision-
making process of physicians in rural versus urban areas. Furthermore, more research
is required on physicians from deeper rural or remote areas to assess their clinical
decision-making process on medical cannabis, and how the lack of access to specialty
cannabis clinics affects that process.
REFERENCES OR BIBLIOGRAPHY


https://egrove.olemiss.edu/etd/225


APPENDIX ONE

Research Questions

PART 1

- Can you tell me a little bit about your medical background? (Where are you from? University? Residency training)
- What areas of medicine do you practice in? How has rural medicine affected the scope of your practice (are you only practicing family medicine or multiple fields)? What are the current challenges that physicians in rural medicine face?
- How did you decide to practice in a rural area? Have you ever practiced in more urbanized areas? If yes, what differences do you see? If no, what differences do you see between yourself and your urban peers?
- When making clinical decisions on therapy for your patients, what are the factors that assist you the most in prescribing/treating (experience, medical education, academic research, Health Canada guidelines, hospital policy and regulations, peers, anecdotal evidence from patients, etc.)?
- Are there any examples of recent change (i.e. policy, Health Canada guidelines, newer medical techniques, etc.) that has affected your clinical decision-making that you can think of? If yes, was it an easy change to adjust to or did it take time?
PART 2

- As a physician, what are your thoughts on the medical use of cannabis? Do you notice bias or stigma among yourself or your colleagues?
- Have you ever prescribed cannabis for a patient?
  - If **YES**, where did you seek out information on its medical indication?
    - Under what conditions did you prescribe it and for what conditions/disease?
    - From your perspective, was it effective?
    - What was your patient's report on its efficacy?
    - Do you continue to prescribe it?
    - Do you find patients are increasingly requesting it? If yes, for what type of disease/conditions? How have you educated yourself on cannabis?
  - If you have **NOT** prescribed medical cannabis, have you sought out information on its medical indication?
    - What were your reasons for not prescribing it?
    - Are there any conditions in which you would consider prescribing it?
    - Do you have patients requesting it?
    - Which resources do you use to gather your information?
- How does working in a hospital/private setting influence your autonomy in prescribing medical cannabis or not? Does working in a group/hospital setting influence you differently?
- How do rural challenges contribute to the prescribing of medical cannabis?
- Does legalization of recreational use impact the patients that come to you for medical use?
- Is there anything else you would like to add about the use of medical cannabis?
APPENDIX TWO

Consent and Confidentiality Form

ONTARIO AGRICULTURAL COLLEGE
School of Environmental Design and Rural Development
Capacity Development and Extension ◼ Landscape Architecture ◼ Rural Planning and Development

CONSENT TO PARTICIPATE IN RESEARCH

Investigating the Decision-Making Process of Physicians in Rural Ontario: Perspectives and Attitudes on Medical Cannabis

You are invited to participate in a research study conducted by Dr. Allan Lauzon and Asiful Islam. This study has the potential to increase understanding and provide insight into the clinical decision-making process that physicians go through when considering whether or not to prescribe medical cannabis in Canada, with specific attention given to physicians working in rural Ontario.

If you have any questions or concerns about the research, please feel free to contact:

Dr. Allan Lauzon
Director, School of Environmental Design and Rural Development

Sandy Auld
Director of Research Ethics
519-824-4120, ext. 56606

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PURPOSE OF THE STUDY

We are conducting research into the clinical decision-making process that physicians from rural Ontario go through when considering medical cannabis as a treatment option for their patient’s medical conditions. Physicians rely on evidence-based guidelines to assist them when prescribing medications, but the blurred boundaries between medical and illicit cannabis use continues to produce further complications due to the ambiguous status and lack of knowledge surrounding medical cannabis and its effects.

Very few studies have been conducted which examine the perspectives of physicians on medical cannabis, and these few studies have found that most physicians are skeptical towards medical cannabis. As the patient demand for medical cannabis rapidly grows in Canada, the pressure weighs on the physician to make difficult decisions with minimal clinical guidelines and it is essential to understand the process of how the physician reaches a final decision. As such, this research will highlight the factors affecting a physician’s clinical decision-making process such as attitudes, beliefs, perspectives, practices, and the knowledge or lack thereof on medical cannabis.

The goal of this research is to better understand the clinical decision-making process that physicians working in rural Ontario undergo when considering whether or not to prescribe medical cannabis to patients for the treatment of their medical condition.

The objectives of this research are to:

a) analyze the decision-making process that rural physicians go through when considering to prescribe medical cannabis to their patients.
b) determine the factors that encourage a physician to recommend the use of medical cannabis for treatment purposes.
c) determine the factors that discourage a physician from recommending medical cannabis for treatment purposes.
PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

- Participate in one interview either in person, or via telephone or Skype at a location of your choosing (approximately 45 minutes).

- Within 30 days of your interview, the researcher will have your interview transcribed and ready for review. First, confirm the information in the transcript of the interview (approximately 20 minutes).

- Then review, modify, and approve the interview transcript describing your clinical decision-making process on medical cannabis. (approximately 20 minutes).

- Send the researchers any documents pertaining to your transcript and this research that could provide a better understanding of the factors that influence your clinical-decision making process when considering medical cannabis as a treatment option (approximately 5 minutes)

Total estimated participation time: 90 minutes

INCLUSION CRITERIA

- The participant must be a physician.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

There are no direct benefits for the participants. This study will provide an opportunity for physicians to reflect on their own clinical decision-making processes. From participating in this study, you will receive a summary of the aggregated information that is collected. This research has the potential to increase knowledge and understanding of the clinical decision-making process that physicians go through when considering whether or not to prescribe medical cannabis in Canada.
PAYMENT FOR PARTICIPATION

You will not receive payment or other remuneration for your involvement in this study. Participants can obtain a copy of the aggregated results by contacting the principal investigator. At the end of the study, the thesis will be published, disseminated to academic journals and presented at conferences.

CONFIDENTIALITY

**Interviews will be audio recorded using a digital recording device.** Direct quotations from participants will be used in the final study report. A Master List of the participants will be linked to the interview data by a pseudonym. The digital audio files and the Master List will be encrypted, stored and secured in a password protected laptop accessible only by the researcher and shared with the principal investigator. Data collected during this study will be retained for 6 months after the researcher’s thesis defense (estimated Summer of 2019). After that date, the collected data will be destroyed. Audio files and the Master List on the laptop will be permanently deleted and paper notes will be shredded.

PARTICIPATION AND WITHDRAWAL

If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may refuse to answer any questions you don’t want to answer and still remain in the study. You may exercise the option of removing your data from the study. The final cutoff date that participants can no longer withdraw from the study or have their data removed is 30 days after the interview. Once the interview has been transcribed by the researcher and reviewed and approved by the participant, withdrawal or data removal can no longer be done. Participant must contact the principal investigator or researcher as soon as possible to initiate the withdrawal process.

PSYCHOLOGICAL RISKS TO THE PARTICIPANTS

There is minimal risk to interview the participants. The questions that will be posed will not be personal and will only require physicians to offer their professional perspective and insight.
RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights and welfare as a research participant in this study (REB# 18-10-012), please contact: Director, Research Ethics; University of Guelph; reb@uoguelph.ca; (519) 824-4120 (ext. 56606). Please note that confidentiality cannot be guaranteed while data are in transit over the internet. You do not waive any legal rights by agreeing to take part in this study. This project has been reviewed by the Research Ethics Board for compliance with federal guidelines for research involving human participants.

NAME OF RESEARCH PARTICIPANT/LEGAL REPRESENTATIVE

I have read the information provided for the study “Investigating the Decision-Making Process of Physicians in Rural Ontario: Perspectives and Attitudes on Medical Cannabis” as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

____________________________________
Name of Participant (please print)

____________________________________
Signature of Participant

____________________________________
Date
APPENDIX THREE

Letter of Invitation for Participants

ONTARIO AGRICULTURAL COLLEGE

School of Environmental Design and Rural Development

Capacity Development and Extension ◆ Landscape Architecture ◆ Rural
Planning and Development

Project Title: Investigating the Decision-Making Process of Physicians in Rural Ontario: Perspectives and Attitudes on Medical Cannabis

This email is to invite you to be interviewed as part of a research study being conducted by Dr. Lauzon, Principal Investigator, and Asiful Islam, Student Investigator, from the School of Environmental Design and Rural Development at the University of Guelph. The interview will be conducted in-person, or via telephone or Skype at a time and place that is convenient to you, with the time requirements listed below.

The research will focus on the clinical decision-making process that physicians from rural Ontario go through when considering medical cannabis as a treatment option for their patient’s medical condition. Physicians rely on evidence-based guidelines to assist them when prescribing medications, but the blurred boundaries between medical and
illicit cannabis use continues to produce further complications due to the ambiguous status and lack of knowledge surrounding medical cannabis and its effects.

Approximated Time Requirement for Participants in Interviews:

Interviews will take = 20 minutes
Verify notes from interview = 5 minutes
Review and approve the information provided once the interview has been transcribed = 15 minutes
Provide any documents pertaining to the interview transcript to aid the researcher to better understand the factors that influence your clinical-decision making process when considering medical cannabis as a treatment option = 5 minutes

Total time: 45 minutes

Very few studies have been conducted which examine the perspectives of physicians on medical cannabis, and these few studies have found that most physicians are skeptical towards medical cannabis. As the patient demand for medical cannabis rapidly grows in Canada, the pressure weighs on the physician to make difficult decisions with minimal clinical guidelines and it is essential to understand the process of how the physician reaches a final decision. As such, this research will highlight the factors affecting a physician's clinical decision-making process such as attitudes, beliefs, perspectives, practices, and the knowledge or lack thereof on medical cannabis.

The goal of this research is to better understand the clinical decision-making process that physicians working in rural Ontario undergo when considering whether or not to prescribe medical cannabis to patients for the treatment of their medical condition.

The objectives of this research are to:

a) analyze the decision-making process that rural physicians go through when considering to prescribe medical cannabis to their patients.
b) determine the factors that encourage a physician to recommend the use of medical cannabis for treatment purposes.
c) determine the factors that discourage a physician from recommending medical cannabis for treatment purposes.

Principal Investigator: Dr. Allan Lauzon
Lead Researcher: Asiful Islam

If you have questions regarding your rights and welfare as a research participant in this study (REB# 18-10-012), please contact: Director, Research Ethics; University of Guelph; reb@uoguelph.ca; (519) 824-4120 (ext. 56606). Please note that confidentiality cannot be guaranteed while data are in transit over the internet. You do not waive any legal rights by agreeing to take part in this study. This project has been reviewed by the Research Ethics Board for compliance with federal guidelines for research involving human participants.

Asiful Islam, the researcher on this project will call you in the next few days to provide more background and to discuss your involvement in this research study. Our research team looks forward to working with you on this important study about rural well-being.

Best regards,

Dr. Allan Lauzon,
University of Guelph
519-824-4120 ext. 53379
Appendix Four

Letter of Invitation to Gateway

Ontario Agricultural College
School of Environmental Design and Rural Development
Capacity Development and Extension  Landscape Architecture  Rural Planning and Development

Letter of Invitation

September 14, 2018

To whom it may concern,

The purpose of this letter is to invite Gateway Rural Health Research to participate in my thesis research and provide access to their network of physicians. The research is
being supervised by Dr. Allan Lauzon who is a researcher from the School of Environmental Design and Rural Development at the University of Guelph.

The goal of this thesis is to better understand the clinical decision-making process that physicians from rural Ontario go through when considering medical cannabis as a treatment option for their patient’s medical condition. Physicians rely on evidence-based guidelines to assist them when prescribing medications, but the blurred boundaries between medical and illicit cannabis use continues to produce further complications due to the ambiguous status and lack of knowledge surrounding medical cannabis and its effects.

Very few studies have been conducted which examine the perspectives of physicians on medical cannabis, and these few studies have found that most physicians are skeptical towards medical cannabis. As the patient demand for medical cannabis rapidly grows in Canada, the pressure weighs on the physician to make difficult decisions with minimal clinical guidelines and it is essential to understand the process of how the physician reaches a final decision. As such, this research will highlight the factors affecting a physician’s clinical decision-making process such as attitudes, beliefs, perspectives, practices, and the knowledge or lack thereof on medical cannabis.

Please consider taking part in this research project as the study has the potential to provide an opportunity for physicians to reflect on their own clinical decision-making processes and increase knowledge on the factors influencing the prescribing of medical cannabis.

Thank you for your time and consideration.

Sincerely,

Asiful Islam
University of Guelph
50 Stone Rd E.,
Guelph, ON, N1G 2W1
647-542-6458
asiful@uoguelph.ca
Hello. My name is Asif. How are you doing today?

I am a graduate student at the University of Guelph conducting research for my thesis on the topic of "Physician Perspectives and Attitudes on Medical Cannabis and How It Affects Their Clinical Decision-Making Process."

I would like to invite you to be interviewed as part of this research study being conducted by Dr. Lauzon, who will be the Principal Investigator, and myself, the Student Investigator. The interview can be conducted in-person, or via telephone or Skype at a time and location that is convenient to you.

The goal of this research is to better understand the clinical decision-making process that physicians working in rural Ontario undergo when considering whether or not to prescribe medical cannabis to patients for the treatment of their medical condition.

The estimated time requirement is:

Interviews will take 45 minutes. Verifying notes from interview will take 20 minutes. Reviewing and approving the information provided in the interview transcript will take 20 minutes. Providing any documents pertaining to the interview transcript will take an additional 20 minutes.
to aid the researcher to better understand the factors that influence your clinical-decision making process when considering medical cannabis as a treatment option will take 5 minutes. Total time will take an estimated 90 minutes.

This study will provide an opportunity for the physicians to reflect on their own clinical decision-making processes. From participating in this study, you will receive a summary of the aggregated information that is collected. This research has the potential to increase knowledge and understanding of the clinical decision-making process that physicians go through when considering whether or not to prescribe medical cannabis in Canada.

You will not receive payment or other remuneration for your involvement in this study. The aggregated results of this study will be made available to you.

Interviews will be audio recorded using a digital recording device. Digital audio files will be encrypted and stored in a password protected laptop accessible only by myself and shared with the principal investigator. Data collected during this study will be retained until 6 months after I have defended my thesis. After that date the data will be destroyed. Audio files and transcripts on the laptop will be permanently deleted and paper notes will be shredded.

If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don’t want to answer and still remain in the study.

If you have questions regarding your rights and welfare as a research participant in this study (REB# 18-10-012), please contact: Director, Research Ethics; University of Guelph; reb@uoguelph.ca; (519) 824-4120 (ext. 56606). You may withdraw your consent at any time and discontinue participation without penalty. Please note that confidentiality cannot be guaranteed while data are in transit over the internet. You do not waive any legal rights by agreeing to take part in this study. This project has been reviewed by the Research Ethics Board for compliance with federal guidelines for research involving human participants.

Please let me know if you have any questions. If you wish to participate, I will send you the consent and confidentiality forms and we can schedule a time for the interview.

Thank you for your time. Have a nice day.
APPENDIX SIX

Research Ethics Board Approval

The members of the University of Guelph Research Ethics Board have examined the protocol which describes the participation of the human participants in the above-named research project and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement, 2nd Edition.

The REB requires that researchers:

- Adhere to the protocol as last reviewed and approved by the REB.
- Receive approval from the REB for any modifications before they can be implemented.
- Report any change in the source of funding.
- Report unexpected events or incidental findings to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants, and the continuation of the protocol.
- Are responsible for ascertaining and complying with all applicable legal and regulatory requirements with respect to consent and the protection of privacy of participants in the jurisdiction of the research project.

The Principal Investigator must:

- Ensure that the ethical guidelines and approvals of facilities or institutions involved in the research are obtained and filed with the REB prior to the initiation of any research protocols.
- Submit an Annual Renewal to the REB upon completion of the project. If the research is a multi-year project, a status report must be submitted annually prior to the expiry date. Failure to submit an annual status report will lead to your study being suspended and potentially terminated.

The approval for this protocol terminates on the EXPIRY DATE, or the term of your appointment or employment at the University of Guelph whichever comes first.

Signature: 

Date: November 20, 2018

Stephen P. Lewis
Chair, Research Ethics Board-General