Factors Influencing Oncology Nurses Discussing Cannabis Use with Patients Experiencing Chemotherapy-Induced Nausea

By
Tianhao Xiao RN, BScN

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Faculty of Health Sciences
School of Nursing
University of Ottawa
Ottawa, Ontario

Dedicated to mom and dad

Thesis Abstract

Background: Cannabis has been legalized in Canada since October 2018 and shown to be effective for chemotherapy-induced nausea (CIN).

Purpose: Guided by the Ottawa Model of Research use, the aim was to determine factors influencing oncology nurses discussing cannabis use with patients experiencing CIN.

Part I: A literature review to identify oncology nurses' practices, knowledge, and attitude toward providing guidance on cannabis use for patients with CIN. Twelve articles were included. Results showed that health care professionals were hesitant to provide guidance for patients on using cannabis for medical purposes. But no studies specifically focus on nurses and CIN.

Part II: A descriptive, cross-sectional study was conducted using survey methods. Twenty-five Canadian oncology nurses responded to the survey. Half (n=11) correctly answered the knowledge question about the effectiveness of cannabis. Most (n=18) did not feel confident providing guidance on use of cannabis for CIN. The top three barriers identified are social stigma, lack of knowledge, and lack of support in the workplace.

Conclusion: Few Canadian oncology nurses discuss cannabis use for CIN. Identified barriers need to be addressed for oncology nurses to be prepared to discuss use of cannabis for CIN.

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List of Abbreviations

APN	Advanced Practice Nurse
CANO	Canadian Association of Nurses in Oncology
CBD	Cannabidiol
CCO	Cancer Care Ontario
CHERRIES	Checklist for Reporting Results of Internet E-Surveys
CIN	Chemotherapy-induced nausea
CINV	Chemotherapy-induced nausea and vomiting
CNA	Canadian Nurses Association
CNO	College of Nurses of Ontario
CNPS	Canadian Nurses Protective Society
COSTaRS.	pan-Canadian Oncology Symptom Triage and Remote Support
CPS	Compendium of Pharmaceuticals and Specialties
ECS	Endocannabinoid system
GoC	Government of Canada
GP	General practitioner
HCP	Health care professional
ID	Interpretive descriptive
LPN	Licensed practice nurse
MD	Doctor of Medicine
MeSH	Medical Subject Headings
NCCN	National Comprehensive Cancer Network
NP	Nurse practitioner

NR	Not reported
OMRU	Ottawa Model of Research Use
ONS	Oncology Nursing Society
OTC	Over-the-counter
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RN	Registered nurse
THC	Delta-9-tetrahydrocannabinol
WOD	War on Drugs

Chapter One

Introduction

Background

Under the Cannabis Act that came into force on October 17, 2018, Canadians are allowed to legally access a certain amount of cannabis for personal use (Government of Canada, 2021). Individuals who seek cannabis for medical purposes can consult their health care providers to obtain a medical document which allows them to register with Health Canada and possess cannabis, or they can go to licensed public vendors to purchase cannabis without a consultation (Government of Canada, 2021). This legalization has an impact on nurses because it requires nurses to shift away from a focus on substance use and harm reduction to medication management and health promotion. Nurse practitioners (NPs), who have the authority to prescribe medical cannabis, will need to know the symptoms of diseases that are indications for this medication (Balneaves et al., 2018). Registered nurses (RNs) and licensed practical nurses (LPNs) will need to be aware of the nursing considerations related to this medication when taking care of patients who are using it (Clark, 2018). As one of the first hospitals moving to provide medical cannabis on-site, the Sunnybrook Health Science Centre in Ontario is planning to provide cannabis by its Odette Cancer Pharmacy as a treatment option for patients (Hasse, 2021). As more health facilities are planning to provide cannabis on-site and as cannabis becomes more readily available to the public in retail stores, it is of great importance for nurses to recognize cannabis as a legitimate medication and be equipped with the knowledge to provide patients with guidance about safely using this medication.

The history of cannabis prohibition and stigma

The legalization of cannabis challenges social norms because it has a long history of being prohibited in Canada. In 1923, cannabis was recognized as an illicit drug under federal criminal law by "unanimous approval and no debate in the House of Commons" (Hathaway & Erickson, 2003, p. 467). In 1972, the Le Dain Commission recommended the legalization of the simple possession of cannabis for personal use, but the government of Canada immediately rejected this proposal (Le Dain, 1972). Following this proposal, ongoing calls for legislative reform by researchers and experts had been largely ignored or rejected by the federal government (Erickson, 1998).

Other than federal prohibition, social stigma also contributed to the negative views of cannabis. In 1922, Edmonton magistrate and leading suffragette, Emily Murphy claimed in her book *The Black Candle* that individuals who were addicted to this drug would "become raving maniacs and are liable to kill or indulge in any form of violence to other persons" (Hathaway & Erickson, 2003; p. 333). Judge Murphy's claim was widely accepted by society at the time when cannabis use was unknown in general. In later years, people started to realize that her claim may not be accurate as more people came into contact with this drug, the dominant narrative she created still had a great impact on how individuals saw the use of this drug over the decades (Hathaway & Erickson, 2003). Meanwhile, in 1971, President Nixon announced that drug abuse was public enemy number one in the United States (US) and launched the War on Drugs (WOD) (Golub et al., 2015). The US government started to intentionally lead the public to associate negative images with cannabis (Golub et al., 2015). The WOD that was launched in the US largely influenced Canada's approach to cannabis because of the close relationship between these two countries (Khenti, 2014). Since then, Canada's WOD justified numerous police and

military raids leading to incarcerations associated with drug use including cannabis use (Khenti, 2014). As a result of the long history of prohibition and stigmatization, it will take time for the public to accept cannabis as a legitimate medication in light of the new legalization.

The endocannabinoid system (ECS) and cannabis

The endocannabinoid system (ECS) in the human body produces endocannabinoids to reduce pain, stress, and nausea (Sharkey et al., 2014). There are two different kinds of cannabinoids. The endocannabinoids produced in the human body are called endogenous cannabinoids; cannabinoids that are derived from cannabis are exogenous cannabinoids (Sharkey et al., 2014). Cannabis, also known as marijuana, refers to the plant Cannabis sativa (Government of Canada, 2018). There are hundreds of chemical ingredients in cannabis, most of which are known as cannabinoids (exogenous cannabinoids). The two major exogenous cannabinoids found in cannabis plants are delta-9-tetrahydrocannabinol (THC) and cannabidiol (CBD). Apart from these cannabinoids that are derived from plants, there are also pharmaceutical cannabis compounds such as nabilone (Sharkey et al., 2014). All these cannabinoids have a similar effect to endogenous cannabinoids.

Cannabis products come in various forms (e.g., dried leaves, cannabis oil, sprays, creams) and can be consumed in different ways such as smoking, drinking, vaping, and applying externally on the skin (Government of Canada, 2018). Cannabis is effective for many health conditions with different levels of evidence (Abrams, 2018). Conclusive or substantial evidence was found for pain in adults, chemotherapy-induced nausea and vomiting (CINV), and spasticity related to multiple sclerosis. There was also moderate evidence for secondary sleep disturbances (Abrams, 2018).

Cannabis and chemotherapy-induced nausea (CIN)

Nausea and vomiting are both common side effects of cancer treatment especially chemotherapy. In a pan-Canadian study measuring symptoms of 101 oncology patients using the Edmonton Symptom Assessment System, nausea is one of the most common symptoms reported (Hui & Breura, 2017). A survey of 368 Canadian oncology nurses also identified nausea as the third most common symptom experienced by oncology patients (Macartney et al. 2012).

Nausea is an "unpleasant painless subjective feeling that one will imminently vomit" (Hasler & Chey, 2003, p. 1860). Whereas vomiting is "a forceful expulsion of stomach contents through the mouth" and may include retching/dry heaves", and it is often associated with nausea (Hasler & Chey, 2003, p. 1860). Although different chemotherapy medications vary in the intensity of nausea or vomiting, those most commonly associated with more severe nausea and/or vomiting include carmustine (BiCNU), cisplatin, cyclophosphamide (Procytox), dacarbazine, daunorubicin (Cerubidine) plus cyclophosphamide (Canadian Cancer Society, 2019).

There are three types of CINV: acute, delayed, and anticipatory (Chow et al., 2020). Acute nausea/vomiting happens within 24 hours following chemotherapy. Delayed nausea/vomiting happens after the first 24 hours following chemotherapy. In some cases, anticipatory nausea/vomiting can happen before a treatment session even without a chemotherapy drug being given if the patient experienced nausea and vomiting during or following the last treatment session. Patients who experience CINV lose fluids and nutrients that may lead to a series of problems, such as dehydration, malnutrition, electrolyte imbalance, and loss of appetite, which further deteriorate patients' quality of life (Chow et al., 2020).

While the mainstream antiemetic medications include ondansetron, olanzapine, and dexamethasone, studies have shown that cannabis also has anti-emetic efficiency (Duran et al., 2010; Machado Rocha et al., 2008; Sallan et al., 1975). Evidence-informed guidelines now include cannabis as a second-line treatment for cancer-related nausea (Cancer Care Ontario, 2019; National Comprehensive Cancer Network, 2019; Oncology Nursing Society, 2019). Cancer Care Ontario (2019) recommended cannabis be used after standard antiemetic treatment has failed, especially for chemotherapy-induced nausea (CIN). The National Comprehensive Cancer Network (2019) suggested using cannabis to manage refractory nausea and CIN as well when patients are not responding to conventional antiemetics. The Oncology Nursing Society made the same recommendation that CIN in adults can be managed by cannabis. Based on a review of current clinical practice guidelines, the pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) research group listed cannabis and cannabinoids among the medications that are effective for nausea/vomiting in their updated guideline (Stacey, 2020).

Problem Statement

Although cannabis is legalized and people can consult their health care providers about this medication, many patients are still self-medicating (Medical Cannabis Patient Survey, 2020). Self-medication refers to taking the medication without consulting health care providers (Kassie et al., 2018). A survey conducted by Medical Cannabis Canada in 2020 indicated that among patients who were using cannabis for a variety of therapeutic purposes, only 37% had a medical certificate from a health care practitioner, 13% had an expired certificate, and the other 50% of the patient population never had one (Medical Cannabis Patient Survey, 2020). Also, the literature showed that there were oncology patients using cannabis obtained from other sources

for CIN without health provider's authorization (Drosdowsky et al., 2020; Hawley & Gobbo, 2019; Macari et al., 2020; Reblin et al., 2019; Saadeh & Rustem, 2018; Waissengrin et al., 2015).

Self-medicating with cannabis can negatively affect patients' health. Frequent use of cannabis without professional guidance has been shown to contribute to addiction and mental health issues amongst the public (Park & Wu, 2017; Statistics Canada, 2018). Smoking cannabis is harmful to the lungs, and those who self-medicate by smoking cannabis have a higher rate of consumption compared to those who received professional guidance (Statistics Canada, 2018). Additionally, potential drug-drug interactions between cannabis and other medications including oncology medications could negatively affect patients' health (Alsherbiny & Li, 2018). As a result, it is in patients' best interest to have professional guidance on the appropriate products and the appropriate dosage of cannabis so that the optimal therapeutic effects of cannabis can be achieved and the risk of cannabis addiction and abuse can be minimized (Canadian Public Health Association, 2018).

Most patients who pursue cannabis use reported that the stigma in the medical system around this medication was one of the biggest barriers that "hindered them from consulting with health care professionals", and they found it "difficult to find a health care professional with whom they could discuss cannabis" (Medical Cannabis Patient Survey, 2020, p. 13). As well, there was evidence that health care professionals were hesitant to use cannabis to manage patients' CIN, despite the fact that it has been recommended by multiple clinical practice guidelines as a second-line treatment (Drosdowsky et al., 2020; Hawley & Gobbo, 2019; Macari et al., 2020; Panozzo et al., 2020; Reblin et al., 2019; Saadeh & Rustem, 2018; Waissengrin et al., 2015). During patient consultations, conversations regarding cannabis were mostly initiated

by patients, not health care professionals (Panozzo et al., 2020). Little is known about oncology nurses' knowledge, attitudes and current practices related to discussing cannabis use for CIN.

Purpose

The overall aim of this thesis was to determine factors influencing oncology nurses discussing cannabis use with patients experiencing CIN. The two objectives were to: a) conduct a narrative synthesis of the literature to understand the current context of health care professionals' practice regarding using cannabis to manage patients' CIN; and, b) conduct a survey of Canadian oncology nurses to determine their knowledge, attitudes, and clinical practice as it relates to discussing cannabis with patients experiencing CIN.

Conceptual Framework

The conceptual framework that guided this thesis was the Ottawa Model of Research Use (OMRU) (Graham et al., 2006; Graham & Logan, 2004) (Figure 1.1). It outlines a six-step approach to implementing evidence-based recommendations (Graham et al., 2006; Graham & Logan, 2004). Step one is preparing for changes and identifying the relevant personnel and resources. Step two is clearly identifying the specific recommendation. Step three is to assess factors influencing the use of the recommendation with a specific focus on identifying the barriers and facilitators at the level of the evidence-based recommendation, the potential adopters, and the environment, respectively. Step four is to select and monitor the knowledge translation strategies in implementing the evidence-based recommendation. The last two steps are monitoring the adaptation of the change and evaluating the outcomes. The first three steps are directly related to this thesis to explore factors influencing nurses discussing use of cannabis for patients experiencing CIN. The evidence-based recommendation in clinical practice guidelines is the use of cannabis for managing CIN (Cancer Care Ontario, 2019; National Comprehensive

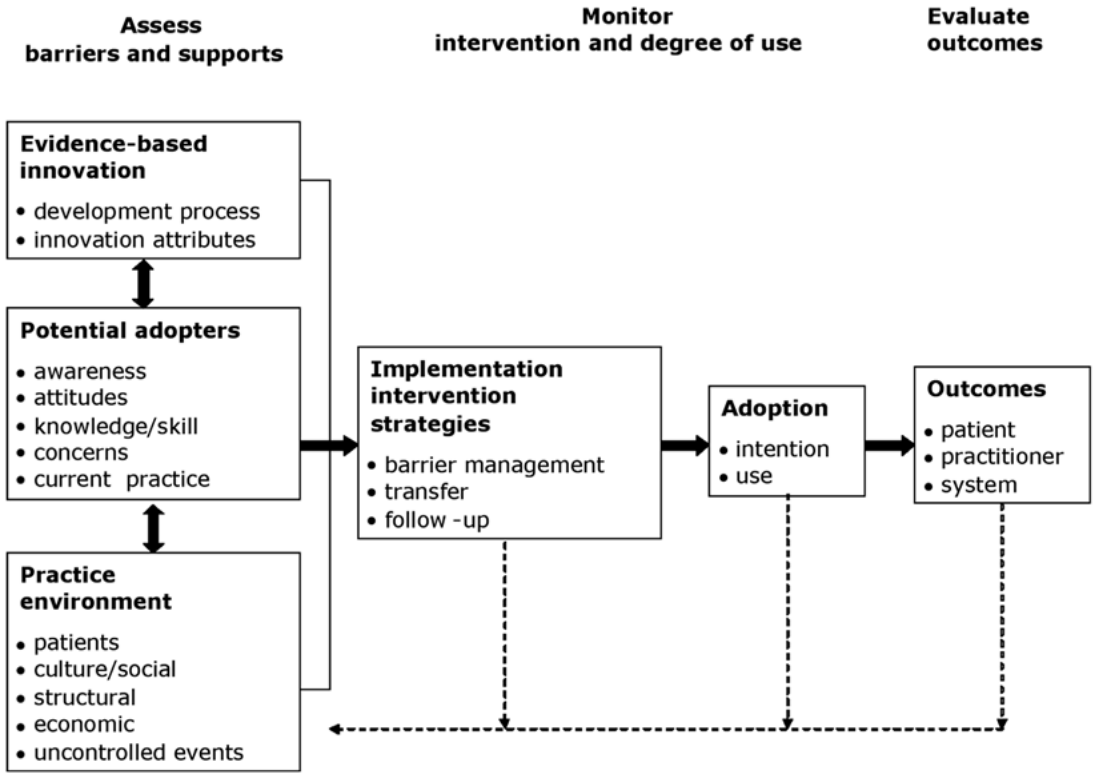
Cancer Network, 2019; Oncology Nursing Society, 2019). The factors that influence the use of cannabis will be identified in both the narrative literature review (Chapter 2) and the survey (Chapter 3).

According to the OMRU, there are three types of factors that can impede or support the change: "factors related to the change or recommendation, factors related to the potential adopter, and factors related to the practice setting or context in which the implementation is to take place" (Harrison & Graham, 2021, p. 138). Factors related to the innovation or change consisted of recognized attributes concerning the change and the process of the development of the change (Harrison & Graham, 2021). For example, the effectiveness of cannabis in alleviating CIN and the acceptability of cannabis for patients with CIN. At the level of the potential adopter, factors are focused on what influences the potential users of the innovation or best practice (Harrison & Graham, 2021. P. 138). For example, nurses' "knowledge of the best practice, attitudes toward the best practice and professional role and skills related to" discussing cannabis use for CIN (Harrison & Graham, 2021. P. 138). The third level are factors related to the practice setting or context, which include any structural, physical, cultural, social, and even economic influences (Harrison & Graham, 2021). For example, nurses' perception of barriers or facilitators within their practice setting that influence their discussion of cannabis use for CIN. The cultural or social influences on nurses' discussing use of cannabis may include, for example, the long history of prohibition and the recent change in legalization.

OMRU was used in the narrative review of the literature (chapter 2) for content analysis to identify health care professionals' current practices, attitudes, knowledge, and other barriers about using cannabis for CIN. In the study to identify factors influencing nurses discussing

cannabis use with patients experiencing CIN (chapter 3), OMRU was used to inform the survey and for content analysis of the barriers and facilitators identified in the qualitative findings.

Figure 1.1: The Ottawa Model of Research Use (OMRU) (Graham & Logan, 2004)



Thesis Organization

This is a thesis by articles and there are four chapters. Chapter two is a literature review that was conducted as part of this thesis. It summarizes the current literature on health care professionals' attitudes and practices on using cannabis to treat patients' CIN, and it also identifies the research gaps on this topic. Given that one of the gaps is about nurses' perspectives on the use of cannabis, Chapter three is a survey on oncology nurses aiming to determine their attitude, knowledge and practice of using cannabis for patients' CIN. Chapter four is an integrated discussion of the findings from this thesis within the broader literature. It provides the implications for nursing practice with a specific focus on the roles of the advanced practice nurse (APN), and it also identifies areas for future research.

References

Abrams. (2018). The therapeutic effects of cannabis and cannabinoids: An update from the National Academies of Sciences, Engineering and Medicine report. *European Journal of Internal Medicine*, *49*, 7–11. https://doi.org/10.1016/j.ejim.2018.01.003

Alsherbiny, M. A., & Li, C. G. (2018). Medicinal cannabis-Potential drug interactions. *Medicines (Basel, Switzerland)*, *6*(1), 3–. https://doi.org/10.3390/medicines6010003

Balneaves, L., Alraja, A., Ziemianski, D., McCuaig, F., & Ware, M. (2018). A national needs assessment of Canadian Nurse Practitioners regarding cannabis for therapeutic purposes. *Cannabis and Cannabinoid Research*, *3*(1), 66–73.

Canadian Cancer Society. (2019). Nausea and vomiting. Retrieved 2 October 2021, from https://cancer.ca/en/treatments/side-effects/nausea-and-vomiting.

Canadian Public Health Association (2018). Cannabis fact sheets. Retrieved 12 October 2021, from: https://www.cpha.ca/sites/default/files/uploads/resources/cannabis/cannabasics-2018-factsheets-e.pdf

Cancer Care Ontario. (2019). Summary of 2019 antiemetic recommendations. Retrieved 7 October 2021, from https://www.cancercareontario.ca/en/file/49566/download?token=sVDajTLI.

Chow, R., Valdez, C., Chow, N., Zhang, D., Im, J., Sodhi, E., & Lock, M. (2020). Oral cannabinoid for the prophylaxis of chemotherapy-induced nausea and vomiting- A systematic review and meta-analysis. *Supportive Care in Cancer*, *28*(5), 2095–2103. https://doi.org/10.1007/s00520-019-05280-4

Clark. (2018). Medical cannabis: the oncology nurse's role in patient education about the effects of marijuana on cancer palliation. *Clinical Journal of Oncology Nursing*, *22*(1), E1–E6. https://doi.org/10.1188/18.CJON.E1-E6

Drosdowsky, A., Blaschke, S., Koproski, T., Fullerton, S., Thakerar, A., Ellen, S., Phipps-Nelson, J., & de Neef, C. (2020). Cancer patients' use of and attitudes towards medicinal cannabis. *Australian Health Review*, *44*(4), 650–655. https://doi.org/10.1071/AH19066

Duran, M., Pérez, E., Abanades, S., Vidal, X., Saura, C., Majem, M., Arriola, E., Rabanal, M., Pastor, A., Farré, M., Rams, N., Laporte, J. R., & Capellà, D. (2010). Preliminary efficacy and safety of an oromucosal standardized cannabis extract in chemotherapy-induced nausea and vomiting. *British Journal of Clinical Pharmacology*, *70*(5), 656–663. https://doi.org/10.1111/j.1365-2125.2010.03743.x

Erickson. P. G. (1998). Neglected and rejected: A case study of the impact of social research on Canadian drug policy. *Canadian Journal of Sociology*, *23*(2/3), 263–280. https://doi.org/10.2307/3341968

Golub, A., Bennett, A. S., & Elliott, L. (2015). Beyond America's war on drugs: Developing public policy to navigate the prevailing pharmacological revolution. *AIMS Public Health*, *2*(1), 142–160. https://doi.org/10.3934/publichealth.2015.1.142

Government of Canada. (2018). About cannabis. [online] Available at: <https://www.canada.ca/en/health-canada/services/drugs-medication/cannabis/about.html> [Accessed 1 October 2021].

Government of Canada. (2021). Cannabis legalization and regulation. https://www.justice.gc.ca/eng/cj-jp/cannabis/

Graham, I. D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *The Canadian Journal of Nursing Research*, *36*(2), 89–103.

Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map?. *The Journal of Continuing education in the health professions*, *26*(1), 13–24. https://doi.org/10.1002/chp.47

Hasler, W. L., & Chey, W. D. (2003). Nausea and vomiting. *Gastroenterology*, *125*(6), 1860–1867. https://doi.org/10.1053/j.gastro.2003.09.040

Hasse, J. (2021). Major Canadian hospital Sunnybrook to provide cannabis on-site. Forbes. Retrieved 18 October 2021, from https://www.forbes.com/sites/javierhasse/2021/05/06/major-canadian-hospital-sunnybrook-to-provide-cannabis-on-site/?sh=4472cf80571d.

Hathaway, A. D., & Erickson, P. G. (2003). Drug reform principles and policy debates: Harm reduction prospects for cannabis in Canada. *Journal of Drug Issues*, *33*(2), 465–495. https://doi.org/10.1177/002204260303300209

Hawley, P., & Gobbo, M. (2019). Cannabis use in cancer: A survey of the current state at BC Cancer before recreational legalization in Canada. *Current Oncology*, *26*(4), e425–e432. https://doi.org/10.3747/co.26.4743

Hui, D., & Bruera, E. (2017). The Edmonton Symptom Assessment System 25 years later: Past, present, and future developments. *Journal of Pain and Symptom Management*, *53*(3), 630–643. https://doi.org/10.1016/j.jpainsymman.2016.10.370

Kassie, A., Bifftu, B. B., & Mekonnen, H. S. (2018). Self-medication practice and associated factors among adult household members in Meket district, Northeast Ethiopia,

2017. *BMC Pharmacology & Toxicology*, *19*(1), 15–15. https://doi.org/10.1186/s40360-018-0205-6

Khenti, A. (2014). The Canadian war on drugs: Structural violence and unequal treatment of Black Canadians. *The International Journal of Drug Policy*, *25*(2), 190–195. https://doi.org/10.1016/j.drugpo.2013.12.001

Le Dain, G. (1972). Cannabis: A report of the Commission of Inquiry into the non-medical use of drugs. Information Canada.

Macari, D. M., Gbadamosi, B., Jaiyesimi, I., & Gaikazian, S. (2020). Medical cannabis in cancer patients: A survey of a community hematology oncology population. *American Journal of Clinical Oncology*, *43*(9), 636–639. https://doi.org/10.1097/COC.0000000000000718

Macartney, G., Stacey, D., Carley, M., & Harrison, M. B. (2012). Priorities, barriers and facilitators for remote support of cancer symptoms: A survey of Canadian oncology nurses. *Canadian Oncology Nursing Journal*, *22*(4), 235–247. https://doi.org/10.5737/1181912x224235240

Machado Rocha, F. C., Stéfano, S. C., De Cássia Haiek, R., Rosa Oliveira, L. M., & Da Silveira, D. X. (2008). Therapeutic use of cannabis sativa on chemotherapy-induced nausea and vomiting among cancer patients: Systematic review and meta-analysis. *European Journal of Cancer Care*, *17*(5), 431–443. https://doi.org/10.1111/j.1365-2354.2008.00917.x

Medical cannabis patient survey (2020). Retrieved 13 October 2021, from https://www.patientaccess.ca/wp-content/uploads/2020/10/Medical-Cannabis-Patient-Survey-Topline-Results-FINAL-1.pdf.

National Comprehensive Cancer Network. (2021). NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) Antiemesis. Retrieved 7 October 2021, from https://www.nccn.org/professionals/physician_gls/pdf/antiemesis.pdf

Oncology Nursing Society. (2019). Cannabis/Cannabinoids. Retrieved 18 October 2021, from https://www.ons.org/CannabisCannabinoids?topic=761&display=pepnavigator&sort_by=created&items_per_page=50.

Panozzo, S., Le, B., Collins, A., Weil, J., Whyte, J., Barton, M., Coperchini, M., Rametta, M., & Philip, J. (2020). Who is asking about medicinal cannabis in palliative care?. *Internal Medicine Journal*, *50*(2), 243–246. https://doi.org/10.1111/imj.14732

Park, J., Wu, L. (2017). Prevalence, reasons, perceived effects, and correlates of medical marijuana use: A review. *Drug Alcohol Depend*; 177: 1-13

Reblin, M., Sahebjam, S., Peeri, N. C., Martinez, Y. C., Thompson, Z., & Egan, K. M. (2019). Medical cannabis use in glioma patients treated at a comprehensive cancer center in Florida. *Journal of Palliative Medicine*, *22*(10), 1202–1207. https://doi.org/10.1089/jpm.2018.0528

Saadeh, C. E., & Rustem, D. R. (2018). Medical marijuana use in a community cancer center. *Journal of Oncology Practice*, *14*(9), e566–e578. https://doi.org/10.1200/JOP.18.00057

Sallan, S. E., Zinberg, N. E., & Frei, E., 3rd (1975). Antiemetic effect of delta-9-tetrahydrocannabinol in patients receiving cancer chemotherapy. *The New England Journal of Medicine*, *293*(16), 795–797. https://doi.org/10.1056/NEJM197510162931603

Sharkey, K. A., Darmani, N. A., & Parker, L. A. (2014). Regulation of nausea and vomiting by cannabinoids and the endocannabinoid system. *European Journal of Pharmacology, 722*, 134–146. https://doi.org/10.1016/j.ejphar.2013.09.068

Stacey, D. (2020). The Ottawa Hospital Research Institute & University of Ottawa. The pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) project. https://ktcanada.ohri.ca/costars/COSTaRS_Practice_Guides_ENGLISH_Jan2020.pdf

Statistics Canada (2018). National Cannabis Survey, fourth quarter. Available from: https://www150.statcan.gc.ca/n1/dailyquotidien/190207/dq190207b-eng.htm

Waissengrin, B., Urban, D., Leshem, Y., Garty, M., & Wolf, I. (2015). Patterns of use of medical cannabis among Israeli cancer patients: A single institution experience. *Journal of Pain and Symptom Management, 49*(2), 223–230. https://doi.org/10.1016/j.jpainsymman.2014.05.018

Chapter Two

Literature Review

Literature Review

Objective

The overall aim of this narrative literature review was to synthesize the evidence on health care professionals' attitudes and current practices on using cannabis for patients experiencing chemotherapy-induced nausea (CIN).

Methods

A narrative literature review was conducted. This method allows a researcher to examine a wide range of recent and current literature for a specific topic (Grant & Booth, 2009). Four health science databases were searched in March 2021: CINAHL, Medline, Embase, and PsycInfo. The search strategy was discussed with a health science librarian, Marie-Cécile Domecq, at the University of Ottawa. Keywords used were "cannabis OR related words AND cancer OR related words AND health care professionals OR related words" (see Appendix A). The search included all health care professionals and was not limited to nurses because cannabis only became legal in Canada in 2018 under the Cannabis Act and the public can now access cannabis in retail stores (Government of Canada, 2021). Therefore, it was less likely that there would be citations on this topic studied with nurses. Also, an exploration of the experience of all health care professionals was deemed to be helpful when considering the role of nurses within the interprofessional health care team. Given that the search was done with titles and abstracts only, cancer was used rather than the specific symptom of nausea because some articles contain nausea in the text but not in titles or abstracts. In addition, the Medical Subject Headings (MeSH) function was used in each database to explore related terms. Eligible articles were included if they had been peer-reviewed, written in English and conducted with human subjects (Table 2.1). Articles were excluded if they were non-peer-review articles, books, commentary, protocols, or

conference abstracts and if they were non-human, non-English, not in the field of oncology, only discuss the effectiveness of cannabis, and not accessible online.

Table 2.1: Summary of literature inclusion/exclusion criteria

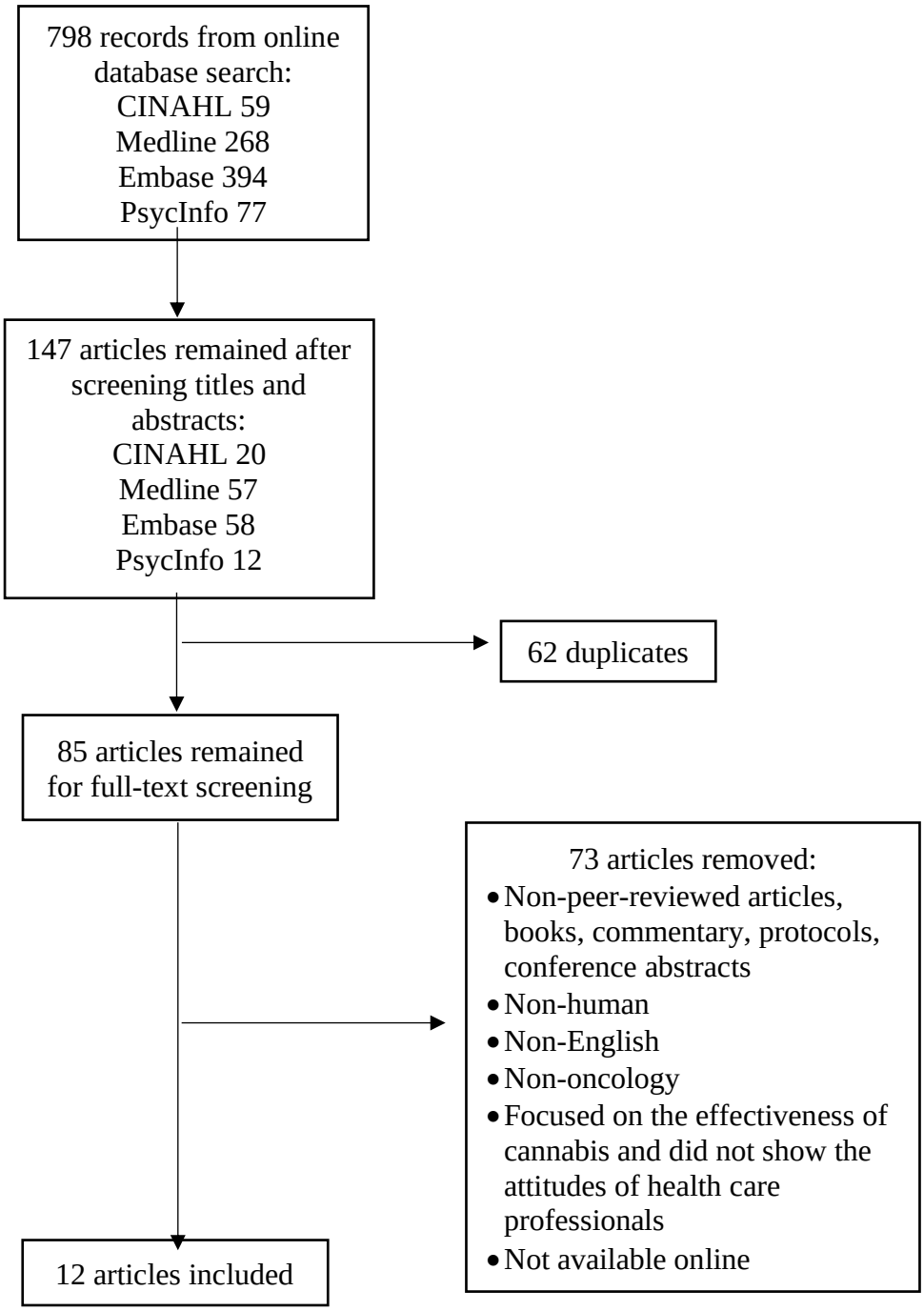
Criteria	Inclusion Criteria	Exclusion Criteria
article type	Peer-reviewed articles	Non-peer-reviewed articles, books, commentary, protocols, conference abstracts
Participants	Human	Non-human
Language	English	Non-English
Field	Oncology	Outside the field of oncology
Focus	Health care professionals' practices, attitudes, and knowledge on providing guidance on cannabis for patients experiencing nausea	Effectiveness of cannabis
Accessible	Yes	No

The database searches were reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria (Moher et al., 2009). Included articles were analyzed descriptively according to the Ottawa Model of Research Use with a focus on barriers at the level of health care professionals, including their attitude and knowledge (Graham et al., 2006; Graham & Logan, 2004).

Results

There were 798 citations retrieved from database searches: 59 from CINAHL, 268 from Medline, 394 from Embase, and 77 from PsycInfo (Figure 2.1). After screening titles and abstracts, 20 citations remained for CINAHL, 57 for Medline, 58 for Embase, and 12 for PsycInfo. The 147 articles were imported into Mendeley. After removing duplicates, full-text screening was performed for the remaining 85 articles and 12 articles were retained for analysis. The excluded citations were non-peer-review articles, books, commentary, protocols, conference abstracts. Non-human, non- English and non-oncology articles were also excluded.

Figure 2.1:PRISMA Flow Diagram



Additionally, articles that were not available online and focused on only the effectiveness of cannabis and did not report on the attitude of health care professionals were excluded. The 12 studies were conducted in Canada (*n* = 1), the United States of America (USA) (*n* = 6), Australia (*n* = 3), Israel (*n* = 1) and New Zealand (*n* = 1), all of which have legalized cannabis use for

medical purposes (see Table 2.2). All studies used survey methods to collect data from patients (n = 6) or health care professionals (n = 6). Of the six studies conducted with HCP, two included nurses.

Table 2.2: Characteristics of included studies and factors influencing health care professionals discussing cannabis with patients

First Author (year) Country	Participants	Study Type	Patients' Use of Cannabis	HCP Attitude	HCP Knowledge	Other Barriers
Ananth (2018) USA	288 pediatric oncology providers (MDs, NPs, RNs, MD assistants, psychologists, social workers),	Survey	85 (30%) reported 1 or more inquiries for cannabis: 70 (79%) were for relief of nausea and/or vomiting. 12 (14%) facilitated access 1 or more times.	240 (92%) were willing to help patients with access to cannabis	NR	Absence of standards around cannabis formulations, potency, and dosing
Braun (2018) USA	237 oncology providers (MDs)	Survey	190 (80%) discussed cannabis with patients or their families, conversation mostly initiated by patients and their families; 109(46%) recommended cannabis for cancer-related issues.	NR	114 (48%) cannabis $\geq$ effective than the standard treatments for CINV. 71(30%) had enough knowledge to recommend cannabis. Of 109 (46%) who recommended it, 61(56%) did not consider having sufficient knowledge	NR
Drosdowsky (2020) Australia	275 patients with suspected or confirmed cancer	Survey	14(5%) were currently using cannabis: 1(7%) had a prescription, and 4(29%) used it for nausea	NR	NR	NR

Hawley (2019) Canada	821 patients with cancer	Survey	190(23%) were currently using cannabis: 74(39%) for nausea, 59(31%) had a medical authorization.	NR	Did not feel sufficiently informed to be able to counsel their patients effectively	NR
Karanges (2018) Australia	640 general practitioners	Survey	62% (378/615) reported 1 or more inquiries for cannabis	52% (328/632) did not feel comfortable consulting on cannabis. 65% (409/632) supported use of cannabis to manage CINV	GPs rated their knowledge of cannabis as poor	Not enough evidence of efficacy; side effects
Macari (2020) USA	188 patients with cancer	Survey	46(24%) used cannabis: 27(59%) used for nausea; 20(43%) had a prescription	NR	NR	NR
Oldfield (2020) New Zealand	45 oncology providers (MDs)	Survey	37 (84%) reported at least one patient asked to prescribe cannabis:11 were consulted for nausea and 23 (62%) chose not to prescribe. 43 (98%) had patients report using illicit cannabis for medical reasons: 11 (26%) reported patients were using cannabis for nausea.	23 (52%) “very likely” to prescribe cannabis given its efficacy was confirmed and it was funded by government	Doctors thought there were some evidence of efficacy for symptomatic relief in nausea/ vomiting. The regulatory processes were poorly understood	Cost to the patients, paperwork
Panozzo (2019) Australia	28 oncology providers (MDs) and trainees	Survey	Of 1700 patients, 104 had the discussion about cannabis for medical purposes: 97 (93%)	NR	NR	NR

			initiated by patients and/or carers. 50 (48%) were about cancer-related nausea, 28 (27%) had a prescription.			
Reblin (2019) USA	73 patients with Glioma,	Survey	24(33%) used cannabis: 13(54%) for nausea, 11(46%) obtained doctor's authorization	NR	NR	NR
Saadeh (2018) USA	175 patients on chemotherapy	Survey	32(18%) used cannabis: 21(66%) for nausea and vomiting. 24(75%) did not have a prescription, and most tried it on their own or at the advice of a friend	NR	NR	NR
Waissengrin (2015) Israel	17,000 patients with cancer	Chart audit and survey	279(2%) had a permit for cannabis: 115(41%) for nausea. 69 completed a detailed questionnaire: 29(42%) were recommended by their oncologists and more than 31(45%) were recommended by nonmedical sources	Most oncologists did not think cannabis was beneficial for patients; reluctant to use an illicit drug;	Most oncologists were not aware of efficacy of cannabis	Perceived lack of evidence on efficacy of cannabis
Zylla (2018) USA	153 oncology providers (MDs, RNs, physician assistants)	Survey	NR	100 (65%) recommend cannabis for patients with CINV, pain, and fatigue. 38 (25%)	Items not a barrier to practice: 34 (22%) very confident in discussing cannabis. 18(12%) unsure of side effects/ benefits.	Perceived cost to patient; research inadequate to justify use; products not Food and Drug Administration approved;

				recommend against it. <77 (50%) do not want to be identified as prescribing it	46 (30%) unsure of quality of products 66 (43%) unsure of legal ramifications to providers or patients	concern about abuse/misuse; workplace/organization against cannabis

CINV = Chemotherapy-induced nausea and vomiting; GP = General practitioner; HCP = Health care professional; MD = Doctor of Medicine; NP = Nurse practitioner; NR=Not reported; RN = Registered nurse.

Patients' Perspectives

Findings showed that oncology patients were using cannabis to manage cancer-related nausea and they were seeking information from health care professionals (Drosdowsky et al., 2020; Hawley & Gobbo, 2019; Macari et al., 2020; Reblin et al., 2019; Saadeh & Rustem, 2018; Waissengrin et al., 2015). In New Zealand, Oldfield et al. (2020) observed that amongst the 44 oncologists, 37 (84%) had been asked to prescribe cannabis by at least one patient, and 11 (25%) were consulted about nausea. Ananth et al. (2018) reported that amongst 284 pediatric health care professionals in the USA, 85 (30%) had one or more inquiries for cannabis, and 79% of the inquiries were about managing nausea and/or vomiting. Similarly in Australia, Panozzo et al. (2020) found that of the 104 patients who had discussed cannabis during consultations, 48% of the discussions were about cancer-related nausea. Although the literature showed that there were inquiries about cannabis for CIN, they tended to focus on nausea and vomiting together, rather than nausea alone.

Although oncology patients were using cannabis to manage nausea and/or other symptoms, not all of them had a prescription (Waissengrin et al., 2015, Drosdowsky et al., 2020, Hawley et al., 2019, Panozzo et al., 2019, Macardi et al., 2020). In the USA, Saadeh and Rustem (2018) found that 32 of the 175 oncology patients used cannabis following chemotherapy, and 21 patients used it for nausea and vomiting, but only 8 had prescriptions. According to Reblin et al. (2019), 13 patients in the USA reported using cannabis for nausea, but only 11 had a prescription. Hence, most patients were self-medicating with cannabis rather than following prescribed use which could put them at potential risk of cannabis addiction and cannabis abuse (Canadian Public Health Association, 2018).

Health Care Professionals' Perspectives

Health care professionals were also hesitant about discussing and prescribing cannabis for patients. Panozzo et al. (2019) in Australia and Braun et al. (2018) in the USA found that conversations around cannabis were mostly initiated by patients and their family, not health care professionals. Panozzo et al. (2019) also found that only 27% of patients obtained a prescription among 48% who inquired about cancer-related nausea. Similarly in the USA, Ananth et al. (2018) found that only 14% of oncologists, who were involved in the consultations on cannabis, facilitated patients' access to cannabis one time or more than one times. Health care professionals reported being aware of the fact that oncology patients were using cannabis for symptom management without authorization, but few chose to prescribe or provide guidance (Oldfield et al., 2020). According to Oldfield et al. (2020) in New Zealand, 43 (98%) oncologists had patients report using illicit cannabis for medical reasons, and among 37 (84%) oncologists who had been asked for a prescription, only 14 (30%) had prescribed it.

Factors influencing health care professionals' practices about cannabis included their attitudes, knowledge, and other barriers. Attitudinal factors included, did not feel comfortable in consulting on cannabis and did not want to be recognized as someone who prescribed a drug that has been illicit historically (Karanges et al., 2018; Waissengrin et al., 2015; Zylla et al., 2018). Health care professionals, from the USA, Canada, New Zealand, and Australia, reported insufficient knowledge of the effectiveness, prescribing processes and legal ramifications interfered with them discussing cannabis use (Braun et al., 2018; Hawley & Gobbo, 2019; Oldfield et al., 2020; Panozzo et al., 2019; Zylla et al, 2018). Some health care professionals were not knowledgeable about cannabis, but still recommended it to patients, Braun et al. (2018) found that amongst oncologists who recommended cannabis for cancer symptoms, only 29% felt

they had sufficient knowledge to provide consultations. The fact that several oncologists who were not confident but still prescribing cannabis indicated the need for appropriate guidance documents and/or educational sessions for health care professionals.

Other barriers interfering with health care professionals' discussions of cannabis was belief that there was insufficient evidence to support its effectiveness (Ananth et al; 2018; Karanges et al., 2018; Waissengrin et al., 2015; Zylla et al., 2018). Some health care professionals were also concerned about cost to patients (Oldfield et al., 2020; Zylla et al., 2018). Others were concerned about paperwork related to recommending cannabis, drug abuse and misuse, and health care facilities do not allow cannabis authorizations (Zylla et al., 2018). These findings further suggested that educational programs and practice guidelines could facilitate health care professionals' practices.

Research Gap

Although the 12 included articles identified nausea and/or vomiting as one of the most common symptoms among oncology patients, the authors did not focus on CIN when exploring health care professionals' practices, attitudes, and knowledge of cannabis. Only two articles in the USA included nurses as research participants, but both of those studies reported study results on health care professionals in general and did not specifically focus on nurses (Ananth et al., 2018; Zylla et al., 2018). Hence little is known about nurses' discussions about cannabis use for CIN or factors influencing their practice.

References

Ananth, P., Ma, C., Al-Sayegh, H., Kroon, L., Klein, V., Wharton, C., Hallez, E., Braun, I., Michelson, K., Rosenberg, A. R., London, W., & Wolfe, J. (2018). Provider perspectives on use of medical marijuana in children with cancer. *Pediatrics*, *141*(1), e20170559. https://doi.org/10.1542/peds.2017-0559

Braun, I. M., Wright, A., Peteet, J., Meyer, F. L., Yuppa, D. P., Bolcic-Jankovic, D., LeBlanc, J., Chang, Y., Yu, L., Nayak, M. M., Tulsky, J. A., Suzuki, J., Nabati, L., & Campbell, E. G. (2018). Medical oncologists' beliefs, practices, and knowledge regarding marijuana used therapeutically: A nationally representative survey study. *Journal of Clinical Oncology*, *36*(19), 1957–1962. https://doi.org/10.1200/JCO.2017.76.1221

Canadian Public Health Association (2018). Cannabis fact sheets. Retrieved 12 October 2021, from: https://www.cpha.ca/sites/default/files/uploads/resources/cannabis/cannabasics-2018-factsheets-e.pdf

Drosdowsky, A., Blaschke, S., Koproski, T., Fullerton, S., Thakerar, A., Ellen, S., Phipps-Nelson, J., & de Neef, C. (2020). Cancer patients' use of and attitudes towards medicinal cannabis. *Australian Health Review*, *44*(4), 650–655. https://doi.org/10.1071/AH19066

Government of Canada. (2021). Cannabis legalization and regulation. https://www.justice.gc.ca/eng/cj-jp/cannabis/

Graham, I. D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *The Canadian Journal of Nursing Research*, *36*(2), 89–103.

Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map?. *The Journal of Continuing education in the health professions*, *26*(1), 13–24. https://doi.org/10.1002/chp.47

Grant, M., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, *26*(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x

Hathaway, A. D., & Erickson, P. G. (2003). Drug reform principles and policy debates: Harm reduction prospects for cannabis in Canada. *Journal of Drug Issues*, *33*(2), 465–495. https://doi.org/10.1177/002204260303300209

Hawley, P., & Gobbo, M. (2019). Cannabis use in cancer: A survey of the current state at BC Cancer before recreational legalization in Canada. *Current Oncology*, *26*(4), e425–e432. https://doi.org/10.3747/co.26.4743

Karanges, E., Suraev, A., Elias, N., Manocha, R., & McGregor, I. S. (2018). Knowledge and attitudes of Australian general practitioners towards medicinal cannabis: A cross-sectional survey. *BMJ Open*, *8*(7), e022101–e022101. https://doi.org/10.1136/bmjopen-2018-022101

Macari, D. M., Gbadamosi, B., Jaiyesimi, I., & Gaikazian, S. (2020). Medical cannabis in cancer patients: A survey of a community hematology oncology population. *American Journal of Clinical Oncology*, *43*(9), 636–639. https://doi.org/10.1097/COC.0000000000000718

Moher D., Liberati A., Tetzlaff J., Altman D. & The Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analysis: The PRISMA statement. Public Library of Science Medicine, 3(2): 123 – 130. doi: 10.1371/journal.pmed.1000097

Oldfield, K., Eathorne, A., Tewhaiti-Smith, J., Beasley, R., Semprini, A., & Braithwaite, I. (2020). Experiences, patient interactions and knowledge regarding the use of cannabis as a medicine in a cohort of New Zealand doctors in an oncology setting. *Postgraduate*

Medical Journal, postgradmedj-2020-139013. Advance online publication. https://doi.org/10.1136/postgradmedj-2020-139013

Panozzo, S., Le, B., Collins, A., Weil, J., Whyte, J., Barton, M., Coperchini, M., Rametta, M., & Philip, J. (2020). Who is asking about medicinal cannabis in palliative care?. *Internal Medicine Journal*, *50*(2), 243–246. https://doi.org/10.1111/imj.14732

Reblin, M., Sahebjam, S., Peeri, N. C., Martinez, Y. C., Thompson, Z., & Egan, K. M. (2019). Medical cannabis use in glioma patients treated at a comprehensive cancer center in Florida. *Journal of Palliative Medicine*, *22*(10), 1202–1207. https://doi.org/10.1089/jpm.2018.0528

Saadeh, C. E., & Rustem, D. R. (2018). Medical marijuana use in a community cancer center. *Journal of Oncology Practice*, *14*(9), e566–e578. https://doi.org/10.1200/JOP.18.00057

Wagner, E. H., Davis, C., Schaefer, J., Von Korff, M., & Austin, B. (1999). A survey of leading chronic disease management programs: Are they consistent with the literature?. *Managed Care Quarterly*, *7*(3), 56–66.

Waissengrin, B., Urban, D., Leshem, Y., Garty, M., & Wolf, I. (2015). Patterns of use of medical cannabis among Israeli cancer patients: A single institution experience. *Journal of Pain and Symptom Management*, *49*(2), 223–230. https://doi.org/10.1016/j.jpainsymman.2014.05.018

Zylla, D., Steele, G., Eklund, J., Mettner, J., & Arneson, T. (2018). Oncology clinicians and the Minnesota Medical Cannabis Program: A survey on medical cannabis practice patterns, barriers to enrollment, and educational needs. *Cannabis and Cannabinoid Research*, *3*(1), 195–202. https://doi.org/10.1089/can.2018.0029

Chapter Three

Factors Influencing Canadian Oncology Nurses Discussing Cannabis Use with Patients Experiencing Chemotherapy-induced Nausea

Authors: Tianhao(Tiffany) Xiao, J. Craig Phillips, Gail Macartney, Dawn Stacey

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Abstract

To determine factors influencing Canadian oncology nurses discussing cannabis use with patients experiencing chemotherapy-induced nausea (CIN), a descriptive, cross-sectional study was conducted. A questionnaire was sent to 678 members of the Canadian Association of Nurses in Oncology (CANO) and 131 oncology nurses in Eastern Ontario from February 8 to April 10, 2022. There were 25 responses. Of 25 nurses, 11 (47.8%) correctly answered the knowledge question about the effectiveness of cannabis for CIN. The top three barriers to discussing cannabis use were social stigma, nurses' lack of knowledge, and lack of guidance within the workplace. All participants identified needing continuing education about providing guidance on the use of cannabis. Few oncology nurses responded to the survey and of those most feel inadequately prepared to discuss cannabis use with patients experiencing CIN. Identified barriers need to be addressed to better support nurses.

Keywords: cannabis, chemotherapy-induced nausea, oncology, nursing care, symptom management

Introduction

Nausea affects up to 40% of oncology patients who receive chemotherapy treatment (Dranitsaris et al., 2017). It is described as an "unpleasant painless subjective feeling that one will imminently vomit" that leads to loss of nutrients and restricted oral intake (Hasler & Chey, 2003, p. 1860). Chemotherapy-induced nausea (CIN) can be a huge burden for patients because losing fluids and nutrients is not only a precursor to undesirable health conditions such as dehydration, malnutrition, and electrolyte imbalance, but it also affects patients' quality of life (Chow et al., 2020). While the mainstream treatment for CIN is antiemetic medications such as ondansetron, olanzapine, and dexamethasone, cannabis is included in clinical practice guidelines as a second-line treatment for its anti-emetic efficacy (Cancer Care Ontario, 2019; Duran et al., 2010; Machado Rocha et al., 2008; National Comprehensive Cancer Network, 2019; Oncology Nursing Society, 2019; Sallan et al., 1975).

The Canadian Cannabis Act, effective as of October 17, 2018, allows Canadians to legally possess cannabis for personal use (Government of Canada, 2021). Canadians who seek cannabis for medical reasons can obtain a prescription from their health care provider or they can purchase it from public vendors without a prescription. This new legalization of a previously illicit street drug that allows adults to self-select cannabis as a medication has challenged social norms. Historically, cannabis was recognized as an illicit drug under federal criminal law in 1923 and has been prohibited most of the time since then (Erickson, 1998; Hathaway & Erickson, 2003; Le Dain, 1972). It has also been stigmatized by individuals largely under the influence of the dominant narrative the government created a century ago that being addicted to cannabis is associated with madness and violence (Hathaway & Erickson, 2003). The more recent War on

Drugs (WOD), launched by the Canadian government, led to incarceration associated with cannabis use further contributed to the associated social stigma (Khenti, 2014).

The new Canadian legalization and the long history of social stigma around cannabis pose great challenges for nursing practice. There has been an increase in the number of cannabis users post-legalization, and more inquiries from patients with cancer about cannabis use for medical purposes (Hawley et al., 2020). Oncology nurses, as the first point of contact (in person or by telephone), will encounter more patients who are seeking guidance on the use of cannabis for CIN and patients reporting using it with or without a prescription (Kelly et al., 2018). Hence, nurses may need to change their attitudes about cannabis from a traditional focus of substance abuse requiring harm reduction to use for medication management of symptoms. However, little is known about oncology nurses' knowledge, attitudes and practice related to discussing cannabis use for CIN.

Purpose

The overall aim of this study was to determine factors influencing Canadian oncology nurses discussing cannabis use with patients experiencing CIN.

The specific research questions were:

a) What are the current nursing practice and perspectives on discussing cannabis use for patients experiencing CIN?
b) To what extent are nurses aware of the effectiveness of cannabis for CIN?
c) How confident do nurses feel about discussing the use of cannabis with patients experiencing CIN?
d) What are the barriers and facilitators to nurses discussing cannabis use with patients experiencing CIN?

Methods

Design

A descriptive, cross-sectional observational study was conducted and it was guided by the Ottawa Model of Research Use (OMRU) (Graham & Logan, 2004). A cross-sectional survey allows researchers to collect data at one point in time across a sample population (Connelly, 2016). The OMRU is a framework for guiding the implementation of evidence-based recommendations into clinical practice (Graham & Logan, 2004).

Under this framework, both negative and positive determinants of influencing a change are identified and reviewed; by doing so, the effective strategies of implementation can be used to overcomes barriers to the change and the goal of implementing the evidence-based practice will be achieved (Harrison & Graham, 2021). The evidence-based recommendation for this study was the use of cannabis for managing CIN, and this study aimed to explore the barriers and facilitators that influence Canadian oncology nurses to discuss cannabis as a treatment for patients with CIN. This study was reported following the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) reporting guideline (Eysenbach, 2004) (see Appendix B). Ethical approval was obtained from the University of Ottawa Health Sciences and Science Research Ethics Board.

Participants and Setting

Participants were limited to Canadian nurses given that Canadian legislation recently changed regulations to allow cannabis access for the public. Eligible participants were Canadian oncology nurses who discussed symptom management with patients receiving chemotherapy, were able to respond to an online survey in English or French, and provided consent to

participate. Those who did not work in a position with opportunities of discussing symptom management with patients receiving chemotherapy within the last two years were excluded.

The survey was carried out with the Canadian Association of Nurses in Oncology (CANO), a national organization whose mandate is to advance high-quality nursing care in cancer control (CANO, 2019). Oncology nurses in Eastern Ontario who were affiliated with The Ottawa Hospital (TOH) or their satellite clinics were also invited. Some nurses belonged to both targeted groups, but it was not possible to remove duplicates.

Measurement Instrument

The survey included the barriers survey based on the OMRU, a knowledge test question on the effectiveness of cannabis for CIN, and demographic questions (Stacey, 2006). The barriers survey was designed to study the influencing factors on health care professionals' behaviors in adopting an innovation into clinical practice. This survey has previously been used for multiple studies investigating determinants of nurses and physicians using evidence-based innovations (Graham, 2007; Stacey et al., 2005; Stacey et al., 2015; Stacey, 2020). Content validity of this tool was verified by practitioners and researchers in previous studies (Graham et al., 2007; Stacey et al., 2005; Stacey et al., 2015). The knowledge test question asked nurses to answer a multiple-choice question indicating the effectiveness of cannabis for CIN with six potential responses: effective, likely effective, expert opinion, not effective, unknown effectiveness, and not sure.

The adapted survey included a series of closed-ended statements focused on factors at the level of the innovation (e.g., cannabis use for CIN), health care professionals' (e.g., nurses) awareness, attitudes, knowledge/skill, concern, and current practice; and environment factors (e.g., ambulatory oncology clinics) (Stacey, 2020) (see Appendix C). For each closed-ended

statement, the 5-point response scale was “strongly disagree” to “strongly agree” with “neutral” in the middle. The survey also included open response questions asking participants to list three barriers and three facilitators that affected their discussing cannabis use for CIN. The survey also asked demographic questions including type of nursing role, employment status, age range, sex at birth, gender, highest education level, and work experience. The adapted questionnaire was available in English and French. All authors of this research and a med-surge RN tested the adapted survey.

Sampling and Procedure

The survey was administered as an online questionnaire through SurveyMonkey®, an online survey site. The benefits of an online survey are easy-accessible and cost-effective (Rosenbaum & Lidz; 2007). CANO head office sent invitations to members to complete the survey within their regular weekly newsletter emails (see Appendix D). Following the Tailored Design Method for Surveys (Dillman, 2014), nurses received the invitation included a statement of the research purpose, instructions, deadline, and the link to SurveyMonkey®. Nurses who clicked the link to SurveyMonkey® were initially screened for eligibility by being asked if they provided any symptom management to adults receiving chemotherapy. Those answering ‘No’ were thanked for their time; those answering ‘Yes’ were instructed to read the consent form and proceed with the questionnaire (see Appendix E). Three reminders were sent out at two, four, and six weeks, after the initial invitation, in the weekly newsletter emails by CANO to increase the response rate (Dillman et al., 2014). The location of the survey invitation varied in the newsletters and on one occasion it appeared first on the list of news items. Survey information was also advertised on CANO’s social media accounts Facebook, Twitter, and Instagram. Previous research has shown that providing up to 4 contacts increases response rates (Dillman et

al., 2014). The oncology nurse educator voluntarily sent one invitation by email to oncology nurses in Eastern Ontario. Participants were assured of the anonymous and voluntary nature of the survey.

When placed in SurveyMonkey®, there were a maximum of five questions per page for a total of 22 questions in six pages. Participants were able to review and change their answers while taking the survey and each participant was only allowed to attempt the survey once. SurveyMonkey® recorded participant's IP address to make sure no repeated attempts were made, and participants who attempted to complete the survey a second time received a message notifying them that they had already taken the survey. SurveyMonkey® deletes the IP addresses 13 months after the survey is conducted. There were no incentives offered for participating in this study. Deidentified data was downloaded from SurveyMonkey® and stored in a secured password-protected personal computer of the author (TX) and the co-researchers of this study.

Data Analysis

Data collected in SurveyMonkey® were transferred to MS Excel spreadsheets for cleaning and processing. Following CHERRIES reporting guideline, participation rate (recruitment rate) was calculated as percentage = people who agreed to participate/ people who visited the survey; completion rate was calculated as percentage = people who completed the survey/people who agreed to participate (Eysenbach, 2004). The knowledge test question was scored as correct if respondents appropriately identified cannabis as effective or likely effective based on evidence reported in multiple clinical guidelines for CIN treatment (Cancer Care Ontario, 2019; National Comprehensive Cancer Network, 2019; Oncology Nursing Society, 2019).

Quantitative findings from closed questions were analyzed descriptively and were classified into three levels of barriers and facilitators according to the OMRU framework: nurses' perceptions of barriers and facilitators at the level of cannabis as a substance, their own knowledge, skill, and confidence, and environmental factors. Medians were calculated for responses of each statement based on "strongly disagree" being 1 to "strongly agree" being 5. Subsequently, response categories "strongly disagree" and "disagree" were combined and reported as "disagree" in the tables, and response categories "strongly agree" and "agree" were combined and reported as "agree".

Qualitative findings from open-ended questions were analyzed using content analysis based on data-driven codes (Lambert & Lambert, 2012). Responses to barriers, facilitators, and open comments were analyzed to identify themes and subsequently the themes were classified into the OMRU Framework (Graham & Logan, 2004). Multiple responses under the same theme from the same participant were only counted once to avoid duplicates. The primary author (TX) independently performed the data analysis and a second author (DS) audited the findings (Lambert & Lambert, 2012; Cohen & Crabtree, 2008).

Results

The survey was sent to 678 CANO members on February 8, 2022, with reminders sent on February 22, March 8, and March 22 (see Figure 3.1). In addition, 131 oncology nurses in Eastern Ontario, some of whom would have been CANO members, received an invitation from the nurse educator at The Ottawa Hospital through email on April 1, 2022. In total, 809 nurses were invited, 27 started the online questionnaire. Twenty-one participants fully completed and 4 partially completed the survey; all data were analyzed. Participation rate (recruitment rate) was 86.2% (25/29); completion rate was 84.0% (21/25). The typical respondent was female (95.7%)

registered nurses (91.3%) under 40 years of age (56.5%), and worked in nursing for 11 to15 years (26.1%) (see Table 3.1).

Figure 2.1: Survey participation

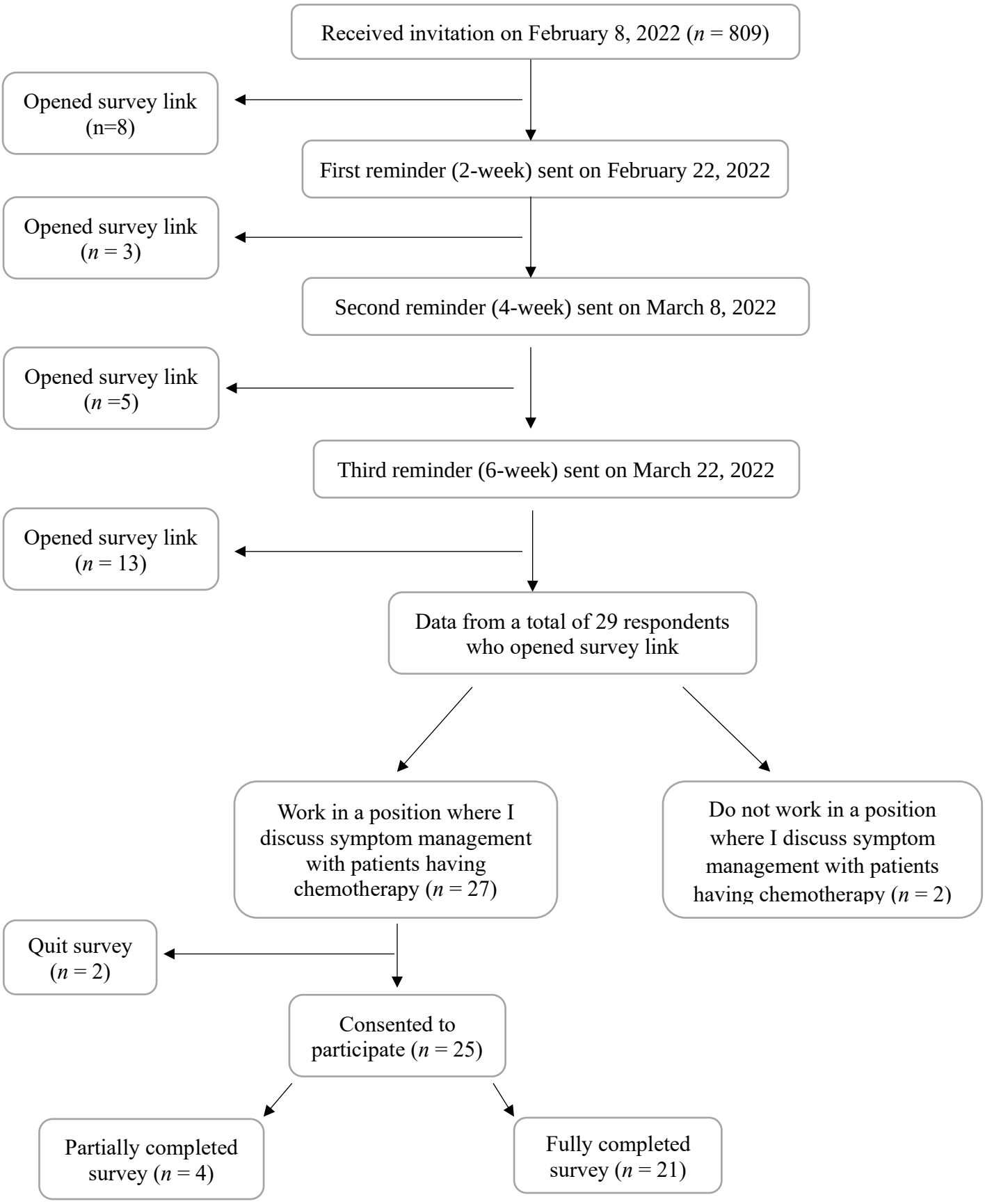

Table 3.1: Characteristics of participants (N = 23)

Variables	*n*	%
Nursing role		
RN	21	91.3
[a]APN	2	8.7
Employment status		
Full-time	14	60.9
Regular part-time and casual	8	34.8
Prefer not to answer	1	4.3
Age range		
<40	13	56.6
40-49	5	21.7
>49	5	21.7
Sex at birth/gender*		
Female/ women	22	95.7
Male/ man	1	4.4
Highest education level		
College diploma	5	21.7
Undergraduate degree	13	56.5
Graduate degree	5	21.7
Work experience (years)		
<10	6	26.1
11 to 15	6	26.1
16 to 20	4	17.4
>21	7	37.4

Notes. RN = Registered Nurse; APN = Advanced Practice Nurse. [a]APN includes nurse educators and clinical nurse specialists. *Same responses to separate questions

Nurses' Perceptions about Cannabis for CIN

Of 24 respondents, 16 (66.7%) *agreed* that cannabis is acceptable for patients with CIN (see Table 3.2). About half of the respondents were *neutral* when asked about the complexity of discussing cannabis (*n* = 10/24, 41.7%) and about the applicability of cannabis to a sizeable proportion of patients (*n* = 13/24, 54.2%). Twelve out of 24 (50.0%) respondents disagreed with the statement that "discussing cannabis for CIN is simple".

Of 21 respondents who answered open questions about barriers to discussing cannabis for CIN, there were two themes at the level of cannabis use (see Table 3.2). Four respondents' comments fit within the theme of lack of scientific evidence (19.0%) as evidenced by "*lack of current literature regarding effectiveness*". Three respondents described a lack of regulation (14.3%) as illustrated by "*not regulated as other drugs*". Of 22 respondents who answered open questions about facilitators, there were three themes (see Table 3.2). Eleven (50%) identified cannabis legalization as a facilitator. Six (27.3%) described increased product accessibility can be a facilitator and highlighted that "*patients have easy access to it on their own"* and *"comes in edible or drop form"*. Four (18.2%) discussed strong evidence for use as evidenced by *"strength of literature"* and *"positive literature regarding effectiveness"*.

Table 3.2: Nurses' perceptions about cannabis

Statements	Disagree		Neutral		Agree		Total	
	n	%	*n*	%	*n*	%	*n*	M
Cannabis is acceptable for patients with CIN	2	8.3	6	25.0	16	66.7	24	4.0
Discussing cannabis for CIN is too complex	7	29.2	10	41.7	7	29.2	24	3.0
Cannabis is not applicable to a sizeable proportion of patients	7	29.2	13	54.2	4	16.7	24	3.0
Discussing cannabis use for CIN is simple	12	50.0	5	20.8	7	29.2	24	2.5

OMRU	**Themes**	**Example quotes**	*n* (%)
Barriers			
Innovation attributes	Lack of scientific evidence (safety/ effectiveness)	"Unclear safety profile if not obtaining from somewhere reliable" "Lack of current literature regarding effectiveness"	4 (19.0)
	Lack of regulation	"It is not regulated as other drugs" "Many forms of cannabis"	3 (14.3)
Facilitators			
Development process	Cannabis legalization	"It is legal" "Legality of THC now in Ontario"	11 (50.0)
Innovation attributes	Increased product accessibility	"Patients have easy access to it on their own" "Comes in edible or drop form (to avoid toxicities from smoking)"	6 (27.3)
	Strong evidence for use	"Strength of literature" "Positive literature regarding effectiveness"	4 (18.2)

Notes. Scale: 1 (Strongly disagree) to 5 (Strongly agree). Reported as disagree (strongly disagree + disagree) and agree (strongly agree + agree); gray shade indicates majority of respondents.

M=Median

Nurses' Perceptions about Own Knowledge, Skill, and Confidence

Of 23 respondents, 11 (47.8%) correctly answered the knowledge question about the effectiveness of cannabis for CIN. Of the 11 respondents, 2 (8.7%) answered "effective", and 9 (39.1%) answered "likely effective". All respondents (n = 23) *agreed* that they need continuing education, and 20 (87.0%) *agreed* that they need to improve their knowledge to provide guidance and *disagreed* that they had enough training (see Table 3.3). Of the 23 respondents, 21 (91.3%) *agreed* that they need to improve their ability to support patients in handling conflicting views about cannabis for CIN. Ten respondents (43.5%) *agreed* that recognizing patients needing guidance is difficult. Most respondents did not feel confident in providing guidance on cannabis use for CIN (n = 14; 60.9%) or the steps of cannabis use (n = 18; 78.3%).

Barriers revealed three themes: negative attitudes, lack of knowledge, and avoidance of cannabis when practising (see Table 3.3). One respondent's comment fits within the first theme (4.8%) as evidenced by "*I do not feel comfortable broaching the subject".* Ten respondents' comments fit within lacking knowledge (47.6%) as illustrated by "*lack of understanding about cannabis*" and "*not enough knowledge and training on providing guidance on the use*". One respondent described avoid cannabis in practice (4.8%) as illustrated by *"I mostly discuss cannabis when a patient mentions it in conversation"*. Facilitators indicated two themes: more information/knowledge and positive attitudes (n = 2/22, 9.1%) (see Table 3.3). Four responses fit within the first theme (18.2%), and the respondents commented that '*knowing it has worked for others*' and '*understanding of dosing*'. Two responses fit within the second theme (9.1%), and the respondents commented that "*I would love to know more about this topic with proper education*" "*I would love to take some cannabis courses*".

Table 3.3: Nurses' perceptions about their knowledge, skills, and confidence in discussing cannabis for CIN

Statements	Disagree		Neutral		Agree		Total	
	n	%	*n*	%	*n*	%	*n*	M
Need to participate in continuing education on cannabis	0	0	0	0	23	100	23	5.0
Need to enhance knowledge about providing guidance on cannabis?	1	4.4	2	8.7	20	87.0	23	4.0
Need to enhance ability to support patients in handling conflicting views	1	4.4	1	4.4	21	91.3	23	4.0
Familiar with the COSTaRS [that discusses use of cannabis for CIN]	4	17.4	2	8.7	17	73.9	23	4.0
Difficult to recognize patients who need guidance	6	26.1	7	30.4	10	43.5	23	3.0
Confident in ability to provide guidance on the use of cannabis for CIN	14	60.9	6	26.1	3	13.0	23	2.0
Confident in providing guidance on the steps for using cannabis	18	78.3	3	13.0	2	8.7	23	2.0
Received enough training on cannabis	20	87.0	3	13.0	0	0	23	2.0

OMRU levels	**Themes**	**Example quotes**	*n* (%)
Barriers			
Attitudes	Negative attitudes	"I do not feel comfortable broaching the subject…"	1 (4.8)
Knowledge/ skill	Lack of knowledge	"Lack of understanding about cannabis" "Not enough knowledge and training on providing guidance on the use"	10 (47.6)
Current practice	Avoidance of discussing cannabis	"I mostly discuss cannabis when a patient mentions it in conversation"	1 (4.8)
Facilitators			

Knowledge/ skill	More information/ knowledge	"Knowing it has worked for others" "Understanding of dosing"	4 (18.2)
Attitudes	Positive attitudes	"I would love to know more about this topic with proper education…" "I would love to take some Cannabis courses"	2 (9.1)

Notes. Scale: 1 (Strongly disagree) to 5 (Strongly agree). Reported as disagree (strongly disagree + disagree) and agree (strongly agree + agree); gray shade indicates majority of respondents.

M=Median

Nurses' Perceptions on Environmental Factors Influencing Discussing Cannabis for CIN

Of 23 respondents, nine (39.1%) felt *neutral* about the number of patients inquiring about cannabis (see Table 3.4). Most respondents *disagreed* that they have clear direction from within their organizations on cannabis use (*n* = 16/23; 69.6%) and *disagreed* that they have good resources (*n* = 17/23; 73.9%).

There were six themes revealed for barriers (see Table 3.4): stigma (*n* = 13/21, 61.9%), unclear guidance from organizations (*n* = 7/21, 33.3%), lack of education opportunities provided to nurses (*n* = 7/21, 33.3%), interprofessional opinions not unified (*n* = 3/21, 14.3%), lack of support at work (*n* = 3/21, 14.3%), and lack of time at work (*n* = 2/21, 9.5%) (see Table 3.4). Comments that fit within the stigma theme were illustrated by *"stigma"* and *"patients are reluctant to talk about their use of cannabis"*. Comments that fit within unclear guidance were illustrated by *"unclear guidance from organization"* and *"lack of patient-facing materials to support teaching*". Comments that fit within lack of education opportunities were illustrated by *"lack of course/education about cannabis"* and *"limited education for oncology nurses*". Responses that fit within the theme of interprofessional opinions not unified were evidenced by *"oncology pharmacists in our centre advise against it due to side-effect amplification"* and *"conflicting information in our health region"*. And finally, responses that fit under lack of

support were evidenced by *"not having permission from employer to discuss"* and *"not having encouragement from educators to discuss"*; response that fit under lack of time was illustrated by *"time needed to research recommendations-difficult in busy clinic setting"*.

Comments to facilitators revealed five themes (see Table 3.4): more education/guidance/resources (*n* = 9/22, 40.9%), less stigma (*n* = 8/22, 36.4%), referral program/expert opinions (*n* = 6/22, 27.3%), unified interprofessional opinions (*n* = 3/22, 13.6%), and more time (*n* = 1/22, 4.5%). The first theme was illustrated by the need for *"education"* and *"clearer direction from professional association for nurses"*. The second theme included comments such as *"increasing social acceptance of medicinal use"* and *"medical oncologist initiate the talk"*. The theme of referral program/expert opinions was evidenced by *"cannabis clinic referral"* and *"the hope that there are medical cannabis experts to refer to"*. Comments to unified interprofessional opinions were evidenced by *"consistency between pharmacy, nursing, and medical profession on cannabis"* and *"guidance from oncologists"*. Finally, comments to the theme of time were evidenced by *"time"*.

Table 3.4: Nurses' perceptions on environmental factors influencing their discussion of cannabis for CIN

Statements	Disagree		Neutral		Agree		Total	
	n	%	*n*	%	*n*	%	*n*	M
Too few patients asking about cannabis for CIN	8	34.8	9	39.1	6	26.1	23	3.0
I have access to good resources to provide guidance on the use of cannabis for CIN	17	73.9	5	21.7	1	4.4	23	2.0
There is clear direction within the program for me to guide patients on the use of cannabis for CIN	16	69.6	4	17.4	3	13.0	23	2.0

OMRU levels	**Themes**	**Example quotes**	*n* (%)
Barriers			
Culture/ social	Stigma	"Stigma" "Patients are reluctant to talk about their use of cannabis"	13 (61.9)
Structural	Unclear guidance	"Unclear guidance from organization" "Lack of patient-facing materials to support teaching"	7 (33.3)
	Lack of education opportunities	"Lack of courses/ education about cannabis" "Limited education for oncology nurses"	7 (33.3)
	Interprofessional opinions not unified	"Oncology pharmacists in our centre advise against it due to side-effect amplification" "Conflicting information in our health region"	3 (14.3)
	Lack of support	"Not having permission from employer to discuss" "Not having encouragement from educators to discuss"	3 (14.3)
	Lack of time	"Time needed to research recommendations - difficult in busy clinic setting"	2 (9.5)
Facilitators			
Structural	More education/ guidance/ resources	"Education" "Clearer direction from professional association for nurses"	9 (40.9)
	Less stigma	"Increasing social acceptance of medicinal use" "Medical oncologists initiate the talk"	8 (36.4)

	Referral program/ expert opinions	“Cannabis clinic referral” “The hope that there are medical cannabis experts to refer to”	6 (27.3)
	Unified interprofessional opinions	“Consistency between pharmacy, nursing, and medical profession on cannabis” "Guidance from oncologists"	3 (13.6)
	More time	“Time”	1 (4.5)

Notes. Scale: 1(Strongly disagree) to 5 (Strongly agree). Reported as disagree (strongly disagree + disagree) and agree (strongly agree + agree); gray shade indicates majority of respondents.

M=Median

Discussion

Our study aimed to determine factors influencing Canadian oncology nurses discussing cannabis use with patients experiencing CIN. Half of nurses correctly answered the question about the effectiveness of cannabis for CIN. The top barriers identified by the nurses were social stigma, lack of knowledge, and lack of guidance and education. The top facilitators were having cannabis legalized, being given access to more education and guidance, and having less stigma about cannabis use. Our findings on their practice, knowledge, and attitudes toward cannabis lead to the following points for discussion.

Overall, oncology nurses are not confident in providing guidance on cannabis use for patients with CIN despite half correctly answered the question about the effectiveness of cannabis. Most participants indicated that they did not have enough knowledge, and they were willing to receive more education. Similar to oncology nurses, other health professionals including oncologists and medical specialists have been found to lack confidence when discussing cannabis use because of their insufficient knowledge of this medication (Hawley & Gobbo, 2019; Oldfield et al., 2020; Panozzo et al., 2020).

Also, oncology nurses are facing barriers on multiple levels to approaching this topic, and these barriers will need to be dealt with in order to create a supportive environment for nurses. Previous studies have reported that health care professionals' lack of knowledge and social stigma are barriers to prescribing and recommending cannabis (Oldfield et al., 2020; Zylla et al., 2018). To tackle these barriers, health care organizations, schools of nursing and regulatory bodies need to develop and/or provide access to educational programs on cannabis so that oncology nurses can participate and gain more knowledge on this medication (Balneaves & Alraja, 2019). Also, the most effective way to reduce social stigma around cannabis use is by changing social beliefs and attitudes (Herek et al., 2009). This requires a change in society at large which will allow oncology nurses' views to be supported when the social stigma is removed (Reid, 2020).

It is unclear why the survey only received 25 responses, particularly given the survey followed Dillman's method that are known to increase responses with reminders (Dillman et al., 2014). However, less than 4% of nurses who received an invitation opened the survey link. Given that most nurses decided not to participate before they even opened the survey link, it was unclear the extent to which they read the CANO weekly newsletter that provided the invitation to participate. Reasons nurses may have been unwilling to participate in the survey included wanting to avoid the topic of cannabis or feeling burnt out due to COVID-19 pandemic. Previous research has shown that individuals are likely to refuse to participate in surveys of sensitive nature (McNeeley, 2012). Given that social stigma was identified as one of the top barriers, it is reasonable to assume that cannabis is still a quite stigmatized topic in the nursing culture. During COVID-19 (coronavirus disease-19) pandemic nurses were unable or unwilling to undertake

extra tasks (Galanis, 2021). Nurses felt considerable stress caused by being directly exposed to the threat of the virus that affected their mental, emotional, and physical health (Galanis, 2021).

The small number of responses received could be an indicator that oncology nurses may not discuss cannabis with patients having CIN. This is also consistent with all health care professionals. Panozzo et al. (2020) found that conversations around cannabis use was often initiated by the patient, not the health care professional. Furthermore, oncologists tend to not prescribe cannabis for patients although they were aware that patients could obtain a supply from public vendors and use it for medical purposes without proper guidance (Drosdowsky et al., 2020; Hawley & Gobbo, 2019; Macari et al., 2020; Reblin et al., 2019; Saadeh & Rustem, 2018; Waissengrin et al., 2015).

Limitations

There were three key limitations to consider. First, there was a small sample size, and this may be linked to having sent a general invitation and invitations being buried within the weekly newsletters. Research showed that personalized invitation containing personal information such as participants' names can generate more responses (Hennrich et al., 2021). It could also be because oncology nurses were unwilling to respond to the survey on cannabis due to the culturally sensitive nature of this topic (McNeeley, 2012). Second, there is a possibility of response bias with only nurses who endorse cannabis use may have responded (McNeeley, 2012). Interestingly the average age of respondents was less than 40 years old which is younger than average nurse in Canada (>40 years old) (Canadian Institute for Health Information, 2019). Previous research has shown that younger people are more supportive about cannabis use (Harnisch et al., 2020). Third, a technical issue was reported by one CANO member that he or

she was unable to open the survey, but it was not possible to investigate this technical issue and others were successful with completing the survey.

Conclusion

Our survey of Canadian nurses identified several factors influencing them discussing cannabis use with patients experiencing CIN. Few oncology nurses discussed cannabis use for CIN and most felt inadequately prepared for this discussion with patients. Nurses asked for more resources and educational opportunities to address their knowledge gap. This knowledge gap was confirmed by only half responding correctly to the knowledge test question evaluating the level of evidence supporting cannabis use for CIN. Our identified barriers should be addressed to better prepare nurses for discussing the use of cannabis.

References

Balneaves, L., & Alraja, A. A. (2019). “Guarding their practice”: A descriptive study of Canadian nursing policies and education related to medical cannabis. *BMC Nursing*, *18*(1), 66–66. https://doi.org/10.1186/s12912-019-0390-7

Canadian Association of Nurses in Oncology (CANO). (2019, November 28). “About us”. Canadian Association of Nurses in Oncology. https://www.cano-acio.ca/page/about_us

Canadian Institute for Health Information. (2019). Nursing in Canada, 2018: A lens on supply and workforce. https://www.cihi.ca/sites/default/files/document/regulated-nurses-2018-report-en-web.pdf

Cancer Care Ontario. (2019). *Summary of 2019 Antiemetic Recommendations* [Ebook] (p. 3). Retrieved 7 October 2021, from https://www.cancercareontario.ca/en/file/49566/download?token=sVDajTLI

Chow, R., Valdez, C., Chow, N., Zhang, D., Im, J., Sodhi, E., & Lock, M. (2020). Oral cannabinoid for the prophylaxis of chemotherapy-induced nausea and vomiting- A systematic review and meta-analysis. *Supportive Care in Cancer*, *28*(5), 2095–2103. https://doi.org/10.1007/s00520-019-05280-4

Cohen, D., & Crabtree, B. (2008). Evaluative criteria for qualitative research in health care: Controversies and recommendations. *Annals of Family Medicine*, 6(4): 331 – 339. doi: 10.1370/afm.818

Connelly. (2016). Cross-sectional survey research. *Medsurg Nursing*, *25*(5), 369–370.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). Internet, phone, mail, and mixed-mode surveys: the tailored design method (4th edition.). Wiley.

Dranitsaris, G., Molassiotis, A., Clemons, M., Roeland, E., Schwartzberg, L., Dielenseger, P., Jordan, K., Young, A., & Aapro, M. (2017). The development of a prediction tool to identify cancer patients at high risk for chemotherapy-induced nausea and vomiting. *Annals of Oncology*, *28*(6), 1260–1267. https://doi.org/10.1093/annonc/mdx100

Drosdowsky, A., Blaschke, S., Koproski, T., Fullerton, S., Thakerar, A., Ellen, S., Phipps-Nelson, J., & de Neef, C. (2020). Cancer patients' use of and attitudes towards medicinal cannabis. *Australian Health Review*, *44*(4), 650–655. https://doi.org/10.1071/AH19066

Duran, M., Pérez, E., Abanades, S., Vidal, X., Saura, C., Majem, M., Arriola, E., Rabanal, M., Pastor, A., Farré, M., Rams, N., Laporte, J. R., & Capellà, D. (2010). Preliminary efficacy and safety of an oromucosal standardized cannabis extract in chemotherapy-induced nausea and vomiting. *British Journal of Clinical Pharmacology*, *70*(5), 656–663. https://doi.org/10.1111/j.1365-2125.2010.03743.x

Erickson. P. G. (1998). Neglected and rejected: A case study of the impact of social research on Canadian drug policy. *Canadian Journal of Sociology*, *23*(2/3), 263–280. https://doi.org/10.2307/3341968

Eysenbach G. (2004). Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *Journal of Medical Internet Research*, *6*(3), e34. https://doi.org/10.2196/jmir.6.3.e34

Galanis, P., Vraka, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Advanced Nursing*, *77*(8), 3286–3302. https://doi.org/10.1111/jan.14839

Graham, I. D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *The Canadian Journal of Nursing Research*, *36*(2), 89–103.

Graham, I. D., Logan, J., Bennett, C. L., Presseau, J., O'Connor, A. M., Mitchell, S. L., Tetroe, J. M., Cranney, A., Hebert, P., & Aaron, S. D. (2007). Physicians' intentions and use of three patient decision aids. *BMC Medical Informatics and Decision Making*, *7*, 20. https://doi.org/10.1186/1472-6947-7-20

Government of Canada. (2021). Cannabis legalization and regulation. https://www.justice.gc.ca/eng/cj-jp/cannabis/

Harnisch, B., Wambeam, R. A., & Canen, E. L. (2020). Views of marijuana in Wyoming. Wyoming Survey & Analysis Center.

Harrison, M. B., & Graham, I. D. (2021). Knowledge translation in nursing and healthcare: A roadmap to evidence-informed practice. Hoboken. John Wiley & Sons, Inc.

Hasler, W. L., & Chey, W. D. (2003). Nausea and Vomiting. *Gastroenterology*, *125*(6), 1860–1867. https://doi.org/10.1053/j.gastro.2003.09.040

Hathaway, A. D., & Erickson, P. G. (2003). Drug reform principles and policy debates: Harm reduction prospects for cannabis in Canada. *Journal of Drug Issues*, *33*(2), 465–495. https://doi.org/10.1177/002204260303300209

Hawley, P., & Gobbo, M. (2019). Cannabis use in cancer: A survey of the current state at BC Cancer before recreational legalization in Canada. *Current Oncology*, *26*(4), e425–e432. https://doi.org/10.3747/co.26.4743

Hawley, P., Gobbo, M., & Afghari, N. (2020). The impact of legalization of access to recreational Cannabis on Canadian medical users with Cancer. *BMC Health Services Research*, *20*(1), 977–977. https://doi.org/10.1186/s12913-020-05756-8

Hennrich, P., Arnold, C., & Wensing, M. (2021). Effects of personalized invitation letters on research participation among general practitioners: A randomized trial. *BMC Medical Research Methodology*, *21*(1), 247. https://doi.org/10.1186/s12874-021-01447-y

Herek, G., Gillis, J. R., & Cogan, J. C. (2009). Internalized stigma among sexual minority adults: Insights from a social psychological perspective. *Journal of Counseling Psychology*, *56*(1), 32–43. https://doi.org/10.1037/a0014672

Hui, D., & Bruera, E. (2017). The Edmonton symptom assessment system 25 years later: Past, present, and future developments. *Journal of Pain and Symptom Management*, *53*(3), 630–643. https://doi.org/10.1016/j.jpainsymman.2016.10.370

Jibb, L. A., Stacey, D., Carley, M., Davis, A., Graham, I. D., Green, E., Jolicoeur, L., Kuziemsky, C., Ludwig, C., & Truant, T. (2019). Research priorities for the pan-Canadian Oncology Symptom Triage and Remote Support practice guides: A modified nominal group consensus. *Current Oncology (Toronto, Ont.)*, *26*(3), 173–182. https://doi.org/10.3747/co.26.4247

Kelly, F., Carroll, S., Carley, M., Dent, S., Shorr, R., Hu, J., Morash, R., & Stacey, D. (2018). Symptom practice guide for telephone assessment of patients with cancer treatment-related cardiotoxic dyspnea: Adaptation and evaluation of acceptability. *Canadian Journal of Cardiology*, *34*(10), S204–S204. https://doi.org/10.1016/j.cjca.2018.07.438

Khenti, A. (2014). The Canadian war on drugs: Structural violence and unequal treatment of Black Canadians. *The International Journal of Drug Policy*, *25*(2), 190–195. https://doi.org/10.1016/j.drugpo.2013.12.001

Kilmer, B. (2019). How will cannabis legalization affect health, safety, and social equity outcomes? It largely depends on the 14 Ps. *The American Journal of Drug and Alcohol*

Abuse, *45*(6), 664–672. https://doi-org.proxy.bib.uottawa.ca/10.1080/00952990.2019.1611841

Lambert, V., & Lambert, C. (2012). Editorial: Qualitative descriptive research: An acceptable design. *Pacific Rim International Journal of Nursing Research*, 16(4): 255 – 256.

Le Dain, G. (1972). Cannabis: A report of the commission of inquiry into the non-medical use of drugs. Information Canada.

Macari, D. M., Gbadamosi, B., Jaiyesimi, I., & Gaikazian, S. (2020). Medical cannabis in cancer patients: A survey of a community hematology oncology population. *American Journal of Clinical Oncology*, *43*(9), 636–639. https://doi.org/10.1097/COC.0000000000000718

Machado Rocha, F. C., Stéfano, S. C., De Cássia Haiek, R., Rosa Oliveira, L. M., & Da Silveira, D. X. (2008). Therapeutic use of cannabis sativa on chemotherapy-induced nausea and vomiting among cancer patients: Systematic review and meta-analysis. *European Journal of Cancer Care*, *17*(5), 431–443. https://doi.org/10.1111/j.1365-2354.2008.00917.x

McNeeley, S. (2012). Sensitive issues in surveys: Reducing refusals while increasing reliability and quality of responses to sensitive survey items. In *Handbook of Survey Methodology for the Social Sciences* (pp. 377–396). Springer New York. https://doi.org/10.1007/978-1-4614-3876-2_22

National Comprehensive Cancer Network. (2021). *NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) Antiemesis* [Ebook] (1st ed.). Retrieved 7 October 2021, from https://www.nccn.org/professionals/physician_gls/pdf/antiemesis.pdf

Oldfield, K., Eathorne, A., Tewhaiti-Smith, J., Beasley, R., Semprini, A., & Braithwaite, I. (2020). Experiences, patient interactions and knowledge regarding the use of cannabis as a medicine in a cohort of New Zealand doctors in an oncology setting. *Postgraduate*

Medical Journal, postgradmedj-2020-139013. Advance online publication. https://doi.org/10.1136/postgradmedj-2020-139013

Oncology Nursing Society. (2019). Cannabis/Cannabinoids. Retrieved 18 October 2021, from https://www.ons.org/CannabisCannabinoids?topic=761&display=pepnavigator&sort_by=created&items_per_page=50.

Panozzo, S., Le, B., Collins, A., Weil, J., Whyte, J., Barton, M., Coperchini, M., Rametta, M., & Philip, J. (2020). Who is asking about medicinal cannabis in palliative care?. *Internal Medicine Journal*, *50*(2), 243–246. https://doi.org/10.1111/imj.14732

Reblin, M., Sahebjam, S., Peeri, N. C., Martinez, Y. C., Thompson, Z., & Egan, K. M. (2019). Medical cannabis use in glioma patients treated at a comprehensive cancer center in Florida. *Journal of Palliative Medicine*, *22*(10), 1202–1207. https://doi.org/10.1089/jpm.2018.0528

Reid. (2020). A qualitative review of cannabis stigmas at the twilight of prohibition. *Journal of Cannabis Research*, *2*(1), 46–46. https://doi.org/10.1186/s42238-020-00056-8

Rosenbaum J, & Lidz CW (2007). Maximizing the results of internet surveys. *Psychiatry Information in Brief* 2010;4(2):1017. https://doi.org/10.7191/pib.1017. Retrieved from https://escholarship.umassmed.edu/pib/vol4/iss2/1

Saadeh, C. E., & Rustem, D. R. (2018). Medical marijuana use in a community cancer center. *Journal of Oncology Practice*, *14*(9), e566–e578. https://doi.org/10.1200/JOP.18.00057

Sallan, S. E., Zinberg, N. E., & Frei, E., 3rd (1975). Antiemetic effect of delta-9-tetrahydrocannabinol in patients receiving cancer chemotherapy. *The New England Journal of Medicine*, *293*(16), 795–797. https://doi.org/10.1056/NEJM197510162931603

Stacey, D., Graham, I. D., O'Connor, A. M., & Pomey, M. P. (2005). Barriers and facilitators influencing call center nurses' decision support for callers facing values-sensitive decisions: A mixed methods study. *Worldviews on Evidence-Based Nursing*, *2*(4), 184–195. https://doi.org/10.1111/j.1741-6787.2005.00035.x

Stacey, D. (2006). The Ottawa Hospital Research Institute. (2006). Factors influencing health professionals providing support for patients preparing to make health decisions: A survey tool. Retrieved 15 October 2021, from https://decisionaid.ohri.ca/docs/implement/Pract-DS-Needs_Values.pdf

Stacey, D., Carley, M., Ballantyne, B., Skrutkowski, M., Whynot, A., & Pan-Canadian Oncology Symptom Triage and Remote Support COSTaRS Team (2015). Perceived factors influencing nurses' use of evidence-informed protocols for remote cancer treatment-related symptom management: A mixed methods study. *European Journal of Oncology Nursing*, *19*(3), 268–277. https://doi.org/10.1016/j.ejon.2014.11.002

Stacey, D. (2020). The Ottawa Hospital Research Institute & University of Ottawa. The pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) project. https://ktcanada.ohri.ca/costars/COSTaRS_Practice_Guides_ENGLISH_Jan2020.pdf

Stacey, D., Carley, M., & Newton, J. (2020). Pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) practice guides - What's changed in version 2020?. *Canadian Oncology Nursing Journal*, *30*(4), 269–276. https://doi.org/10.5737/23688076304269276

Waissengrin, B., Urban, D., Leshem, Y., Garty, M., & Wolf, I. (2015). Patterns of use of medical cannabis among Israeli cancer patients: A single institution experience. *Journal of Pain*

and Symptom Management, *49*(2), 223–230. https://doi.org/10.1016/j.jpainsymman.2014.05.018

Zylla, D., Steele, G., Eklund, J., Mettner, J., & Arneson, T. (2018). Oncology clinicians and the Minnesota medical cannabis program: A survey on medical cannabis practice patterns, barriers to enrollment, and educational needs. *Cannabis and Cannabinoid Research*, *3*(1), 195–202. https://doi.org/10.1089/can.2018.0029

Chapter Four

Integrated Discussion

Integrated Discussion and Conclusion

The purpose of this chapter is to summarize findings from the narrative literature review conducted to synthesize the evidence on health care professionals' attitudes and current practices on using cannabis to treat patients' chemotherapy-induced nausea (CIN) (chapter two) and the results from a survey to determine factors influencing Canadian oncology nurses discussing cannabis use with patients experiencing CIN. Then, I will discuss the findings within the broader literature and the implications for advanced practice nurses (APNs) with a specific focus on the domains of clinical practice, education, and research.

Summary of Thesis

Chapter two was a narrative literature review study to synthesize the evidence on health care professionals' attitudes and current practices on using cannabis for patients experiencing CIN. Four databases were searched: CINAHL, Medline, Embase, and PsycInfo in March 2021. After screening, 12 articles were eligible for inclusion. The results showed that oncology patients were using cannabis to manage CIN and other treatment-related symptoms, and they were seeking information from health care professionals. Few health care professionals chose to prescribe or discuss cannabis use with patients. Factors influencing health care professionals' behaviours were lack of knowledge of cannabis, social stigma associated with cannabis use, and absence of standards on cannabis regarding its formulations, potency, and dosing. Few studies included nurses and in those that did the nurses' responses were not reported independently of the other health care professionals. Hence, little is known about nurses' approach to discussing cannabis with patients.

Chapter three was a survey conducted with Canadian oncology nurses with the goal to determine factors influencing them discussing cannabis use with patients experiencing CIN. This

survey focused on cannabis use for CIN given that studies show it is effective or likely effective in the treatment of CIN and cannabis is publicly available in Canada. Of over 800 oncology nurses were invited to participate, 25 responses were received. Although 11 correctly answered the knowledge question about the effectiveness of cannabis for CIN, respondents did not feel confident in providing guidance on cannabis for patients with CIN and 100% identified needing access to continuing education to learn more about providing guidance on the use of cannabis. In addition to nurses' lack of knowledge, other top barriers included social stigma and lack of guidance within the workplace. These barriers need to be addressed to create a supportive environment for nurses. Given, the small number of responses to the survey, it is unclear to what extent oncology nurses are discussing cannabis with patients experiencing CIN.

Integrated Discussion

Based on findings from the two studies conducted within this thesis, there are three main points for broader discussion: (1) although cannabis is legal, there is little guidance on its use for nurses, other health care professionals or patients; (2) clinical practice guidelines do not include enough information necessary for providing guidance on using publicly available (non-prescription) cannabis products to manage CIN; and (3) it appears as though most nurses have not been discussing cannabis with patients and barriers need to be overcome if they are to discuss it within their practice.

Although cannabis is legalized in Canada, there is little guidance on its use for CIN for nurses, other health care professionals or patients. In chapter two, I found that one of the reasons that health care professionals were not confident in discussing and recommending cannabis was the lack of regulations and guidance on the many formats of cannabis in publicly accessible stores. In chapter three, I found that a key barrier to nurses' not discussing cannabis

for CIN was the absence of guidance in the workplace. Nurses reported that they do not have clear instructions and proper guidance when being approached by patients with questions regarding using cannabis for CIN.

There are various formats of cannabis products in Canada, but the Compendium of Pharmaceuticals and Specialties (CPS) (2022), only has information on the cannabis product Nabilone related to its use in the management of CIN. Other formats available in Canada include fresh, dried, oil, plants, seeds, edible, and concentrates and these are all legally available in cannabis retail stores. The Cannabis Act categorized cannabis-containing products into three categories: cannabis for non-medical purposes, cannabis for medical purposes, and health products containing cannabis (Government of Canada (GoC), 2018). Only drugs under the second category need health care practitioners' authorization, and currently, two cannabis products fall under this category and are available for sale in Canada: Nabilone and Sativex (GoC, 2018). Other than these two forms of cannabis requiring prescription, all other forms of cannabis-containing products can be purchased by patients at licensed public vendors without health care practitioners' authorization and used by patients to self-medicate for CIN. However, the CPS, the key source of evidence-based information on drugs and health products in Canada, does not provide information on cannabis provided by public vendors. Therefore, health care professionals including nurses are currently lacking guidance from one of the most credible sources for medications that they have been trained to use.

Clinical practice guidelines do not have enough information necessary for providing guidance on using publicly available (non-prescription) cannabis products to manage CIN. In chapter three, most survey participants reported that they were familiar with The pan-Canadian *Oncology* Symptom Triage and Remote Support (COSTaRS) Practice Guides;

however, they still did not feel confident in providing guidance for patients. The COSTaRS Practice Guides listed cannabis/cannabinoids products as medications effective for CIN but did not provide detailed information such as its formats, dosages, routes, and side effects (Stacey, 2020). The reason specific doses were not provided is that they may be different from the actual dose prescribed (Stacey, 2017).

The National Comprehensive Cancer Network (NCCN) also suggested Nabilone be used for refractory and breakthrough nausea if standard treatment failed, and it also provided Nabilones' dosage, route, and frequency (NCCN, 2021). However, no information on Sativex was found. Similarly, guidelines from Cancer Care Ontario (CCO) and Oncology Nursing Society (ONS) do not have any detailed information about the usage of cannabis products, although they suggested that cannabis can be used after a trial with standard antiemetic medications for residual CIN (CCO, 2019; ONS, 2019). Although these guidelines outline the effectiveness of cannabis for CIN, they do not provide detailed information on its usage; therefore, nurses are not able to provide proper guidance for patients according to these guidelines.

Most nurses have not been discussing cannabis with patients and barriers need to be overcome if they are to discuss it within their practice. It was found from the narrative literature review that health care professionals were hesitant to discuss cannabis with patients (Chapter two). This finding is aligned with our survey results. As discussed in chapter three, only 25 survey responses from over 800 potential participants indicated that most oncology nurses are reluctant to participate in surveys regarding cannabis and therefore, it is likely that they have not been discussing cannabis with patients or they are reluctant to participate in research about this topic.

Cannabis, a medicinal plant that was recently legalized in Canada, is a new medication that is available for CIN but it falls outside of the traditional prescription or over-the-counter types of medications for CIN. In Canada, nurses may recommend over-the-counter (OTC) medications to patients for medical purposes, and some cannabis products can be considered OTC (GoC, 2018). OTC medications are medications that do not require a prescription (Sánchez-Sánchez et al., 2021). The College of Nurses of Ontario (CNO) allows nurses to recommend and administer OTC medications if nurses are accountable and comply with organizational policy (CNO, 2022). As well, the Cannabis Act does not restrict a nurse's ability to recommend cannabis to patients for medical purposes (Canadian Nurses Protective Society [CNPS], 2018). As a result, it is within nurses' scope of practice to recommend and provide guidance to patients on using cannabis and nursing practice needs to adapt to this change. Nurses in our study (Chapter three) indicated that there were many barriers influencing the reasons why they did not discuss cannabis despite it being within their scope of practice to discuss OTC products. According to the Ottawa Model of Research Use (OMRU), the steps following the identification of barriers are to implement strategies to overcome them and assess the outcomes (Graham et al., 2006; Graham & Logan, 2004).

Implications for Nursing

The results from my thesis have several implications for nursing, particularly for the role of Advanced Practice Nurses (APNs) (see Table 4.1). APNs are nursing experts with specialized and advanced nursing knowledge and skills in their own field of practice (Canadian Nurses Association (CNA), 2019). Their practice builds on six competencies as outlined by the CNA (2019): (1) direct comprehensive care, (2) health system optimization, (3) education, (4) research, (5) leadership, and (6) consultation and collaboration. I will discuss the study results of this thesis with implications for the following three main relevant competencies: direct comprehensive care, education, research, and leadership.

Table 4.1: Implications for APNs

APN Competency	Implications for APNs
1. Direct Comprehensive Care	• Routinely assess oncology patients' CIN • Explore non-pharmacologic and pharmacologic strategies including cannabis that oncology patients use to alleviate CIN • Refer to guidelines and resources for the proper use of cannabis for CIN [e.g., Second-line treatment for refractory CIN (NCCN, 2021)] • Monitor patients using cannabis for CIN for adverse effects
2. Education	• Identify existing educational tools and evidence-informed practice guidelines on the use of cannabis for CIN appropriate for their organization • Explore and participate in educational opportunities on cannabis for health care professionals (e.g., Certificate course: Understanding Cannabis in Clinical Practice provided by CNA) • Create training module or facilitate access to existing training about cannabis use for CIN for use within their organization
3. Research	• Conduct an interpretive descriptive qualitative research study using individual interviews to more deeply explore nurses' understandings and perceptions about discussing cannabis for CIN

	• Conduct an interpretive descriptive qualitative study using focus groups with interprofessional team consisted of nurses, oncologists, pharmacists, and allied health professionals to understand perceptions of other health care professionals about discussing cannabis for CIN • Quantitatively test interventions to overcome barriers interfering with nurses discussing cannabis with patients experiencing CIN
4. Leadership	• Advocate more support and guidance for nurses in the workplace • Advocate a safe and healthy work environment so that nurses feel supported when having discussions about cannabis with patients. • Advocate more educational opportunities and encourage nurses and other health care professionals to participate

Direct comprehensive care. APNs possess clinical experience in a specialized field of nursing (CNA, 2019). They utilize their unique clinical expertise to provide comprehensive and holistic care for patients and their families in collaboration with other members on the health care team. They also perform advanced assessment for patients in complex situations and develop intervention strategies to improve patients' health conditions (CNA, 2019).

APNs in oncology are specialized in managing cancer-related symptoms including CIN (Blakely & Cope, 2015). They collaborate with other health care professionals to deliver comprehensive and holistic care for patients to minimize the effect of CIN on patients' quality of life. When performing advanced assessments for patients, APNs need to review the current non-pharmacologic and pharmacologic strategies that the patient is using to manage CIN including other options such as cannabis, and this is particularly important when the conventional treatments were ineffective. Multiple clinical guidelines have recommended cannabis products to be used for CIN as a second-line treatment after standard antiemetic treatment has failed [Cancer Care Ontario, 2019; National Comprehensive Cancer Network (NCCN), 2021; Oncology Nursing Society, 2019]. APNs need to be aware of the level of evidence on the effectiveness of cannabis for CIN and refer to the proper resources and guidance if cannabis is considered to be

beneficial for patients. Although cannabis can be effective for CIN, there are side effects related to its use such as psychotic symptoms, severe dysphoric reactions, seizure, and urinary tract infection (Pratt et al., 2019). APNs need to monitor and be able to manage these side effects so that the benefits of cannabis for patients exceed the potential harms.

Education. APNs also play a significant role in learning and professional growth for all members of the health care team (CNA, 2019). They disseminate new knowledge and new research findings and coordinate educational programs for the team. APNs also identify the learning needs of the team and find or devise educational programs to meet their needs (CNA, 2019). This is particularly important for Canadian oncology nurses in my study (Chapter three) who identified the need for more training on the use of cannabis for CIN.

APNs need to identify existing educational tools and evidence-informed practice guidelines on the use of cannabis for CIN appropriate for use within their organization. They can help develop educational programs to disseminate new research findings on the effectiveness of cannabis for CIN. Cannabis was recently legalized for public access in Canada and more patients are inquiring about using cannabis to manage symptoms (Hawley et al., 2020). Therefore, APNs need to ensure nursing and allied health professionals are aware of the level of evidence on the effectiveness of cannabis for CIN, and they also need to be aware of the educational opportunities from credible sources and coordinate educational programs for the team to participate. For example, the CNA offers a certificate course: Progress for Understanding Cannabis in Clinical Practice. This course consists of four modules and is designed to give learners an introduction to cannabis' social-economic background and working mechanism on the human body. It also summarizes health conditions that cannabis is effective for including CIN as well as clinical scenarios that health care professionals may encounter related to patients'

cannabis use. The course costs $5 and is open to people who have an account with CNA. It is self-paced, and each module takes about 30 minutes to complete.

As well, APNs can actively participate in creating training modules and devising practice guidelines regarding using cannabis for CIN. Research showed that health care professionals do not have enough knowledge on the level of evidence on the effectiveness of cannabis for CIN, and they are not familiar with the policy and process of prescribing or recommending cannabis (Oldfield et al., 2020; Panozzo et al., 2019). Through developing training modules and practice guidelines, APNs make a significant contribution to supporting other health care professionals to gain knowledge as well as clarifying the process and policy around cannabis use for them.

Research. APNs are "committed to generating, synthesizing, critiquing, and applying research evidence" (CNA, 2019, p. 32). This commitment includes conducting research. APNs are qualified and well positioned in the health care system to serve as the primary investigator to improve the quality of patient care.

This thesis aimed to have a general understanding of nurses' perceptions about discussing cannabis with patients experiencing CIN. For future research, APNs can conduct an interpretive descriptive (ID) qualitative research study with individual interviews to more deeply explore nurses' understandings and perceptions about discussing cannabis for CIN. The method of ID allows researchers to identify and describe themes and patterns of the research participants through investigating a clinical phenomenon (Hunt, 2009). APNs can also lead an ID qualitative research using focus groups to further explore other health care professionals' perceptions. The group can consist of the interprofessional health care team including nurses, oncologists, pharmacists, and allied health care professionals. The focus group method can be used because it preserves an individual's lived experience as well as inspires new perspectives through

encouraging dialogues and discussion in the group (Bradbury-Jones et al., 2009). Additionally, I found in chapter three that the top three barriers to nurses' discussing cannabis use were social stigma, nurses' lack of knowledge, and lack of guidance within the workplace. APNs can lead research that aims to quantitatively test interventions to overcome these barriers. APNs could also participate in research to test therapeutic properties of all forms of cannabis.

Leadership. APNs are leaders (CNA, 2019). They are change advocates and always seeking opportunities to improve the quality of patient care. They are able to "identify problems and initiate change to address challenges at the clinical, organizational or system level" (CNA, 2019, p. 33).

In chapter three, our survey results revealed that nurses are facing barriers at the organizational level such as lacking support and guidance in the workplace when discussing cannabis use with patients experiencing CIN. Some participants specifically stated that they did not have permission or encouragement from employers to discuss cannabis. APNs can advocate more support and guidance for nurses at the workplace. Specifically, they can advocate a safe and healthy work environment so that nurses feel supported when having discussions about cannabis with patients. APNs can also advocate for more educational opportunities on cannabis at the workplace and encourage nurses and other health care professionals to participate.

Conclusion

This thesis aimed to determine factors influencing oncology nurses discussing cannabis use with patients experiencing CIN. Guided by the OMRU, two studies were performed. The narrative literature review in chapter two suggested that health care professionals lacked knowledge of cannabis and they were not confident in discussing cannabis with patients. The survey conducted with oncology nurses indicated similar results and the top three barriers to discussing cannabis identified by survey participants were social stigma, nurses' lack of knowledge, and lack of guidance within the workplace. The thesis findings suggested that nurses need more educational opportunities and guidance on discussing cannabis with patients. According to OMRU, the next step would be to design interventions to overcome identified barriers.

References

Ananth, P., Ma, C., Al-Sayegh, H., Kroon, L., Klein, V., Wharton, C., Hallez, E., Braun, I., Michelson, K., Rosenberg, A. R., London, W., & Wolfe, J. (2018). Provider perspectives on use of medical marijuana in children with cancer. *Pediatrics*, *141*(1), e20170559. https://doi.org/10.1542/peds.2017-0559

Blakely, K., & Cope, D. G. (2015). Establishing an Advanced Practice Nursing Clinic in the Cancer Setting. *Seminars in Oncology Nursing*, *31*(4), 282–289. https://doi.org/10.1016/j.soncn.2015.08.004

Bradbury-Jones, C., Sambrook, S., & Irvine, F. (2009). The phenomenological focus group: an oxymoron? *Journal of Advanced Nursing*, *65*(3), 663–671. https://doi.org/10.1111/j.1365-2648.2008.04922.x

Canadian Nurses Association. (2019). Advanced practice nursing: A pan- Canadian framework. Retrieved from https://hl-prod-ca-oc-download.s3-ca-central-1.amazonaws.com/CNA/2f975e7e-4a40-45ca-863c-5ebf0a138d5e/UploadedImages/documents/Advanced_Practice_Nursing_framework_EN.pdf

Canadian Nurses Protective Society. (2018). Access to cannabis for medical purposes: What every nurse should know. https://cnps.ca/article/access-to-cannabis-for-medical-purposes-what-every-nurse-should-know/#general

Cancer Care Ontario. (2019). 2019 Antiemetic Recommendations for Chemotherapy-Induced Nausea and Vomiting: A Clinical Practice Guideline. Retrieved 27 July 2022, from https://www.cancercareontario.ca/en/file/49571/download?token=d3biqzP1

College of Nurses of Ontario. (2022). Recommending Over-the-counter Medications. Retrieved from https://www.cno.org/en/learn-about-standards-guidelines/educational-tools/ask-practice/recommending-otc-medications/

Compendium of pharmaceuticals and specialties. (2022). Canadian Pharmacists Association

Drosdowsky, A., Blaschke, S., Koproski, T., Fullerton, S., Thakerar, A., Ellen, S., Phipps-Nelson, J., & de Neef, C. (2020). Cancer patients' use of and attitudes towards medicinal cannabis. *Australian Health Review*, *44*(4), 650–655. https://doi.org/10.1071/AH19066

Government of Canada. (2018, July). *Health products containing cannabis or for use with cannabis: Guidance for the Cannabis Act, the Food and Drugs Act, and related regulations.* https://www.canada.ca/content/dam/hc-sc/documents/services/drugs-health-products/drug-products/applications-submissions/guidance-documents/cannabis-health-products-guidance-eng(2).pdf

Graham, I. D., & Logan, J. (2004). Innovations in knowledge transfer and continuity of care. *The Canadian Journal of Nursing Research*, *36*(2), 89–103.

Graham, I. D., Logan, J., Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: time for a map?. *The Journal of continuing education in the health professions*, *26*(1), 13–24. https://doi.org/10.1002/chp.47

Hawley, P., & Gobbo, M. (2019). Cannabis use in cancer: A survey of the current state at BC Cancer before recreational legalization in Canada. *Current Oncology*, *26*(4), e425–e432. https://doi.org/10.3747/co.26.4743

Hawley, P., Gobbo, M., & Afghari, N. (2020). The impact of legalization of access to recreational Cannabis on Canadian medical users with Cancer. *BMC Health Services Research*, *20*(1), 977–977. https://doi.org/10.1186/s12913-020-05756-8

Hunt, M. (2009). Strengths and challenges in the use of interpretive description: Reflections arising from a study of the moral experience of health professionals in humanitarian work. *Qualitative Health Research*, *19*(9), 1284–1292. https://doi.org/10.1177/1049732309344612

Macari, D. M., Gbadamosi, B., Jaiyesimi, I., & Gaikazian, S. (2020). Medical cannabis in cancer patients: A survey of a community hematology oncology population. *American Journal of Clinical Oncology*, *43*(9), 636–639. https://doi.org/10.1097/COC.0000000000000718

National Comprehensive Cancer Network. (2021). NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) Antiemesis. Retrieved 7 October 2021, from https://www.nccn.org/professionals/physician_gls/pdf/antiemesis.pdf

Oldfield, K., Eathorne, A., Tewhaiti-Smith, J., Beasley, R., Semprini, A., & Braithwaite, I. (2020). Experiences, patient interactions and knowledge regarding the use of cannabis as a medicine in a cohort of New Zealand doctors in an oncology setting. *Postgraduate Medical Journal*, postgradmedj-2020-139013. Advance online publication. https://doi.org/10.1136/postgradmedj-2020-139013

Oncology Nursing Society. (2019). Cannabis/Cannabinoids. Retrieved 18 October 2021, from https://www.ons.org/CannabisCannabinoids?topic=761&display=pepnavigator&sort_by=created&items_per_page=50.

Panozzo, S., Le, B., Collins, A., Weil, J., Whyte, J., Barton, M., Coperchini, M., Rametta, M., & Philip, J. (2020). Who is asking about medicinal cannabis in palliative care?. *Internal Medicine Journal*, *50*(2), 243–246. https://doi.org/10.1111/imj.14732

Pratt, M., Stevens, A., Thuku, M., Butler, C., Skidmore, B., Wieland, L. S., Clemons, M., Kanji, S., & Hutton, B. (2019). Benefits and harms of medical cannabis: a scoping review of

systematic reviews. *Systematic Reviews*, *8*(1), 320–335. https://doi.org/10.1186/s13643-019-1243-x

Reblin, M., Sahebjam, S., Peeri, N. C., Martinez, Y. C., Thompson, Z., & Egan, K. M. (2019). Medical cannabis use in glioma patients treated at a comprehensive cancer center in Florida. *Journal of Palliative Medicine*, *22*(10), 1202–1207. https://doi.org/10.1089/jpm.2018.0528

Saadeh, C. E., & Rustem, D. R. (2018). Medical marijuana use in a community cancer center. *Journal of Oncology Practice*, *14*(9), e566–e578. https://doi.org/10.1200/JOP.18.00057

Sánchez-Sánchez, E., Fernández-Cerezo, F. L., Díaz-Jimenez, J., Rosety-Rodriguez, M., Díaz, A. J., Ordonez, F. J., Rosety, M. Á., & Rosety, I. (2021). Consumption of over-the-counter drugs: Prevalence and type of drugs. *International Journal of Environmental Research and Public Health*, *18*(11), 5530. https://doi.org/10.3390/ijerph18115530

Stacey, D. (2020). The Ottawa Hospital Research Institute & University of Ottawa. The pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) project. https://ktcanada.ohri.ca/costars/COSTaRS_Practice_Guides_ENGLISH_Jan2020.pdf

Stacey, D. (2017). Brief Communication: The pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS)—Practice guides for symptom management in adults with cancer. *Canadian Oncology Nursing Journal*, *27*(1), 92-98. Retrieved from http://www.canadianoncologynursingjournal.com/index.php/conj/article/view/764/716

Waissengrin, B., Urban, D., Leshem, Y., Garty, M., & Wolf, I. (2015). Patterns of use of medical cannabis among Israeli cancer patients: A single institution experience. *Journal of Pain*

and Symptom Management, *49*(2), 223–230. https://doi.org/10.1016/j.jpainsymman.2014.05.018

Zylla, D., Steele, G., Eklund, J., Mettner, J., & Arneson, T. (2018). Oncology clinicians and the Minnesota Medical Cannabis Program: A survey on medical cannabis practice patterns, barriers to enrollment, and educational needs. *Cannabis and Cannabinoid Research*, *3*(1), 195–202. https://doi.org/10.1089/can.2018.0029

Appendices

Appendix A. Search Strategy Used for Databases

CINAHL:

S1: TI ("delta(9)-tetrahydrocannabinolic acid" or (cannabi* or dronabinol or ha?chi?ch$1 or hashis?h$1 or hash or mari#uana* or tetrahydrocannabi* or (tetrahydro N1 cannabi*) or THC)) OR AB ("delta(9)-tetrahydrocannabinolic acid" or (cannabi* or dronabinol or ha? chi?ch$1 or hashis?h$1 or hash or mari#uana* or tetrahydrocannabi* or (tetrahydro N1 cannabi*) or THC))
S2: (MH "Cannabis+") OR (MH "Cannabinoids+")
S3: (MH "Medical Marijuana")
S4: S1 OR S2 OR S3
S5: TI (neoplasm* or cancer* or mass or tumo* or sarcoma or oncolog*) OR AU (neoplasm* or cancer* or mass or tumo* or sarcoma or oncolog*)
S6: S4 AND S5
S7: TI (("HCP*" OR "HCW*" OR ((health OR healthcare OR nursing or medical or clinical or support or hospital) N1 (personnel or provider* or staff* or worker* or professional* or employee*)) OR (("health care") N1 (personnel or provider* or staff* or worker* or professional* or employee*)) OR "Caregiver*" OR "Nurse*" OR practitioner* OR clinician* OR specialist* OR therapist* OR doctor* OR physician* OR generalist* or "occupational health")) OR AB (("HCP*" OR "HCW*" OR ((health OR healthcare OR nursing or medical or clinical or support or hospital) N1 (personnel or provider* or staff* or worker* or professional* or employee*)) OR (("health care") N1 (personnel or provider* or staff* or worker* or professional* or employee*)) OR "Caregiver*" OR "Nurse*" OR practitioner* OR clinician* OR specialist* OR therapist* OR doctor* OR physician* OR generalist* or "occupational health"))
S8: (MH "Health Personnel") OR (MH "Allied Health Personnel") OR (MH "Expert Clinicians+") OR (MH "Medical Staff+") OR (MH "Novice Clinicians+") OR (MH "Nurses+") OR (MH "Physicians") OR (MH "Oncologists") OR (MH "Physicians, Family") OR (MH "Radiation Oncologists") OR (MH "Surgeons")
S9: S7 OR S8
S10: S6 AND S9

Medline:

1 exp cannabinoids/ or cannabis/ or "marijuana abuse"/ or exp "marijuana use"/ or "medical marijuana"/ or "cannabinoid receptor agonists"/ or "marijuana abuse"/ (31284)
2 "delta(9)-tetrahydrocannabinolic acid".mp. (125)
3 (cannabi* or dronabinol or ha?chi?ch$1 or hashis?h$1 or hash or mari#uana* or tetrahydrocannabi* or (tetrahydro adj cannabi*) or THC).ti,ab,kf. (53430)
4 1 or 2 or 3 (57340)
5 (neoplasm* or cancer* or mass or tumo* or sarcoma or oncolog*).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (5171893)
6 4 and 5 (6918)

7 ("HCP*" or "HCW*" or ((health or healthcare or nursing or medical or clinical or support or hospital) adj1 (personnel or provider* or staff* or worker* or professional* or employee*)) or ("health care" adj1 (personnel or provider* or staff* or worker* or professional* or employee*)) or "Caregiver*" or "Nurse*" or practitioner* or clinician* or specialist* or therapist* or doctor* or physician* or generalist* or "occupational health").ti,ab. (1432538)
8 "Health Personnel"/ (47297)
9 7 or 8 (1447741)
10 6 and 9 (363)
11 limit 10 to (english language and humans) (268)

Embase:

1 exp cannabinoids/ or cannabis/ or "marijuana abuse"/ or exp "marijuana use"/ or "medical marijuana"/ or "cannabinoid receptor agonists"/ or "marijuana abuse"/ (82189)
2 "delta(9)-tetrahydrocannabinolic acid".mp. (89)
3 (cannabi* or dronabinol or ha?chi?ch$1 or hashis?h$1 or hash or mari#uana* or tetrahydrocannabi* or (tetrahydro adj cannabi*) or THC).ti,ab. (72248)
4 1 or 2 or 3 (96854)
5 (neoplasm* or cancer* or mass or tumo* or sarcoma or oncolog*).mp. (7243058)
6 4 and 5 (14189)
7 ("HCP*" or "HCW*" or ((health or healthcare or nursing or medical or clinical or support or hospital) adj1 (personnel or provider* or staff* or worker* or professional* or employee*)) or ("health care" adj1 (personnel or provider* or staff* or worker* or professional* or employee*)) or "Caregiver*" or "Nurse*" or practitioner* or clinician* or specialist* or therapist* or doctor* or physician* or generalist* or "occupational health").ti,ab. (1982667)
8 "Health Personnel"/ (145897)
9 7 or 8 (2039370)
10 6 and 9 (991)
11 limit 10 to (human and english language and article) (403)
12 limit 11 to abstracts (394)

PsycInfo

1 exp cannabinoids/ or cannabis/ or "marijuana abuse"/ or exp "marijuana use"/ or "medical marijuana"/ or "cannabinoid receptor agonists"/ or "marijuana abuse"/ (11171)
2 "delta(9)-tetrahydrocannabinolic acid".mp. (1)
3 (cannabi* or dronabinol or ha?chi?ch$1 or hashis?h$1 or hash or mari#uana* or tetrahydrocannabi* or (tetrahydro adj cannabi*) or THC).ti,ab. (26220)
4 1 or 2 or 3 (26813)
5 (neoplasm* or cancer* or mass or tumo* or sarcoma or oncolog*).mp. (147195)
6 4 and 5 (737)
7 ("HCP*" or "HCW*" or ((health or healthcare or nursing or medical or clinical or support or hospital) adj1 (personnel or provider* or staff* or worker* or professional* or employee*)) or ("health care" adj1 (personnel or provider* or staff* or worker* or professional* or employee*))

or "Caregiver*" or "Nurse*" or practitioner* or clinician* or specialist* or therapist* or doctor* or physician* or generalist* or "occupational health").ti,ab. (519821)
8 "Health Personnel"/ (17686)
9 7 or 8 (524305)
10 6 and 9 (77)

Appendix B. Checklist for Reporting Results of Internet E-Surveys (CHERRIES) Guideline

Checklist Item	
Survey design	**P. iii: Abstract** **P. 36: Design** "A descriptive, cross-sectional observational study was conducted" **P. 38: Sampling and Procedure** "CANO head office sent invitations to members to complete the survey within their regular weekly newsletter emails." "The oncology nurse educator voluntarily sent one invitation by email to oncology nurses in Eastern Ontario."
Institutional Review Board (IRB) approval and informed consent process	**P. 36: Design** "Ethical approval was obtained from the University of Ottawa Health Sciences and Science Research Ethics Board." **P. 38: Sampling and Procedure** "Those answering 'Yes' were instructed to read the consent form and proceed with the questionnaire." "Participants were assured of the anonymous and voluntary nature of the survey"
Data protection	**P. 38: Sampling and Procedure** "SurveyMonkey® recorded participant's IP address to make sure no repeated attempts were made […]" "SurveyMonkey® deletes the IP addresses 13 months after the survey is conducted." "Deidentified data was downloaded from SurveyMonkey® and stored in a secured password-protected personal computer of the author (TX) and the co-researchers of this study."
Development and testing	**P. 37: Measurement Instrument** "The survey included the barriers survey based on the OMRU, a knowledge test question on the effectiveness of cannabis for CIN, and demographic questions" "All authors of this research and a med-surge RN tested the adapted survey"
Open survey versus closed survey	**P. 38: Sampling and Procedure** "CANO head office sent invitations to members to complete the survey within their regular weekly newsletter emails."

	"The oncology nurse educator voluntarily sent one invitation by email to oncology nurses in Eastern Ontario."
Contact mode	**P. 38: Sampling and Procedure** "CANO head office sent invitations to members to complete the survey within their regular weekly newsletter emails." "The oncology nurse educator voluntarily sent one invitation by email to oncology nurses in Eastern Ontario."
Advertising the survey	**P. 38: Sampling and Procedure** "CANO head office sent invitations to members to complete the survey within their regular weekly newsletter emails." "Survey information was also advertised on CANO's social media accounts Facebook, Twitter, and Instagram" "The oncology nurse educator voluntarily sent one invitation by email to oncology nurses in Eastern Ontario."
Web and context	**P. 38: Sampling and Procedure** "The survey was administered as an online questionnaire through SurveyMonkey®, an online survey site." "Nurses received the invitation included a statement of the research purpose, instructions, deadline, and the link to SurveyMonkey®."
Mandatory/voluntary	**P. 38: Sampling and Procedure** "Participants were assured of the anonymous and voluntary nature of the survey."
Incentives	**P. 38: Sampling and Procedure** "There were no incentives offered for participating in this study"
Time/date	**P. 40: Results** "The survey was sent to 678 CANO members on February 8, 2022, with reminders sent on February 22, March 8, and March 22. In addition, 131 oncology nurses in Eastern Ontario, some of whom would have been CANO members, received an invitation from the nurse educator at The Ottawa Hospital through email on April 1, 2022"
Randomization of questionnaires	N/A
Adaptive questioning	N/A
Number of items/ Number of screens (pages)	**P. 38: Sampling and Procedure**

	"When placed in SurveyMonkey, there were a maximum of five questions per page for a total of 22 questions in six pages."
Completeness check	N/A
Review step	**P. 38: Sampling and Procedure** "Participants were able to review and change their answers while taking the survey and each participant was only allowed to attempt the survey once."
Unique site visitor	**P. 38: Sampling and Procedure** "[…] each participant was only allowed to attempt [the survey] once." "SurveyMonkey® recorded participant's IP address to make sure no repeated attempts were made […]"
View rate	N/A
Participation rate	**P. 40: Results** "Participation rate (recruitment rate) was 86.2% […]"
Completion rate	**P. 40: Results** "Completion rate was 84.0% […]"
Cookies used	N/A
IP check	**P. 38: Sampling and Procedure** "SurveyMonkey® recorded participant's IP address to make sure no repeated attempts were made […]"
Log file analysis	N/A
Registration	N/A
Handling of incomplete questionnaires	**P. 40: Results** "Twenty-one participants fully completed and 4 partially completed the survey; all data were analyzed"
Questionnaires submitted with an atypical timestamp	N/A
Statistical correction	N/A

Appendix C. Adapted Survey

1. Within the last 2 years, have you worked in a position where you discuss symptom management with patients receiving chemotherapy?

- ☐ Yes, please proceed with question 2
- ☐ No, thank you for taking the time to answer this question

2. Have you ever discussed cannabis with a patient who is experiencing chemotherapy-induced nausea (CIN)?

- ☐ Yes,
- ☐ No,
- ☐ Do not remember,
- ☐ Prefer not to answer,

Items	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
3. The use of cannabis is acceptable for patients experiencing CIN					
4. Discussing cannabis use for CIN is simple.					
5. Discussing cannabis for CIN is too complex					
6. Cannabis is not applicable to a sizeable proportion of patients.					
7. I need to enhance my knowledge about providing guidance on the use of cannabis for patients experiencing CIN					

8. I feel confident in my ability to provide guidance on the use of cannabis for patients experiencing CIN					
9. I have access to good* resources to provide guidance on use of cannabis for patients experiencing CIN (* understandable, evidence-based, accurate, up-to-date, balanced information on benefits and harms, non-biased)					
10. For patients experiencing CIN, I feel confident in providing guidance on the steps for using cannabis					
11. There are too few patients asking about cannabis for CIN for me to develop my skills					
12. I find it difficult to recognize patients having difficulty finding guidance on using cannabis to manage CIN					

13. I am familiar with the pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) practice guides					
14. I am sensitive to the influence that my personal preferences can have on patients					
15. I received enough training to provide guidance on use of cannabis for patients experiencing CIN					
16. I need to participate in continuing education about providing guidance on use of cannabis for patients experiencing CIN					
17. I need to enhance my ability to support patients in handling conflicting views from significant others about using cannabis to manage CIN					
18. There is clear direction within the program that I need to answer patient's questions about use of cannabis for CIN					
19. What is the current evidence on use of cannabis for CIN? □ Effective □ Likely effective □ Expert opinion					

☐ Not effective ☐ Unknown effectiveness ☐ Not sure
20. What are three (3) barriers to nurses in Canada providing guidance on cannabis use for patients experiencing CIN? 1. 2. 3.
21. What are three (3) enablers that make it easier for Canadian nurses to provide guidance on use of cannabis for patients experiencing CIN? 1. 2. 3.
22. Do you have any further comments, questions or suggestions?
Please tell us a little about yourself…
I. What is your nursing role in Canada? ☐ RN (registered nurse) ☐ LPN (licensed practical nurse)/PRN (registered practical nurse) ☐ NP (licensed nurse practitioner) ☐ Advanced Practice Nurse (educator, clinical nurse specialist) ☐ Other role, please specify_____
II. Are you currently working:

□ Full-time □ Regular part-time (FTE) □ Casual □ Prefer not to answer
III. Your age range? □ Under 30 □ 30- 39 □ 40-49 □ 50-59 □ 60 and older □ Prefer not to answer
IV. Your sex at birth □ Female □ Male □ Prefer not to answer
V. Your gender □ Woman □ Man □ Non-binary □ Prefer not to answer □ Don’t have an option that applies to me. I identify as (please specify)
VI. Your highest grade or level of education completed:

- College diploma
- Undergraduate university degree
- Graduate university degree
- Nurse Practitioner (NP) diploma/degree
- Other

VII. How long have you been working as a nurse in Canada?

- Less than 2 years
- 2 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 20 to 25 years
- 26 to 30 years
- More than 30 years

Appendix D. Letter of Invitation

Subject:

Questionnaire: Understanding Factors Influencing Canadian Oncology Nurses' Discussing Cannabis Use with Patients Experiencing Chemotherapy – induced Nausea

Body:

To CANO members,

My name is Tiffany (Tianhao) Xiao, and I'm a student studying in the Master of Science in Nursing at the University of Ottawa. I'm currently conducting a survey for my thesis about factors influencing oncology nurses' discussing cannabis use with patients experiencing chemotherapy-induced nausea.

Cannabis has been legalized in Canada since October 17, 2018. But little is known about oncology nurses' approach to discussing cannabis to manage chemotherapy-induced nausea with patients. I invite you to participate as your voice is of great importance to my research. Nurses are the backbone of the Canadian health care system, and we want to explore any barriers and enablers nurses encounter in their practice.

The link to SurveyMonkey for this questionnaire is https://www.surveymonkey.ca/r/ZQS7MD3. After clicking the link, there will be a question to screen your eligibility, then you will be directed to read and sign the consent form. After signing the form, you will see the questionnaire which is consisted of 22 questions and will take you about 15 minutes to complete. The deadline is **February 28th**.

If you have any questions or concerns, please do not hesitate to reach out to me or my supervisor Dr. Dawn Stacey. I would like to thank you in advance for your participation.

Appendix E. Consent Form

Title of the study: Understanding Factors Influencing Canadian Oncology Nurses' Discussing Cannabis Use with Patients Experiencing Chemotherapy – induced Nausea

Researcher: Tianhao (Tiffany) Xiao RN, BScN, School of Nursing, Faculty of Health Science, University of Ottawa
Supervisor: Dawn Stacey RN, PhD, CON(C), FCAHS, FCAN, FAAN, Full Professor, School of Nursing, University of Ottawa

I am invited to take part in this research study as part of Tiffany Xiao's Master's thesis. The aim of the study is to understand factors influencing Canadian nurses' discussing cannabis use with patients who have nausea from chemotherapy. My participation will help to identify the factors so that further research can create and test enablers for better supporting these nurses. I will be asked to complete a 15-minute survey with questions about my attitudes, knowledge, and practice on cannabis. Some questions may make me feel less comfortable to answer. But the information I share will be treated with a non-judgemental manner.

The survey results will be used only for the aim of this study. The survey is anonymous as no names or other personal identifiers will be asked. I am aware that my confidentiality will be protected because no personal identifying data will be collected and the data will only be available to the research team (the researcher, the supervisor, and the thesis advisory committee). To lower the risk of security breaches and help ensure my confidentiality, I am advised to sign out of my account, close my browser and lock my screen or device when I am no longer using them and when I have completed the survey.

The de-identified survey results will be kept in the researcher's and supervisor's personal locked computers in a locked file. The data will be kept for 5 years after the study is published and then destroyed.

I am under no obligation to take part in this survey. If I choose to participate, I can withdraw at any time and/or refuse to answer any questions, without any consequences. However, If I choose to withdraw after submitting the survey, the data cannot be withdrawn or deleted due to the anonymous nature of the study.

By clicking "I consent" below, I am providing my consent to participate in this study and will be directed to the survey.

I consent

Please print/save a copy of this consent information for your records.
If I have any questions about the study, I may contact the researcher or her supervisor.

If I have any questions regarding the ethical conduct of this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5

Tel.: (613) 562-5387

Email: ethics@uottawa.ca

Appendix F. Timeline

Research Activities	2021		2022			
	November	December	January	February/ March/ April	May/ June/ July	August/ September
Ethical approval	*	*				
Contact CANO		*	*			
Send out survey				*		
Send out reminders				*		
Data collection				*		
Data analysis					*	
Drafting article					*	
Drafting thesis					*	*
Final thesis						*
Submit article for publication						*