

**Evaluating the Effectiveness of Registered Nurse-led Chronic Pain Self-
Management Program within a Primary Care Facility**

METASEBIA ASSEFA

Interdisciplinary Health Science
Faculty of Health Sciences
University of Ottawa

Supervising Professor:

Dr. Raywat Deonandan, Faculty of Health Sciences

Thesis submitted to the University of Ottawa
in partial Fulfillment of the requirements for the
Masters of Science in Interdisciplinary Health Sciences

Date: April 9th, 2019

© Metasebia Assefa, Ottawa, Canada, 2019

ACKNOWLEDGEMENT

My journey at the University of Ottawa has been a fulfilling one both academically and personally. I feel very blessed to have had the opportunity to live in such a wonderful city that allowed me to connect with so many amazing individuals. I would like to start off by thanking my supervisor, Dr. Deonandan for his mentorship. My venture into a project that involved both quantitative and qualitative methods required a lot of guidance and I am grateful to Dr. Deonandan for his continued support and confidence in me.

I would also like to thank members of my Thesis Advisory Committee- Dr. Muggah, Dr. Finestone and Dr. Konkle for providing constructive feedback through the process. I would also like to extend a special thank you to Mrs. Isabelle Leclerc (RN). Without her passion, commitment, and positive attitude none of this would have been possible. Overall, I feel lucky to have had such a wonderful group of people who not only worked endlessly to make all this possible but also provided an enjoyable working environment with a lot of laughter and fruitful discussions.

I would also like to thank all the individuals who participated in our survey. Their opinions and lived experiences were very valuable for this project and I am very grateful for their time and input. My thanks also extend to the Bruyère Continuing Care Hospital for their cooperation and support with my research.

I would also like to thank my friends, who were always there to pick me up when I was down. Thank you for listening, for offering your invaluable advice, and for all your well wishes and prayers. You are all such wonderful people and I am gratefully indebted to each and every one of you.

Finally, I want to thank my family- most especially my beloved parents for providing me with unfailing support, endless love and continuous encouragement. This accomplishment would have not been possible without you. You mean the world to me.

LIST OF ABBREVIATIONS

ASMP	Arthritis Self-Management Program
BPI	Brief Pain Inventory
CCM	Chronic Care Model
CDPMF	Chronic Disease Prevention and Management Framework
CDSMP	the Chronic Disease Self-Management Program
CI	Confidence Interval
CNCP	Chronic Non-Cancer Pain
CP	Chronic Pain
CPP	Cumulative Patient Profile
ECCM	Expanded Chronic Care Model
EMR	Electronic Medical Record
FHT	Family Health Teams
HQO	Health Quality Ontario
IASP	International Association for the Study of Pain
MCID	Minimum Clinically Important Difference
MEQ	Morphine Equivalence Quotient
MME	Morphine Milligram Equivalent
NRS	Numerical Rating Score
PETD	Patient Explanation Treatment Diagram
RN	Registered Nurse
SMS	Self-management support
SPSS	Statistical Package for Social Sciences
SWOT	Strength Weakness Opportunities and Threats

ABSTRACT

Self-management support (SMS) is considered an effective approach to chronic pain (CP) management. However, the provision of SMS for chronic pain patients faces challenges within primary care facilities in Ontario. An innovative SMS program led by a Registered Nurse (RN) at the Bruyère Family Health Team in Ottawa has been created for chronic pain patients. The goal of this program is to improve the current chronic pain management using SMS in an outpatient facility by harnessing the skills of primary health care team members. The hope would be that this program could be spread and scaled across other programs in the region.

This thesis exists in two parts:

1. Evaluate the RN-led chronic pain self-management program to determine its effectiveness in terms of self-reported pain scales and Morphine Equivalence Quotient (MEQ)
2. Understand the perspectives of health care practitioners, administrators and patients within the RN-led chronic pain self-management program

Patients meet with the RN for initial face-to-face visit for an hour, for SMS and then for at least one follow up visit. The primary outcome variables of interest were their self-reported pain evaluated using validated pain scales. Opioid use was also assessed before and after the program based on the MEQ. Results were analyzed using SPSS version 20. An online questionnaire was distributed to team members. All responses were conceptually arranged into a SWOT analysis, which will be directed toward the ongoing management needs of the clinic.

Between January 2016 and August 2018, 125 patients were seen of these 58 patients (12 males and 46 females) had at least one follow up appointment with the RN. In 46.2% of the population there was a decrease in their total opioid dose from their first to their last appointment and of these

4 patients (15.4%) had a daily MEQ of 0 by their last appointment. There was a significant average difference between patient's daily MEQs at their first and last appointment ($t_{20} = 2.245$, $p < 0.05$). On average patients came into their first appointment with a daily MEQ of 23.88 higher than at their last visit (95% CI [1.69, 46.07]).

Staff and patients who participated in the online survey identified the following strengths: multidisciplinary approach, increased accessibility for patients, cost effectiveness, better patient engagement, and no refills of opioids

Canada needs a better strategy to manage the CP epidemic. This chronic pain self-management program led by an RN focuses on a multidisciplinary approach that is readily accessible to patients and integrated within primary care to best meet and prioritize the needs of chronic pain patients.

Keywords: chronic pain; self-management; nurse-led

TABLE OF CONTENTS

ACKNOWLEDGEMENT	II
LIST OF ABBREVIATIONS	III
ABSTRACT	IV
1 BACKGROUND	1
1.1 WHY FOCUS ON CHRONIC NON-CANCER PAIN (CNCNP)?	1
1.2 WHY USE SELF-MANAGEMENT SUPPORT (SMS)?	5
1.3 RATIONALE OF SELF-MANAGEMENT FOCUSED MODEL: THEORETICAL PERSPECTIVES	5
1.4 COMMONLY USED SELF-MANAGEMENT PROGRAMS	9
1.5 BARRIERS IN MANAGEMENT OF CP WITHIN PRIMARY CARE	12
1.5.1 TRAINING AND SUPPORT	12
1.5.2 WAITING TIMES	15
1.5.3 SYSTEM LEVEL CHALLENGES	17
2 HYPOTHESIS	23
3 OBJECTIVES	25
4 RESEARCH DESIGN AND METHODS	25
4.1 INTERVENTION	25
4.1.1 PARTICIPANT IDENTIFICATION	26
4.1.2 PROGRAM ELEMENTS	26
4.1.3 1ST APPOINTMENT	27
4.1.4 FOLLOW-UP APPOINTMENT	28
5 RESEARCH ETHICS	30
6 DATA ANALYSIS	30
6.1 SECONDARY DATA ANALYSIS	30
6.1.1 ANALYSIS	30
6.1.2 HYPOTHESES	31
6.1.3 MEASURES- OUTCOME VARIABLES	31
6.2 PRIMARY DATA COLLECTION	31
6.2.1 DESIGN AND SURVEY INSTRUMENT	31

6.2.2	SETTING	32
6.2.3	PARTICIPANT RECRUITMENT AND SAMPLING	32
6.2.4	STRENGTH WEAKNESS OPPORTUNITIES AND THREATS (SWOT) ANALYSIS	33
6.2.5	DATA ANALYSIS	37
7	RESULTS	38
7.1	SECONDARY DATA ANALYSIS:	38
7.1.1	PARTICIPANTS	38
7.2	OUTCOME MEASURES OF INTEREST:	41
7.3	PRIMARY DATA ANALYSIS	45
8	DISCUSSION	50
8.1	PRIMARY DATA ANALYSIS- DISCUSSION	56
8.2	SELF-MANAGEMENT AND SELF-MANAGEMENT SUPPORT	57
8.3	COLLABORATION	59
8.4	APPROACH OF CARE: HOLISTIC, PATIENT-CENTERED, AND CONTINUITY OF CARE	61
8.5	REGISTERED NURSE QUALITIES	63
8.6	COSTS	65
9	LIMITATIONS	67
10	CONCLUSION:	71
11	APPENDICES	74
	APPENDIX A: DIAGRAM OF THE “CHRONIC CARE MODEL”	74
	APPENDIX B: DIAGRAM OF “THE EXPANDED CHRONIC CARE MODEL”	75
	APPENDIX C: DIAGRAM OF THE “ONTARIO CHRONIC DISEASE PREVENTION AND MANAGEMENT FRAMEWORK”	76
	APPENDIX D: ETHICS CERTIFICATES	77
	APPENDIX E: RECRUITMENT NOTICE	80
	APPENDIX F: CONSENT TEXT	81
12	WORKS CITED	83

LIST OF TABLES

TABLE 1: EXAMPLE OF SWOT MATRIX 36

TABLE 2 : SUMMARY OF PARTICIPANT DEMOGRAPHIC VARIABLES (N=125) 38

TABLE 3: PATIENT SELF-REPORTED SCORES AT FIRST AND LAST APPOINTMENTS 40

TABLE 4: SUMMARY OF SURVEY PARTICIPANTS AND DELIVERY METHODS (N=36)..... 45

TABLE 5: SUMMARY OF RESPONSES FROM ADMINISTRATORS: 45

TABLE 6 SUMMARY OF RESPONSES FROM CLINICIANS 46

TABLE 7 SUMMARY OF RESPONSES FROM PATIENTS 47

LIST OF FIGURES

FIGURE 1: OVERVIEW OF CHRONIC PAIN SMS PROGRAM 29

1 BACKGROUND

1.1 Why focus on Chronic Non-Cancer Pain (CNCP)?

Chronic Non-Cancer Pain (CNCP) presents a serious challenge for Canada, and brings with it severe social and economic costs. According to the International Association for the Study of Pain, chronic pain (CP) is defined as “pain that persists beyond normal tissue healing time, which is assumed to be three months” (International Association for the Study of Pain, 1994; Merskey & Bogduk, 1994). For the purposes of this paper, CNCP will be referred to as CP. Simply by looking at its high prevalence, affecting 19% of the Canadian population, chronic pain negatively impacts the quality of life for one in five Canadians (Reitsma, Tranmer, Buchanan & VanDenKerkhof, 2012; Lynch, 2011). Chronic pain poses a significant burden on patients, their families and our society as a whole, being a very costly disorder.

The spending on chronic pain includes the direct costs that an individual incurs from treatment and use of health care services, and the indirect costs such as loss of productivity and disability payments. It results in direct costs to the healthcare system of more than \$6 billion per year in Canada, which are expected to increase to \$10.29 billion by 2025 (Angeles et al., 2013). This does not include societal costs such as disability or loss in productivity (Angeles et al., 2013). Using current prevalence data, Phillips and Schopflocher (2008) predict costs to be \$400 million, “in the absence of effective intervention for individuals with moderate or severe chronic pain” (p. 43), highlighting the ongoing need for improving current management practices. Individuals living with chronic pain are frequent users of healthcare services and therefore place a substantial demand on the healthcare system (Todd et al., 2010; Gustavsson et al., 2012). In a study conducted in

Denmark, Jensen et al. discovered that individuals with chronic pain visited primary care facilities significantly more than those without pain. Their results showed that compared to individuals without pain, who were seeing primary care physicians four times per year, those with moderate chronic pain visited primary care physicians six times more per year and those with severe chronic pain visited primary care physicians nine times more per year (Jensen, Sjøgren, Ekholm, Rasmussen, & Eriksen, 2004). Additionally, those with severe chronic pain are more than twice as likely to be hospitalized compared to those without pain (Jensen, Sjøgren, Ekholm, Rasmussen, & Eriksen, 2004). In Canada, those with severe chronic pain had more visits with their physician, 12.9 versus 3.8 visits, and stayed in the hospital nearly six times more, 3.9 versus 0.7 days, than those without chronic pain (Lalonde et al., 2014). The National Population Health Survey estimates that in Alberta compared to individuals with no pain, those suffering from severe chronic pain reported 4 times higher rates of hospitalization in the previous year (Phillips & Schopflocher, 2008). Placing such a large demand on the healthcare industry, this expenditure is only expected to increase if those with chronic pain do not have access to an appropriate, effective, and easy to access management strategy.

With chronic pain, instead of looking at a certain brief period of pain, we are faced with a prolonged period of suffering that has a severe effect on an individual's quality of life. Chronic pain results in profound societal costs, with an average of 28.5 lost work days per year per individual. Chronic pain affects 18.9% of the working age population in Canada and up to 60% of people with chronic pain end up losing income as they become unemployed or face a reduction in their responsibilities as a result of their pain (Schopflocher, Taenzer & Jovey, 2011; Lynch, 2011). Looking deeper at the cost on the individual, the costs of chronic pain go far beyond the economic consequences. It results in severe human suffering, with double the risk of suicide, and is associated with the worst quality of life compared to other chronic diseases (Lynch, 2011). Studies

that compare chronic pain with other well-known chronic illnesses such as diabetes showed that chronic pain is more prevalent and consistently results in significantly worse factors associated with quality of life (Moulin, Clark, Speechley & Morley-Forster, 2002; Peng et al., 2007).

It is clear that chronic pain poses a significant burden on the individual and on our society as a whole. Prescription drugs, most notably opioids, are used to manage chronic pain, with the hope of improving the patient's quality of life. However, the abuse and overdose related to opioids has become a serious public health concern. Looking at Canada as a whole, it has the highest rate of opioid prescribing measured by morphine equivalents worldwide (Busse, 2017). According to the Ontario Drug Policy Research Network (ODPRN), the rate of opioid related deaths in this province has significantly increased over the past two decades (Gomes et al., 2014). In the past year, 1 in 7 Ontarians were dispensed an opioid with 85% obtaining it for the management of pain (Gomes et al., 2017a). The use of non-steroidal anti-inflammatory (NSAIDs), specific anticonvulsants, tricyclic anti-depressants and opioids have been shown to reduce pain (Lynch & Watson, 2006). However, reports also show that compared to the average Ontarian, those dispensed an opioid for pain visited the emergency department and were hospitalized much more frequently (Gomes et al., 2017a).

The economic impact of opioid abuse or misuse is considerable. According to "Canadian Substances Use Cost and Harms", the greatest proportion of costs attributable to opioids in the country were due to lost productivity (Canadian Substance Use Costs and Harms Scientific Working Group, 2018). The comorbidities associated with opioid abuse combined with related crime and the loss of productivity that is often incurred as a result, brings to light some substantial

risks (Reimer et al., 2016). Ontario continues to see a large increase in the rate of opioid prescribing, opioid related deaths and an increase in the prevalence of opioid use disorder (Gomes & Juurlink, 2016). Moreover, the rate of prescribing stronger opioids within the province has also consistently increased over recent years (Gomes et al., 2014). Health Quality Ontario (HQO) recently published a report entitled “Nine Million Prescriptions” which revealed that opioid prescriptions dispensed had increased by approximately half a million from 2013/2014 compared to 2015/2016 (Health Quality Ontario, 2017a). While opioids are used to manage pain, current clinical practice guidelines do not recommend them as the primary therapy for chronic pain patients (Busse et al., 2017; Ernstzen, Louw & Hillier, 2017; Dowell, Haegerich, & Chou, 2016; Hooten et al., 2017). Instead, non-pharmacological options are consistently recommended as a first-line therapy for the management of chronic pain (Dowell, Haegerich, & Chou, 2016). In a best evidence guideline from 2017 the provincial quality council of Ontario, HQO stated that a multidisciplinary, multimodal approach is a comprehensive intervention that, “...can often be as effective as opioids in managing chronic pain while presenting far less risk of harm...”(Health Quality Ontario, 2017b). Shifting the focus onto a more holistic modality that does not rely solely on opioids allows people with chronic pain to engage with health care professionals through a shared-decision making process. HQO has put together a quality standard with details on the need to shift from opioid therapy toward a biopsychosocial approach with multidisciplinary care, highlighting that:

A multidisciplinary, multimodal approach to pain management involves a combination of therapies, including nonopioid pharmacotherapy and nonpharmacological therapies (i.e., active and passive physical interventions, psychological therapies, and self-management programs) provided by a team of different types of health care professionals. (Health Quality Ontario, 2017b, p42)

People with chronic pain have a right to appropriate treatment options. This multifaceted disorder is associated with staggering costs for both the health care system and the patient. Therefore, Canada needs a better pain management strategy to reduce costs, improve quality of life and overall provide a better life for those living with chronic pain. Chronic pain is a multidimensional problem and as such should be approached using a combination of biological, psychological and social approaches. This thesis investigates an intervention that employs this approach, addressing all of these components simultaneously, is easily accessible and integrated within primary care to ensure the delivery of coordinated, and consistent care to patients with chronic pain.

1.2 Why use Self-Management Support (SMS)?

With an increase in life expectancy, chronic diseases have increased accordingly, threatening health status and resulting in a large increase in health care costs. This has led to increased interest in the role of patient self-management of chronic illness. There are several studies that look at how educating patients about their chronic illnesses improves health behaviors and even decreased health care costs (Center for the Advancement of Health, 1996). As a result, across all chronic diseases we see a trend that places the role of patient to self-manage their condition as being integral to their health and well-being. Current literature show that benefits exists from replicable, and inexpensive self-management programs making this an immensely useful intervention for chronic diseases. Such benefits include increasing healthful behaviors such as exercising more, improving health status with improvements in factors like pain and psychological wellbeing, and decreasing hospitalization rates (Lorgi et al., 1999).

1.3 Rationale of Self- Management Focused Model: Theoretical Perspectives

We have seen the grave consequences that stem from the poor management of chronic pain; from the severe economic reparations, to the debilitating effects on an individual's quality of life, it is clear that we need a more effective way to manage chronic pain.

Looking at self-management of chronic pain as a chronic condition, growing evidence suggests that its management should primarily be led by employing the chronic care model (CCM) (Clark & Upshur, 2007). The CCM (see Appendix A for diagram of model) is an evidence-based framework based on six components to help guide the planning and delivery of chronic care (Wagner, 1998): self-management support, delivery system design, decision support, clinical information systems, the community, and health systems. Imbedding models that prioritize patient-centered care within primary care, such as the CCM, result in positive patient outcomes for chronic care (Aryani, 2016; Bodenheimer, Wagner & Grumbach, 2002). There are several chronic disease models that have been developed throughout the years from the CCM. Some focus on decision support and others on clinical information systems. All of the components of the CCM are important to reshape in order to see successful change within the health system. According to the research in this field the literature suggests that self-management support (SMS) is increasingly cited as an effective way to manage chronic pain. SMS is consistently recommended in the management of chronic illnesses having extensive success in patient outcomes (Kwaki, 2012; Newman, Steed & Mulligan, 2004).

A study looking at the various elements on chronic disease models revealed that SMS is one of the most studied elements. Among the various chronic disease models, it has one of the greatest evidence bases in positive clinical and non-clinical outcomes (Grover & Joshi, 2015). Individuals with chronic illnesses engage in behaviors and make decisions that significantly impact their health and well-being. Therefore, their disease outcomes depend largely on the individual's ability to manage their own health.

Self-management is described very eloquently below by Adams, Greiner, and Corrigan (2004):

Self-management relates to the tasks that an individual must undertake to live well with one or more chronic conditions. These tasks include gaining confidence to deal with medical management, role management, and emotional management

The definition above elucidates the key aspects of self-management, from obligatory patient tasks to highlighting the notion of confidence with the overall goal of empowering individuals to manage their illness and to live a better quality of life. It presents a promising strategy to managing chronic diseases moving beyond traditional education strategies. Self-management highlights patient responsibility in actively recognizing challenges and managing or even solving these issues. While patients also recognize the importance and value of self-management strategies in their health and well-being, they also note the need for assistance and validation from their health-care providers. A study was conducted to evaluate patient's perceptions of self-management education. Patients expressed that in order for them to continue any such positive changes they may have made, they would still require supervision and support from their health care providers (Bodenheimer, Wagner & Grumbach, 2002). The provision of support in this case is just as much important as teaching individuals self-management skills. Self-management support focuses on the role that the health care provider plays to encourage and best educate patients to embrace self-management skills. Research suggests that having a person who is trained in the specific chronic condition increases the patient's confidence to manage their disease (Bandura, 1989).

Self-management support is defined as the systematic provision of education and supportive interventions by health care staff to increase patients' skills and confidence in managing their health problems, including regular assessment or progress and problems, goal setting, and problem-solving support (Adams, Greiner & Corrigan 2004)

Self-management in Ontario has been defined through the Ontario Chronic Disease Prevention and Management Framework (CDPMF) based on the CCM and British Columbia's Expanded Chronic Care Model (ECCM) (Government of Ontario, 2007). In the ECCM (see Appendix B for diagram of model), self-management support is identified "...as one of the four essential components within the healthcare system..." (BC Ministry of Health, 2011). The ECCM shifts the focus from the clinically-dominated perspective in the CCM, to highlight the relationship between the health-care system and community. The ECCM broadens the scope of the CCM, "...not just by reducing the impact on those who have a disease but also by supporting people and communities to be healthy..." using strategies imbedded within the community and health systems (Barr et al., 2003). The ECCM, in comparison to the CCM, emphasizes a use of existing resources within the community and health systems diagrammatically by the use of a porous border highlighting the flow of resources between the community and health systems (Barr et al., 2003). The Ontario CDPMF (see Appendix C for diagram of model), based on the ECCM, functions as a guide to change the delivery of care while imbedding the identified elements of the CCM to improve health outcomes and provide individuals with effective and comprehensive care (Government of Ontario, 2007). For the purposes of this paper, the Ontario CDPMF is employed to empower patients by teaching them the skills to manage their chronic pain, and providing the ongoing support to help them manage their chronic pain.

In a review looking at the effectiveness of the CCM, Bodenheimer's study (2003) showed that while none of the components of the model could be singled out as essential, patient outcomes improved in almost all studies that included self-management support. Self-management allows the patient to become a partner and a key player in their health care management. Like all other chronic illnesses, it is essential to consider the patient as key part of the answer. Self-management

support realizes this through strategies such as goal setting, care-planning and follow-up. In doing so, the patient will be empowered to manage their own health. Effective self-management is then only accomplished when health care providers empower and support patients in a collaborative manner to employ the self-management strategies.

The definitions highlighted above recognize the importance of the individual's skills to self-manage, and the importance of ensuring the presence of supportive initiatives to facilitate self-management. Additionally, it is also important to appreciate that this cannot occur in isolation from support and integration within the broader health care system and society (Bodenheimer, Lorig, Holman & Grumbach, 2002). Therefore, the other five aspects of the CCM also play a significant role in facilitating self-management.

Members of the primary care community, including clinicians, nurses and patients, along with members of the pain management community were asked to identify interventions to improve pain management in primary care in Canada. The overarching priority they identified was patient empowerment emphasizing that "...provision of self-management strategies are needed to empower patients and thereby confer on them a role of active partner in their treatment rather than simply a consumer of care..." (Lalonde et al., 2015). Chronic pain cannot be treated in the conventional biomedical sense. Rather, a multidisciplinary holistic approach is consistently recommended which embraces the biopsychosocial model of pain (Kress et al., 2015).

1.4 Commonly used Self-Management Programs

Self-management intervention programs have been studied all over the world, with a variety of delivery methods such as online, with groups, or one-on-one. There are several models cited in the literature, with most intervention programs based on a combination of these models. Adaptations

are made to develop interventions that would be best for the illness at hand. However, each of the programs are evidence-based approaches which have been tested as clinical intervention programs. For example, the Stanford Patient Education Research Centre offers evidence-based self-management programs with over 30 years of research to demonstrate their improvements in several factors including self-reported health, fatigue, disability, exercise, and communication with physicians (Lorig et al., 1999). It was initially developed in the 1990s for an Arthritis Self-Management Program (ASMP). A study looking at the effects of the ASMP for patients showed that it decreased pain, reduced physician visits, and resulted in significant savings per patient (Lorig, Mazonson & Holman, 1993). The ASMP is one of the most popular self-management programs as it led the current self-management programs offered by the Stanford Patient Education Research Centre for people with HIV/AIDS (Gifford, Laurent, Gonzales, Chesney & Lorig, 1998), diabetes (Lorig, Ritter, Villa & Armas, 2009) , and chronic pain (LeFort, Gray-Donald, Rowat, Jeans, 1998). Once self-management was identified as effective strategy across a range of chronic disease, the Chronic Disease Self-Management Program (CDSMP) was then developed to apply to anyone with chronic disease. Multiple community-based self-management interventions have been designed for people living with other chronic conditions such as stroke, lung disease and chronic obstructive pulmonary disease (Sánchez – Nieto et al., 2016). The CDSMP was created through a research study looking to evaluate a community-based self-management program helping individuals with different chronic illnesses (Lorig et al., 1999). The findings from this study demonstrated the potential of this intervention that improved the health behaviors and health status of patients with various chronic diseases. The positive health outcomes included a reduction in hospital visits, improvements in exercise, disability and overall self-reported health (Lorig et al., 1999). Additionally, with reduced health-costs the findings render the self-management program as a feasible and effective intervention (Lorig et al., 2001). These are a few of the studied

models that have propelled the use and development of other self-management programs throughout the world.

Disease specific self-management interventions have been successful in providing improved health outcomes. Self-management interventions tailored to target patients with chronic obstructive pulmonary disease showed improvements in patient health status and reductions in physician visits, emergency room visits, and hospital admissions (Bourbeau, 2003). Pain is the most prevalent outcome measured in self-management intervention studies which are evaluating the effectiveness of the program (Mann, LeFort & VanDenKerkhof, 2013). Studies report a statistically significant improvement in pain intensity and pain interference both immediately after self-management interventions, and during the subsequent months and years (Mann, LeFort & VanDenKerkhof, 2013). Self-management interventions have also been tailored to specific populations based certain sociocultural determinants and shown to produce positive health outcomes among African-Americans and rural communities (Samuel-Hodge et al., 2009; Flood, Hawkins, Rohloff, 2017). However, there is limited research looking specifically at the effectiveness of self-management programs for individuals suffering from chronic pain (Miller, MacDermid, Walton & Richardson, 2015; Du et al., 2011).

Self-management programs are continually being designed, evaluated, and implemented both across multiple chronic illnesses and targeting specific chronic diseases. From the various examples discussed above, it is clear that self-management intervention is a way to strengthen the health-care system, by improving health status of individuals and reducing costs. Self-management interventions also take the other aspects of the CCM into consideration.

1.5 Barriers in Management of CP within Primary Care

1.5.1 Training and support

Pain is one of the main reasons that would motivate an individual to seek medical attention. A study conducted in America revealed that chronic pain is in fact the most commonly cited complaint, reported by 40% of patients seen in primary care facilities. Compared to pain specialists who treat 2% of chronic pain patients, primary care physicians treat approximately 53% of chronic pain patients (Breuer, Cruciani & Portenoy, 2010). Primary care providers are at the frontline in dealing with management and care, handling the great majority of chronic pain patients in Canada (Boulanger, Clark, Squire, Cui & Horbay, 2007; Reid et al., 2002). A study measuring the number of chronic pain patients seen at the primary care level concluded that on average family practitioners in Canada see 45 chronic pain patients per month, of which 83.3% of the patients had non-cancer related pain (Morley-Forster, Clark, Speechley & Moulin, 2003). Looking deeper into the care that patients receive at the primary care level, the literature demonstrates that patients have unsatisfactory pain and quality of life outcomes (Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS), 2006). It is therefore unsurprising that the large majority of physicians (68%) believe that chronic pain is not well managed in Canada (Morley-Forster et al., 2003; Boulanger et al., 2007). Some consequences they identified included severe mental health problems, increased drug addiction and increased use of the health care system (Morley-Forster et al., 2003). Here, we will discuss barriers that exist for primary care providers to provide the necessary care and support that individuals with chronic pain need when managing their condition.

While frontline primary care providers manage the great majority of chronic pain patients, their training and education in this field is comparatively limited (Lavis & Boyko, 2009). In 2017, the Association of Faculties of Medicine of Canada conducted a survey across all 17 Canadian medical

universities in response to the recent opioid crisis. After reviewing the curricula of all the universities to assess the teaching surrounding pain management, the expert panel concluded that future physicians are ill-prepared to manage chronic pain. According to the conclusions of the review, training and education in “pain, addiction to pain medication and pain management are not adequately or consistently addressed in undergraduate or postgraduate curricula in Canada...” (The Association of Faculties of Medicine of Canada, 2017) Additionally, primary care physicians have reported a knowledge gap in the management of chronic non-cancer pain within primary care, with majority citing an improvement in education of physicians as a strategy to improve this (Morley-Forster et al., 2003; Lalonde et al., 2015). Lalonde et al. held focus group discussions with various primary care professionals, patients, and family members to explore their ideas regarding challenges in the management of chronic pain in primary care. Participants consistently reported a lack of training on pain management as “...primary care does not understand what specialists ask, and patient is caught in this mess...” (Lalonde et al, 2015). Evidently, there is insufficient training to provide supportive and appropriate care for chronic pain patients. Furthermore, providers are not only unsatisfied with their training in chronic pain management, but also are reportedly unsatisfied with their treatment of chronic pain patients (Upshur, Luckmann & Savageau, 2006).

There doesn't appear to be one set approach to chronic pain management. Rather, “... A challenge underlying the overall availability and accessibility of effective approaches to chronic pain management is that healthcare providers have divergent approaches to practice...” (Lalonde et al., 2015). The personalized approach of care required when managing chronic pain, combined with the variability in approaches available when managing chronic pain, makes the health care provider's ideas and beliefs about effective management options very important. Additionally, while evidence-based guidelines exist to support the assessment and treatment of chronic non-

cancer pain, primary care providers report having limited knowledge about these guidelines (Lalonde et al., 2015). Therefore, members of the pain management community including primary care providers have highlighted one of the major obstacles they face as “lacking connections with everything”, feeling isolated and without the necessary support system to fully support their patients- “work in silos” (Lalonde et al., 2015).

The traditional health system is not structured in a way that addresses all the needs of a chronic pain patient. One way the medical system has adapted to provide care that addresses the needs of the chronically ill is through the creation and development of integrated care teams. In Ontario, Family Health Teams (FHTs), which consist of health professionals from different disciplines, exist to allow for collaborative care within primary care (Rosser, Colwill, Kasperski & Wilson, 2010). FHT were developed so that healthcare providers could assist one another in providing integrated and coordinated care to better manage chronic conditions, so as to avoid the issues that arise when working in silos (McColl et al., 2009). Despite such efforts, care needs clearly exceed the current management practices in primary care. One such presentation of this is evidenced as patients suffering from chronic pain largely have other co-morbidities (Butchart, Kerr, Heisler, Piette, Krien, 2009). For example, a growing body of literature has shown that the comorbid nature of chronic pain and depression is considerable (Bair, Robinson, Katon, Kroenke, 2003; Rayner et al., 2016). A study in Alberta showed that of the individuals diagnosed with depression, 4% reported having no pain compared to 25% who had severe pain (Health Surveillance, Alberta Health, 2006). The high prevalence of comorbidities among patients with chronic pain can decrease the applicability of clinical guidelines (Guthrie, Payne, Alderson, McMurdo & Mercer, 2012). In order to comprehensively address the gaps in current health care system, further research on managing chronic pain in multimorbid patients is required. Additionally, while FHTs are important for the management of chronic conditions, the intricacies made apparent through the

comorbidities of the population suggests a demand for a specialized approach. An investigation looking at how a specialized provision of primary care, with a nurse-practitioner led model of care, created an improvement in the management of senior care had also highlighted high comorbidities as one of the challenges within "...primary care, which is designed to provide acute and episodic care..." (Parsad et al., 2014). Overall, current management practices demonstrate that primary care is poorly resourced to provide efficient care for chronic pain patients as primary care providers have limited knowledge and supports in the field.

1.5.2 Waiting times

There is ample evidence to demonstrate that a multidisciplinary approach produces several benefits for chronic pain sufferers in terms of improved function scores and coping behaviors related to their pain (Scascihini, Toma, Dober-Spielmann, Sprott, 2008). Having established that chronic pain is indeed complex, as it is propagated by social, biological and psychological factors, it would be fitting for its treatment to target all these factors- a strategy used in multidisciplinary pain treatment facilities (MPTF) (Fashler et al., 2016). Multidisciplinary treatment is considered to be the most optimal because of the negative effects chronic pain has on both the physical and psychosocial well-being of a patient (Gureje, Von Kroff, Simon & Gater, 1998). Leading bodies of pain research, such as the International Association for the Study of Pain (International Association of Pain (IASP), 2009), have also identified that the multidisciplinary treatment paradigm as the most ideal approach for chronic pain patients as they reduce both direct and indirect costs to the healthcare system (Weir, Browne, Tunks, Gafni, Roberts, 1992; Lynch et al., 2007).

Canadians with chronic diseases have identified that accessing care is a challenge they face as part of their day to day reality. Looking deeper at this issue, the most common reason for this was reported to be waiting too long for their appointments (Health Council of Canada, 2007). Wait

times are important to consider because timely access to care is an important factor in improving quality of life for the chronic pain sufferer. The impact of a wait time even as short as three months is severely debilitating to the chronic pain sufferer with reports of both increased emotional distress and pain severity (Choinière et al., 210). Compared to seven other Commonwealth Fund countries, Canadians reported the longest wait time to see a doctor with Canada being ranked as having the greatest wait times to see a specialist (Schoen et al., 2007).

Although multidisciplinary pain centers and multidisciplinary pain clinics dedicated to the management of chronic pain do exist, they have been deemed inadequate given the burden of disease in Ontario (Morley et al., 2003). To begin with, geographic maldistribution of these MPTFs is one of the major obstacles that a chronic pain patient who lives in a more rural or less urban setting faces. A study examining the different challenges that Canadian chronic pain sufferers face revealed that 98% of these facilities operate in mid-sized urban cities and 82% in major metropolitan cities (Peng et al., 2007). As a result, a large majority of the population is left underserved by these facilities and as was previously discussed, they have to rely on their primary care provider or family physician for care (Peng et al., 2007). The Canadian Pain Society and the Canadian Anesthesiologists' Society worked together to establish a benchmark wait time for chronic pain treatment which has been set to no longer than six months (Wait Time Alliance, 2014). According to the evidence, patients experience a significant health deterioration when waiting six months or longer for an appointment (Lynch et al., 2007; Lynch et al., 2008). Following this, a survey of the MPTFs in Canada was conducted to assess wait times, which were found to range from six months to five years (Peng et al., 2007). As Canadian MPTFs are not well equipped to handle the burden of chronic pain (Peng et al., 2007; Choinière et al., 2010;), this paper presents a readily available comprehensive, intervention within primary care that could possibly alleviate this burden.

Patients who receive care in a timely manner can avoid several complications (Schoen, Osborn, How, Doty, Peugh, 2009). More specifically, those suffering from chronic pain with poor access to pain treatment experience decrease in function, deterioration of psychological well-being and overall lower quality of life with the inability to participate in leisure activities (Lynch et al., 2008). The conclusions drawn from a recent survey, conducted in 2017, were consistent with those of previous studies- wait times for care far exceeded what patients viewed as being acceptable (Liddy et al., 2017). As the patient perspective is central in making any improvements to current delivery of care, it is important to highlight that their needs are not being met. Understanding that the patients are not satisfied with current standards regarding wait times, facing problems of anxiety, increased hospital and emergency department visits, and reduced ability to participate in day-to-day activities, further highlights the need for a new and innovative chronic pain strategy in Canada.

1.5.3 System level challenges

The current Canadian health care system excels at addressing acute illnesses (Veteran Affairs Canada and Canadian Academy of Health Sciences, 2017; Nelson et al., 2014; Nasmith et al., 2010). It is organized to respond very efficiently to illnesses that are urgent and short-term. These acute illnesses typically and ideally result in a cure as the treatment outcome. Chronic illnesses, on the other hand, are long term and goals of care are aimed toward improving quality of life, enhancing function, reducing stress and pain and preventing secondary illnesses (Grumbach, 2003). The model of healthcare doesn't sufficiently prioritize the needs of chronic pain patients as it is primarily a volume-driven, episodic, health system (Nelson et al., 2014). The underlying issue here is that healthcare planning is based more on traditional service delivery rather than the needs of the population (Tomblin Murphy & MacKenzie, 2013). In order to have a system of care that is effective and equitable, it is essential to look at how to best prioritize and meet the healthcare needs

of the population (Tomblin Murphy & MacKenzie, 2013). However, historical and political aspects are taking precedent and ultimately affecting the way that healthcare is delivered in Canada. In 2011, the Canadian Academy of Health Sciences put together an assessment of the healthcare system to highlight issues surrounding chronic disease prevention and management to improve outcomes for patients by providing more efficient models of healthcare (Nelson et al., 2014). According to the report, there is an inconsistency in the way the healthcare system has developed as, "...health and health care needs have changed, yet corresponding scopes of practice and to a certain extent models of care, have not changed..." (Nelson et al., 2014). Here we will discuss the different aspects of the Canadian and more specifically, Ontarian health care system that make it difficult to provide efficient care for chronic pain sufferers.

1.5.3.1 Fragmentation of Care

As was previously established, MPTF are considered an effective treatment paradigm for chronic pain. The needs of chronic pain patients are best met with a multidisciplinary approach to pain management. This highlights the importance of inputs from different health professionals due to the complex nature of chronic pain. Despite this, healthcare delivery in Canada is fragmented (Wilson, Lavis, Moat & Guta, 2016). This has come into effect due to various structural and financial policies in place which have created barriers between care professionals (Nolte et al., 2012). One example of this are the barriers separating primary care from secondary care (Glasby, Dickinson & Peck, 2006; Nolte et al., 2012). Multimorbidity is the most common chronic condition experienced by adults (Tinetti, Fried & Boyd, 2012). As a result, when considering a patient with chronic pain they likely have other comorbidities (Sharpe et al., 2017). However, these care providers are most likely work in different places, and have no communication regarding the patient's care (Tinetti et al., 2012; Wilson et al., 2016). These patients are left to navigate

themselves in a system with poor care coordination, seeing multiple care professionals which only increases the risks of clinical errors (Schoen et al., 2009) on top of managing their day to day life with this condition on their own (Wilson et al., 2016).

Majority of chronic pain patients have to rely on primary care providers. A study done in Toronto, looking at the factors of referral by family practitioners showed that one third of the respondents referred more than thirty patients every year to tertiary pain clinics (Lakha et al., 2011). A separate study also conducted a survey among chronic pain patients to understand their experience at pain clinics and found that nearly half of the respondents were referred to that pain clinic by a different specialist (Liddy et al., 2017). Future consequences of this specialist-to-specialist referral including the inability of the PCP to remain in the conversation, a lack of communication between care providers (Lalonde et al., 2015), which could later worsen patient outcomes (Liddy et al., 2017). Patients could get lost in the system as a result of this triage. A study done in Montreal was looking at the different challenges to improving the management of CNCP in primary care (Lalonde et al., 2015). The barriers identified included physicians feeling isolated in managing CNCP, having inefficient record management and difficulties in accessing health professionals and services (Lalonde et al., 2015). There is a need to integrate care around the patient to have a delivery system that prioritizes the needs the chronically ill so as to address such barriers. The importance of care coordination is further highlighted in a study that examined the longevity of improvements seen for patients after they were referred to specialty clinics. It was found that after only a few months, most of the patients returned to their original level of functioning (Every, 2007). Overall, patients are left to navigate themselves within a health system in which they get triaged continuously, causing frustration, diminishing health outcomes, and creating a loop of redundant and reactive work. As a result, having a delivery of care that prioritizes care coordination is of great importance to the health and well-being of the population.

Being isolated when providing care to those with multiple chronic conditions can be very challenging (Lalonde et al., 2015). For example, a specialist might see a specific outcome of particular importance because that is their particular area of expertise. Yet, patients with chronic diseases are complex in that they have competing health outcomes all of which require attention (Wilson et al., 2016). For this reason, it is that much more important to have collaborative care that is both readily accessible and patient centered.

1.5.3.2 Limited Time with Care Providers

The majority of chronic pain sufferers get medical attention from their primary care providers (Peppin, Cheatle, Kirsh & Mccarberg, 2015). This means that within the average 15 to 20-minute appointment, there has to be some form of meaningful self-management support (Every, 2007). It has been shown that time has been a limitation in providing preventative services within primary care (Yarnall, Pollak, Østbye, Krause & Lloyd Michner, 2003). The appointment times are clearly not sufficient for providing comprehensive care. Short appointments would only work when clinicians aren't expected to do as much work. However, with the rise of chronic conditions, the complaints presented within primary care settings are becoming increasingly complex while appointments have only become 1 or 2 minutes longer (Mechanic, McAlpine & Rosental, 2001). This mismatch in between the increasing workload and short appointment duration makes it difficult to provide the much-needed personalized care for patients with chronic diseases.

While it is impossible to reduce the amount of complaints presented during an appointment, it is possible to disseminate and share responsibilities with the rest of the care team such as nurses (Linzer et al., 2015). Looking at self-management specifically, when healthcare professionals were asked about the barriers to providing self-management, majority of their responses pointed toward a lack of time during their appointments with patients (Roberts, Younis, Kidd & Partridge, 2013). As a result, to account for the increasing complexity of complications presented in primary care,

such as chronic pain, this thesis looks at the potential benefits of providing team-based care to mitigate barriers including brief appointment times with clinicians. The intervention employed concentrates on providing patients with sufficient time, so they feel heard and are active participants in their care.

1.5.3.3 Fee for service model

The payment method that is used within the healthcare system is referred to as “fee for service”, as healthcare providers receive payment for the service they deliver. In Ontario, it is the main payment method used to compensate many primary care physicians, making up 72% of payments in 2015(Ontario Ministry of Health and Long-Term Care, 2017; Mattison & Wilson, 2017). The problem with this traditional payment system is its failure to prioritize the current needs of the population. For example, fee-for-service payment results in increased physician services disregarding the quality of the health outcomes (Mattison & Wilson, 2017). The priority is not placed on providing integrated care that seeks to improve quality of care for the patient. The complexities of the needs of the chronically ill are not met by the fee for service model as they require sustained collaborative care (Mattison & Wilson, 2017). Rather, this fee-for-service system is not constructed to give comprehensive care and “...has left primary care providers feeling like they are on an assembly line rather than engaged in a mission to heal the sick and prevent serious illness...” (Linzer et al., 2015). A study was performed to compare four different models of primary health care: fee for service, capitation, blended payment and community health centers (CHCs). Of these, it was found that chronic diseases were managed best under the CHC model, which prioritizes longer appointments and collaborative care (Russell et al., 2009). In Ontario, medical care is publicly funded, so individuals do not have to pay out of pocket for services

performed by physicians in hospitals (Wilson et al., 2016). However, services provided by allied health professionals and other healthcare providers such as dieticians are not covered by the government of Ontario (Wilson et al., 2016). As a result, providing integrated care that is collaborative across disciplines is not incentivized by the payment model. Rather, the fee-for-service model could go so far as encouraging further isolation of primary care physicians.

Implementing new payment systems to have longer appointments with primary care physicians is complicated and would require the collaboration of different sectors (Linzer et al., 2015). Instead, this paper focuses on a strategy that could possibly improve outcomes without increasing costs while prioritizing patient health outcomes.

In conclusion, access to pain treatment is deemed a fundamental human right. However, as we have examined, there are significant challenges in the delivery of effective chronic pain treatment in Canada. Reasons include the burden placed onto primary care providers with limited knowledge in the field, the long wait times, and system level challenges within our healthcare system that make it difficult to provide accessible, integrated and well-coordinated continued care for chronic pain sufferers. Each reason feeds into the other and studies have identified that because current strategies are ineffective, possible interventions within primary care need to be investigated (Nelson et al., 2014; Choinière et al., 2010).

2 HYPOTHESIS

The barriers examined previously shows the gaps in the healthcare system for CP patients and their providers, which in turn places a lot of the responsibility on patients to manage their chronic conditions (Kawi, 2013). As a result, adding to previously discussed evidence, provision of self-management support becomes that much more important as interventions for chronic illnesses. Patients with self-management support from health care professionals have been shown to have better chronic pain outcomes (Kawi, 2013; Wagner et al., 2001, Watts et al., 2009)

There are several members in a health care team that could provide the self-management support for the chronic pain patient. For example, studies have looked at pharmacist-led interventions for chronic pain management (Suh, Bartlett, Inguanti & Folstad, 2004; Phelan, Foster, Thomas, Hay, Blenkinsopp, 2008). Most disease management programs involve nurses as case managers to facilitate patient education and monitor disease outcomes (Matthias et al., 2010). Case management led by nurses has also been investigated as a possible avenue to meet the complex needs of the CP patient population with its innate capability of providing integrated care. When case management is available in the primary care setting it allows for better collaboration between the case management nurse and the primary physician as well as ensuring coordination of care and continuity of care for the patient (Schraeder et al., 2008; Chouinard et al., 2013). Evidence shows that nurses, including Registered Nurses (RNs) and Nurse Practitioners (NPs), functioning as nurse care managers lead to a highly satisfied patient population (Matthias et al., 2012). Patients attributed a lot of their positive comments to the nurses and negative ones to their physicians, drawing Matthias et al. (2012) to conclude that a possibility exists to provide "...a self-management program that empowers patients to take ownership of their pain and its management,

coupled with regular encouragement and support from NCMs [which] may fill a void in patients' chronic pain care". Nurses are uniquely positioned to develop the required partnership with the patient, in a way that is supportive, empathetic and educationally beneficial to result in constructive change to the healthcare system (Grady & Gough, 2014; Battersby et al., 2010; Drofflinger, Kerns & Auerbach, 2013). Primary care nurses have been shown to have success in leading and providing self-management education program for conditions like diabetes (Tshiananga et al., 2012). Despite all these benefits, nurses have been largely underutilized for chronic pain and there are only a few studies that investigate this opportunity for chronic pain, within a primary care setting (Lukewich, Mann, Vandenberg & Tranmer, 2015; Abdul Hadi, Alldred, Briggs & Closs, 2012). One study conducted in Ontario, Canada in 2015 concluded that one of the main opportunities that exist for primary care facilities to provide self-management support is by optimizing nursing roles (Lukewich et al., 2015).

Since nurses are optimally positioned within primary care facilities to provide self-management support for chronic pain (Lukewich et al., 2015), would this translate to improved chronic pain outcomes? Even though it is an area of increased interest, there is little knowledge surrounding the effectiveness of a Registered Nurse (RN)-led chronic pain self-management program within a primary care setting. Additionally, nurses working within a multidisciplinary team based care have demonstrated improved patient, health system and provider outcomes (Körner et al., 2016). Hence, the program intervention while being led by an RN, will function as a multidisciplinary team. The current study seeks to investigate the link between the RN-led program and chronic pain outcomes. The primary hypothesis of this study was that the RN-led chronic pain self-management program would lead to improved chronic pain outcomes.

3 OBJECTIVES

An RN led Chronic Pain SMS Program was initiated in January 2016 at the Bruyère Family Health Team. The program was run by an RN, working with a multidisciplinary team including a family physician, targeting chronic pain. The objectives of this study were two-fold:

Quantitative: Evaluate the nurse-led chronic pain management program to determine its effectiveness in terms of self-reported pain scales

Qualitative: Understand the perspectives of health care practitioners, administrators and patients within the RN led Chronic Pain SMS Program

4 RESEARCH DESIGN AND METHODS

This thesis seeks to assess the qualities of the Chronic Pain SMS Program at the Bruyere Hospital by engaging in two methodologies. First is a secondary analysis of existing patient data collected by the managing nurse of the intervention. In this analysis, success rates and patient trajectories were mapped and quantified. The second method involves primary collection of opinion and experience qualitative data from stakeholders of the program. Below, the intervention, data sources and analysis plan are detailed.

4.1 Intervention

The Chronic Pain SMS Program at Bruyère Family Health Team Setting:

The program was based at the Bruyère -Family Health Team in downtown Ottawa within the Bruyère Continuing Care Hospital. The Family Health Team has two sites which share a single electronic medical record. Multidisciplinary team members work across both sites and include a

pharmacist, social worker, dietician, and kinesiologist. The payment in the FMC is capitation based where providers receive a monthly comprehensive care capitation payment for all enrolled patients. This is in contrast to fee-for-service where providers are paid for each face to face visit with the patient. The patient population at the FMC is 16,000.

4.1.1 Participant Identification

Patients were identified as eligible for the program either through a referral by one of their providers or through a search of the electronic medical record (EMR). Using the EMR, eligible patients were identified using the following criteria:

1. At least 18 years old AND at least one of the following criteria:
2. Fibromyalgia or FM in) OR
3. The words “chronic” and “pain” in the CPP (i.e. “chronic pain”, or “chronic neck pain”, or “chronic pelvic pain” etc. OR
4. On a long acting narcotic (for the purposes of pain control)

Cancer patients were excluded from participation in the program as it was focused on chronic non-cancer pain. Physicians also referred their patients to the RN based on which patients they believed would benefit the most from the program. These patients were only deemed eligible by the RN for the program if they met the criteria mentioned above. The program was offered in both English and French so patients needed to have a working understanding of either language or had to bring someone (usually a family member) for translation purposes, to be enrolled into the program.

4.1.2 Program Elements

The chronic pain SMS program is built on evidence based self-management tools and principles. The key people in the program are the SMS RN, the most responsible provider (either a family physician or a nurse practitioner), the interdisciplinary team members (pharmacist, social

worker). In addition, the program included a physiatrist from the Bruyère Continuing Care hospital who has a specialization in chronic pain care.

Eligible patients are offered the program and those who participate meet with the RN for initial one hour face-to-face visit. The number of follow-up visits varied per patient. Follow ups would be three months after their first appointment, so as to allow patients to make any relevant lifestyle changes before their next appointment. However, since the program employs a patient-centered approach, appointments would also be booked on the basis of a patient's request. Therefore, the number of appointments after their first three-month follow-up appointment would vary based on the patient's needs.

4.1.3 1st Appointment

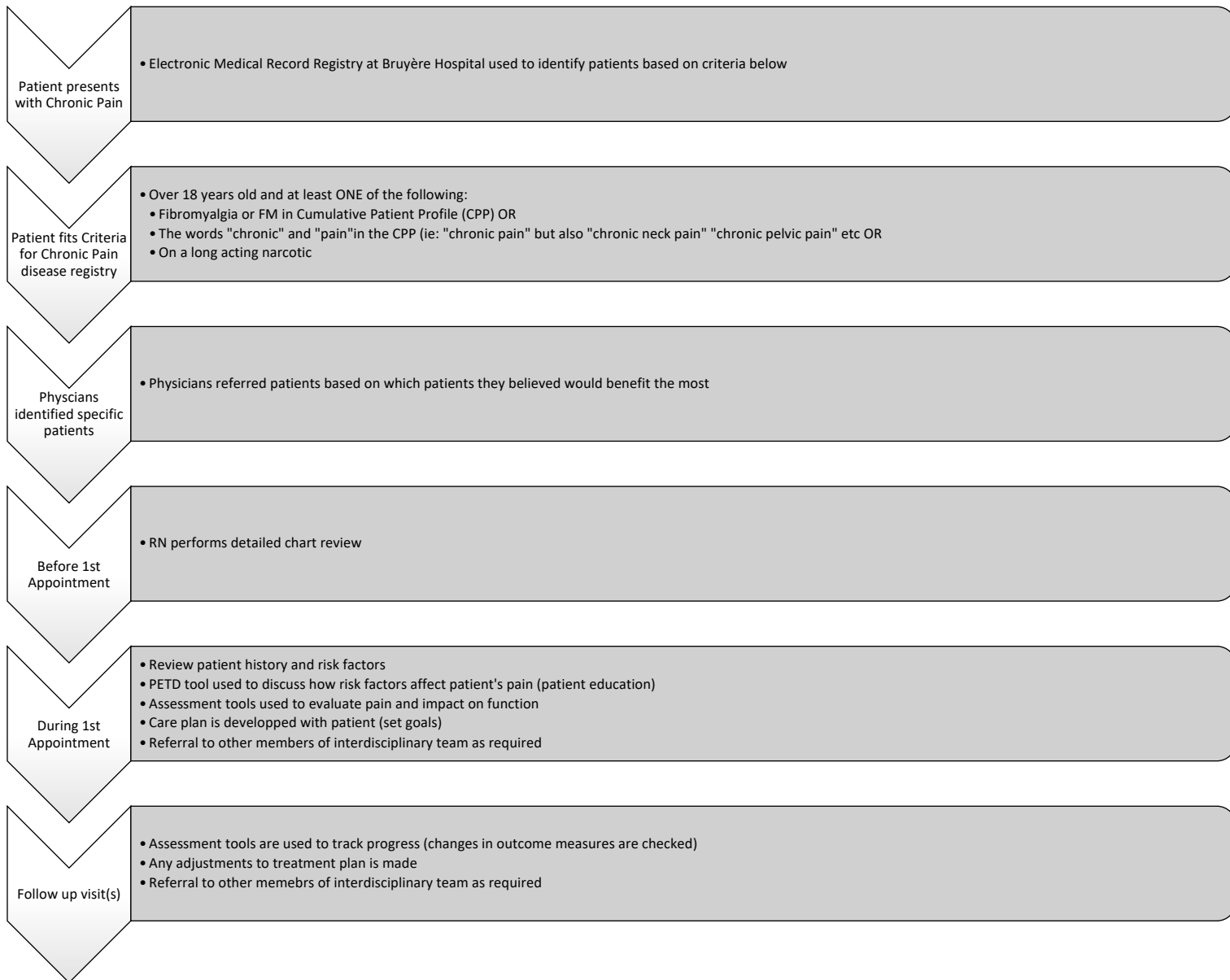
During their one- hour appointments, the chronic pain RN assessed each patient's baseline pain intensity- using the Numerical Rating Scale (Haefeli & Elfering, 2005), baseline functionality and pain interference- using the Brief Pain Inventory (Poquet & Lin, 2015), and baseline confidence- using the Confidence Scale (Bodenheimer, Lorig, Holman & Grumbach, 2002) and demographic characteristics. Self-management education focuses largely on the concerns the patient has (Lorig & Holman, 2003), and while patients may share similar concerns as they all have the same chronic disease, each patient has unique challenges and require an individual assessment. Each patient receives self-management education, during this 1-hr appointment, on chronic pain using the Patient Explanation Treatment Diagram (PETD) tool (Finestone, Yanni & Dalzell, 2015) (see Appendix C for diagram). This is a 1-page diagram that gets filled out during the first appointment. It enables the patient and RN to engage in patient-centered communication and shared decision making, regarding the various causes of their chronic pain, noting down specific examples in their life. They go through all the risk factors (health-related habits, sleep, exercise, ergonomics and psychosocial factors), discussing any possible clinical recommendations they could carry out.

Following this, the patient is asked if they want to set a goal. Goal setting is an integral part of SMS (Langford, Sawyer, Gioimo, Brownson & Toole, 2007; DeWalt et al., 2009; Lorig & Holman, 2003). Another recorded variable during the appointment is the patient's Morphine Equivalence Quotient (MEQ) which might also be more commonly referred to as the patient's Morphine Milligram Equivalent (MME). Opioids come in different forms which could influence how much is needed to be taken to get the desired analgesic effect as a result comparing them can only occur once their "mg MEQ" is calculated. "'mg MEQ' stands for 'milligrams of morphine or equivalent', and is a standardized measure of the total amount of opioid dispensed on a single prescription or more broadly into the community" (Gomes, 2017b). Essentially, it is the total daily dose of opioids that the patient is on which is essential information in managing and tapering the dosage (American Academy of Family Physicians, n.d.).

4.1.4 Follow-up Appointment

At the follow up visit, patients were subsequently assessed for changes in goal status, MEQ, perceived pain (NRS and BPI scores), and confidence in pain management which occurred. All changes were recorded and consistently updated by RN immediately after the appointment. Referrals were also offered by the RN to the patient with members of the multidisciplinary care team as needed. For example, if a patient presented with mental health comorbidities, they would be offered an appointment with one of the social workers who provide counseling services. Figure 1 summarizes a general layout of the program.

Figure 1: Overview of Chronic Pain SMS Program



5 RESEARCH ETHICS

Ethical approval was granted from the University of Ottawa, Office of Research Ethics and Integrity and the Bruyère Continuing Care Research Ethics Board. Patients were informed about the purpose of the survey and gave their consent prior to participation.

Reb Protocol # M16-17-041

6 DATA ANALYSIS

This paper employed mixed methods with both qualitative and quantitative approaches. These are detailed below.

6.1 Secondary Data Analysis

6.1.1 Analysis

A secondary analysis was conducted in 2018 from data collected during the RN-Led Chronic Pain Self-Management Program. Data collection tends to be the most time-consuming and expensive part of most primary research. Using secondary data analysis here would allow the use of existing data to answer our research question, requiring less time and money as the data was readily available.

The data used for the secondary data analysis ran from January 2016 to August 2018. The data was coded and analyzed; the statistical software used was SPSS (version 25.0; IBM Statistics). Statistical methods of descriptive statistics (including mean, standard deviation, and frequency

distribution), t-test, chi-square test, one-way ANOVA (analysis of variance), and spearman correlation tests were used. This portion of the study is statistically exploratory, with no a priori expectations. Hence all possible bivariate relationships are considered.

6.1.2 Hypotheses

The secondary data analysis tested the following hypothesis:

- (a) Participants who completed the program (had at least one follow up appointment) would report positive changes in self-reported scales, with a decrease in NRS, increase in functionality (decrease in BPI), increase in confidence score and decrease in MEQ

6.1.3 Measures- Outcome Variables

The primary outcome measures of interest were:

- Numerical Rating Scale (NRS)
- Confidence Level Scale
- Brief Pain Inventory (BPI)
- Morphine Equivalence Quotient (MEQ)

All three measures of interest were self-reported scales which have all been clinically tested and are validated pain scales (Younger, McCue & Mackey, 2009).

6.2 Primary Data Collection

6.2.1 Design and Survey Instrument

An online survey method was chosen for the qualitative portion of the study. A survey was selected for this study as it ensured quick data compilation, being easy to administer which made it cost-effective. The fact that it was administered online, through SurveyMonkey.com, allowed participants to access it regardless of geographical location allowing for efficient and rich data

collection (Jones, Baxter & Khanduja, 2013; Heen, Lieberman & Miethe, 2014). Online surveys have the disadvantage of limiting participation from individuals without internet access. Therefore, interested participants who couldn't access the survey online were sent physical copies of the survey through mail so as to increase participation.

A questionnaire was designed specifically for the purposes of this study. These questions were developed using surveys that have been developed to measure self-management support: Assessment of Chronic Illness Care (Bonomi, Wagner, Glasgow & VonKroff, 2002), Patient Assessment of Care for Chronic Conditions (Glasgow et al., 2005) and the Assessment of Primary Care Resources and Supports for Chronic Disease Self-Management (Brownson et al., 2007). All questions were reviewed and ethics approval was obtained from The Review Ethics Board at Bruyère and the University of Ottawa Office of Research and Ethics.

6.2.2 Setting

As previously mentioned, the Bruyère Family Health Team has a team of varying professionals from physicians, registered nurses, nurse practitioners, physiotherapists, to social workers, administrative support staff and many other health care professionals who all work collaboratively to provide coordinated care within the primary care facility.

6.2.3 Participant Recruitment and Sampling

There were three different surveys designed for three different groups of participants:

1. Patients
2. Clinicians (Medical Doctors/ Nurse Practitioners)
3. Administrators (RN/ Clerk/ allied health professionals/ administrative staff)

The target population here were all the members of the Family Health Team (FHT) at Bruyère, dividing them into three main groups. The purpose of dividing them and having three different

surveys was to ask questions that would pertain to the groups specifically. This was done so that the research objective of understanding each group's perspective on a deeper and more valuable level to better guide the future of the program. For example, clinicians were grouped as Medical Doctors (MD) or nurse practitioners (NPs) because of their shared ability to prescribe drugs, and were asked questions which delved into this while RN's were part of the administrative survey as they cannot prescribe drugs. There were two approaches that were utilized to recruit participants for the surveys. For the clinicians and administrative staff, the flyer and recruitment preamble were included in the weekly newsletter that circulates among hospital staff. Reminders were also sent through emails and announcements were made at staff meetings. For patients, following the ethics guidelines, the RN who leads this Chronic Pain Self-Management Program sent them all an email outlining the research survey. Patients interested in participating were asked to email her back at which point she would send them the link to the online survey or the paper-copy through mail (see Appendix for flyer and recruitment texts). The paper-based option for the surveys was offered for patients due to low participating rates.

For the qualitative portion of the study had a total of 36 participants. An online survey was administered through "surveymonkey.com" and paper copies were sent through mail, where applicable.

6.2.4 Strength Weakness Opportunities and Threats (SWOT) Analysis

In order to maintain and possibly improve healthcare organizations, assessments of these organizations must be made on a continuous basis. All healthcare organizations have weaknesses and strengths that are unique to that particular organization. While there are numerous ways to evaluate performance, the measurement tool employed here was a survey. The goal of the survey was to analyze the responses to determine where adjustments need to be made within the Chronic Pain Self-Management Program through a SWOT- analysis framework. As a result, the questions

were made with the intention of identifying internal and external factors that affect the performance of the program, to make future adjustments.

SWOT analyses were initially intended for use in the business field for strategic planning purposes, which is "...the process by which an organization determines its future overall direction and defines the actions that will shape it..." (Balamuralikrishna & Dugger, 1995; Harrison, 2010). However, recently SWOT analyses have gained momentum in other fields as evaluation tools that focus on strategic planning, and establishing priorities (Skinner, Hanning, Sutherland, Edwards-Wheesk & Tsuji, 2012). In healthcare, SWOT analyses are recently being used to evaluate certain health services. A study was conducted by Toivanen, Lahti and Leino-Kilpi (1999) to assess the relevance of SWOT analysis as a tool to measure the quality of a specific health service. They concluded that SWOT analysis "...provided more structured interpretation of the results, and can be more easily transferred to development of services" (Toivanen, Lahti & Leino-Kilpi, 1999). Essentially, the study showed that compared to the conventional analysis, a SWOT analysis is more beneficial in setting priorities and outlining goals for quality improvement within healthcare (Toivanen, Lahti & Leino-Kilpi, 1999; Skinner et al., 2012).

The primary goal of strategic planning is to assess the internal and external environment for helpful and harmful features to the objective at hand. This is illustrated in Table 3, adapted from Harisson (2010). SWOT analysis is a qualitative method and one of the most useful tools in strategic planning as it looks at the strengths, weaknesses, opportunities and threats of a program or organization so as to critically assess programs or organizations and provide future recommendations based on the four aspects. Harrison (2010) defines SWOT analysis as "an examination of an organizations internal strengths and weaknesses, its opportunities for growth and improvement, and the threats the external environment presents to its survival. Originally designed for use in other industries, it is gaining increased use in healthcare..." Strengths and

weaknesses are based on the internal environment as they are made up by the program's goals, resources, and competencies. This identifies the core strengths that the program can capitalize on and the essential areas of improvement. The opportunities and threats are external factors, which are based on the political, economic, cultural and legislative environment that affect the program to either present obstacles or help accomplish its objectives. The SWOT-analysis is based on data, which in this case is collected through surveys, and "... the conclusions drawn from SWOT analysis are [based on] an expert opinion of the panel..." (Harrison, 2010). For the purposes of this paper, the panel will be the author with contributions from the advisory committee. With this type of analysis, the rationale behind placing certain themes in one box over the other are based on what the organization deems most important (Toivanen, Lahti & Leino-Kilpi, 1999). In other words, the conditions are based on the priorities set by the Chronic Pain Self-Management program, which were clearly outlined as the main objectives of the program.

Table 1: Example of SWOT Matrix

	Helpful to Objective	Harmful to Objective
Internal Origin	STRENGTH	WEAKNESS
External Origin	OPPORTUNITY	THREAT

In evaluating the different functional areas of the program performance, three different surveys were created to pertain to a specific population. Clinician’s and administrator’s survey questions were developed with help from Assessment of Chronic Illness Care (Bonomi et al., 2002), and the Assessment of Primary Care Resources and Supports for Chronic Disease Self-Management (Brownson et al., 2007), while patient’s survey questions drew on the Patient Assessment of Care for Chronic Conditions (Glasgow et al., 2005) . These are all validated tools examining self-management support and were used as practical tools to help improve the program as a whole. Questions ranged from being scored on a Likert type (single questions) or Likert type (multiple item question), to open ended questions, as well as multiple choice questions. Open ended questions were used to collect quantitative data, while those based on the Likert scale were used to collect quantitative data. The survey was intended to explore the attitudes and perspectives of patients, clinicians and administrative/support staff who were in some way involved with the RN-Led Chronic Pain Self-Management Program.

6.2.5 Data Analysis

These surveys were intended to explore the attitudes and beliefs of healthcare providers, administrative staff and patients who were involved in the RN-led Self-Management Chronic Pain Program at the Bruyère Family Health Team. As the goal was to analyze results with a SWOT framework for future guidelines to improve the program, thematic analysis was conducted with the survey data by the lead researcher. The Likert questions and Likert-Type questions produced quantitative data and were analyzed accordingly. Qualitative data was organized by hand. The analysis began with coding. The open question questions were coded individually by assigning words/ sentences into specific themes. Themes were identified using inductive and deductive reasoning. Subthemes were identified and categorized into major themes. Themes were derived from the data collected with the surveys and were categorized into a SWOT matrix. These would then help develop strategies to improve the program as a whole.

7 RESULTS

7.1 Secondary Data Analysis:

7.1.1 Participants

A total of 125 patients were enrolled into the Chronic Pain Self-Management Program and seen by the RN. Their ages ranged from 19 to 91 years ($M=58.80$, $SD=16.42$). Of these, 58 patients had at least one follow up appointment (46.4%) and were considered to have completed the program. The remaining 64 patients only had one appointment (51.2%), and 3 patients (2.4%) had booked a follow up appointment but had not yet been seen and reassessed at the time of the study.

Table 2 : Summary of Participant Demographic Variables (N=125)

Variable	Range	Mean (<i>M</i>)	Standard Deviation (<i>SD</i>)	Number (<i>N</i>)	Percentage (%)
Age (years)	19- 91	58.80	16.42		
Sex					
Female				96	76.8
Male				29	23.2
Had at least 1 Follow Up Visit					
Female				46	79.3
Male				12	20.7
Had No Follow Up Visit					
Female				48	75.0
Male				16	25.0

The tables below show the mean NRS, interference and confidence scores for patients at the first visit and the mean NRS, interference and confidence scores and MEQ for patients at the last visit with their corresponding standard deviations.

	N	Mean	Std. Deviation
NRS 1 st Visit	87	5.94	2.118
NRS Last Visit	52	5.81	2.368

	N	Mean	Std. Deviation
Interference 1 st Visit	80	45.82	14.748
Interference Last Visit	44	41.45	18.368

	N	Mean	Std. Deviation
Confidence 1 st Visit	72	7.30	2.304
Confidence Last Visit	34	7.32	2.041

	N	Mean	Std. Deviation
MEQ 1 st Visit	23	75.00	160.91
MEQ Last Visit	23	54.09	134.29

A paired sample T-test was conducted to measure the differences in MEQ and self-reported NRS, interference, and confidence before and after completing the program. This was the test chosen as the means are from the same population, but taken at different times. There was no statistically significant difference between the patient's self-reported NRS, interference or confidence before and after completing the program. The differences between the two self-reported scores (first and last) are likely due to chance and not due to participation in the program. However, there was a statistically significant difference in the patient's mean MEQ before and after the program ($p=0.036$). The results are summarized in table 3 below.

Table 3: Patient Self-Reported Scores at First and Last Appointments

	First Appointment		Last Appointment		p^*
NRS	<i>n</i>	Mean (SD)	<i>n</i>	Mean (SD)	0.134
	87	5.94 ± 2.118	52	5.81 ± 2.368	
Interference	80	45.82 ± 14.748	44	41.45 ± 18.368	0.073
Confidence	72	7.30 ± 2.304	34	7.32 ± 2.041	0.601
MEQ	21	80.98 ± 167.46	21	57.10 ± 140.27	0.036

*Comparison of difference between self-reported scores before and after completing the program; significance of difference from first appointment ($p<0.05$)

7.2 Outcome measures of interest:

1. Numerical Rating Score (NRS): 52 patients had reported NRS at their first appointment and last appointment. 42.3% reported an improvement in their pain NRS.
 - a. There was no statistically significant difference ($p= 0.134$) between the patient's self-reported NRS before and after completing the program.
2. Interference Score: 44 patients had reported interference score at their first and last appointment. 61.4% reported an improvement in their interference score.
 - a. There was no statistically significant difference ($p= 0.073$) between the patient's self-reported interference scores before and after participation in the program.
3. Confidence Score: 34 patients had reported confidence scores at their first and last appointment. 35.3% had an improvement in confidence scores.
 - a. There was no statistically significant difference ($p= 0.602$) between the patient's self-reported confidence scores before and after participation in the program.

When the self-reported outcome measures at the first appointment were compared to the last follow up appointment, the difference was not statistically significant for any of the self-reported outcome measures.

Daily MEQ was the last outcome of interest in this study. There were 28 patients where opioid MEQ was reported in their charts at their first and last appointment. 2 of these patients have not completed the program so were excluded. Additionally, 3 patients of the 26 patient population had dosages that were not numeric and rather branded in the data file as a “rare” dosage, or the name of the specific opioid being taken (ex: “Burans”). Essentially, this leaves us with 23 patients with MEQ at first and last appointments. Further, 2 more patients out of this 23 had MEQ values that

were not discrete values. Rather, they were presented as a range because that is how the patient's prescription appeared. Hence, there were 21 patients with reported MEQs that were analyzed and presented in the table above. For the purposes of the data analysis software, only the quantifiable numerical dataset was analyzed (21 patients). However, looking at all the patients that completed the program and performing the data analysis using Excel, 10 patients out of the 26 with first and last MEQ had a decrease in their MEQ (38.5%). On top of these 10 patients, 2 patients that had the name of the specific opioid they were taking instead of a discrete value at their first appointment had a decrease at their follow up. One of these patients even went down to an MEQ of 0. Overall, that means 12 out of 26 patients had a decrease in their MEQ from their first to their last appointment (46.2%). Of these, 4 patients fully stopped their opioids and had an MEQ of 0 at their last appointment (15.4%). Of the remaining 14 patients, 8 patients had no change in their MEQ from the first appointment to the last appointment (30.8%). This means 6 patients had an increase in their MEQ (23.1%).

MEQ values at the first and last appointment were strongly and positively correlated ($r= 0.965$, $p<0.001$). There was a significant average difference between patient's MEQs at the first and last appointment ($t_{20}= 2.245$, $p<0.05$). On average patients came into their first appointment with an MEQ of 23.88 higher than at their last visit (95% CI [1.69, 46.07]).

Various Statistical Tests with Significant Outcomes:

1. A chi square test was performed and a significant relationship was found between doing the PETD and goal setting/ achieving behavior, $X^2 (3, N=130) = 46.77$, $p< 0.001$. The results suggest that patients who did the PETD were most likely to achieve their goal (29%), while patients who did not do the PETD were most likely to not set a goal (44%).

2. A chi square test was performed and a significant relationship was found between being on opioids and any changes in MEQ, $X^2 (3, N=130) = 93.00, p < 0.01$. 26.9% of the total patient population were on opioids. Of these individuals, 40% saw no change in their MEQ from their first to their last appointment, while 36% saw a decrease in their MEQ from their first to their last appointment.
3. A chi square test was performed and a significant relationship was found between being on opioids and goal setting/achieving behavior, $X^2 (3, N=130) = 8.35, p = 0.04$. If patients were on opioids, they were most likely to not set a goal (66.7%).
4. A chi square test was performed and a significant relationship was found between having a follow up visit and goal setting/achieving behavior, $X^2 (6, N=130) = 66.97, p < 0.01$. If patients had a follow up visit, they were most likely to achieve their goal (61.7%), whereas those who didn't have a follow up visit, were most likely to not set a goal (92.2%).
5. A chi square test was performed and a significant relationship was found between having a follow up visit and completing the PETD, $X^2 (2, N=130) = 26.68, p < 0.01$. If patients had a follow up visit, they were most likely to complete the PETD (83.4%), whereas those who didn't have a follow up visit, were most likely to not complete the PETD (60.5%).
6. A one-way ANOVA test was done to understand whether the patient's interference scores differed based on whether they were on opioids. The mean interference scores were equal for the three groups (on opioids, not on opioids, N/A) for the last visit [$F(1,37)=0.35, p=0.56$]; however, the mean interference score was significantly different for at least one of the three groups (on opioids, not on opioids, N/A) for the 1st visit [$F(1,73)=4.36, p=0.04$]
7. A one-way ANOVA test was done to understand whether the patient's interference scores differed based on goal setting behavior. The mean interference scores were equal for the four groups (achieved goal, stayed the same, didn't achieve goal, didn't set a goal) for the

last visit [$F(3, 34) = 0.20, p = 0.90$]; the mean interference score was significantly different for at least one of the four groups (achieved goal, stayed the same, didn't achieve goal, didn't set a goal) for the 1st visit [$F(3, 44) = 3.26, p = 0.03$].

Significant Correlation Tests:

1. Patients with higher pain in the beginning of the program also reported higher pain scores at the end of the program ($r = 0.468, n = 49, p = 0.001$)
2. Patients that reported higher pain scores at the first visit also reported higher baseline interference scores (at the first visit) ($r = 0.480, n = 75, p < 0.01$)
3. Patients that reported higher pain scores at the first visit also reported higher interference scores at their last visit ($r = 0.418, n = 39, p = 0.008$)
4. Patients with higher pain scores at the end of the program also had higher interference scores ($r = 0.475, n = 39, p = 0.002$)
5. Patients who reported higher interference scores at their first visit had higher interference scores at their last visit ($r = 0.511, n = 39, p = 0.001$)
6. Patients who had higher function scores at their first visit also reported higher interference scores during their first visit ($r = 0.415, n = 45, p = 0.005$)
7. Patients who reported a higher confidence score at their first appointment, reported lower interference scores at their last appointment ($r = -0.404, n = 35, p = 0.016$)
8. Patients who reported a higher function score at their first appointment also reported a higher function score at their last appointment ($r = 0.560, n = 35, p < 0.01$)
9. Patients with a PETD done were more likely to set a goal and achieve it ($r = 0.611, n = 96, p < 0.01$)

7.3 Primary Data Analysis

The clinician survey in English had 13 participants total, administrator survey had 14 participants total, and patient survey had 9 participants. A breakdown of survey participants can be seen in the table below (Table 4).

Table 4: Summary of Survey Participants and Delivery Methods (N=36)

Survey	Language	Method of Delivery	Number of Participants (N)
Patients	English	Online	2
Patients	English	Mail	4
Patients	French	Mail	2
Patients	French	Online	1
Administrators	English	Online	11
Administrators	French	Online	3
Clinicians	English	Online	13
Clinicians	French	Online	0
Total			36

The thematic analysis of the surveys revealed many interrelated themes and sub-themes regarding the perceptions of clinicians, patients, administrative staff and allied health professionals within the RN-led Chronic Pain Self-Management Program as illustrated in the tables 5, 6 and 7 below.

Table 5: Summary of Responses from Administrators:

Administrators

INTERNAL FACTORS	
STRENGTHS (+)	WEAKNESSES (-)
<ul style="list-style-type: none"> Advantages of CPSM RN led intervention <ul style="list-style-type: none"> Continuity of care Holistic approach Great collaboration Focus on patient empowerment through educating patient, ensuring patient-centered care, and provision of self-management support RN has more time- longer appointments/ RN increased availability) Highly competent personnel (Positive qualities of the RN's personality) 	<ul style="list-style-type: none"> Limitations of RN <ul style="list-style-type: none"> Increase burden on nurses Limited collaboration/awareness of program <ul style="list-style-type: none"> Disseminate research results Divide work-load with others
EXTERNAL FACTORS	
OPPORTUNITIES (+)	THREATS (-)
<ul style="list-style-type: none"> RN can become expert in CNCP management (cost-effective) Program provides some form of accountability (being responsible for supporting specific patient) 	<ul style="list-style-type: none"> Costs of program implementation Limitations of RN <ul style="list-style-type: none"> Inability to prescribe Negative perception of RN by patient

Table 6 Summary of Responses from clinicians

INTERNAL FACTORS	
STRENGTHS (+)	WEAKNESSES (-)
<ul style="list-style-type: none"> Multidisciplinary approach Patient engagement (motivation) Focus on patient empowerment through educating patient, ensuring patient-centered care, and provision of self-management support RN has more time: increased accessibility 	<ul style="list-style-type: none"> Lack of awareness of program Lack of integration of program <ul style="list-style-type: none"> Possible lack of communication can affect ensuring coordinated care Lack of specific guidelines of appointments to share with the whole team
EXTERNAL FACTORS	
OPPORTUNITIES (+)	THREATS (-)
<ul style="list-style-type: none"> Advantages of RN: <ul style="list-style-type: none"> RN cannot refill opioids Cost effective (expertise of RN) 	<ul style="list-style-type: none"> Limitations of RN <ul style="list-style-type: none"> Inability to prescribe Negative perceptions of RN by patient

Table 7 Summary of Responses from patients

INTERNAL FACTORS	
STRENGTHS (+)	WEAKNESSES (-)
<ul style="list-style-type: none"> • Benefits of RN <ul style="list-style-type: none"> • Support from RN (feel listened to and involved in their care) • Being held accountable by RN- checks up on patient to track progress after appointment • Professional • Takes adequate time to understand patient, ask about their goals in caring for their condition • Supports patient in learning skills to better care for themselves • Good communication between RN and patient's primary family physician/ nurse practitioner • Very satisfied with RN leading the program compared to doctor leading the program • Advantages of Appointments <ul style="list-style-type: none"> • Convenient • Fast • Improved the understanding of chronic pain (positive comments regarding resources and education material (handouts) used • Increased patient participation in their healthcare • Resulted in improvements with: level of chronic pain, physical health, mental health, ability to do day activities, better understand medication and decrease use of narcotics/ opioids 	<ul style="list-style-type: none"> • Other health care providers were not as familiar with patient history • Too few appointments • Not enough advice on how to access certain services or information required by patient is given
EXTERNAL FACTORS	
OPPORTUNITIES (+)	THREATS (-)
<ul style="list-style-type: none"> • Understanding that Opioids alone are not the answer to pain management • Compared to other support programs this one is much better in patient's view • Positive experiences with nurses 	<ul style="list-style-type: none"> • Continued struggle with daily pain • Negative experiences with other healthcare providers

Across all three survey groups, clinicians, administrators and patients, time was brought up as an important theme and was categorized as a strength of the program. Patients discussed its benefits for them in terms of convenience, and the ease of booking an appointment with the RN. For clinicians and administrators, discussions surrounded the fact that RN's had more availability which would allow for longer appointments and overall increased accessibility for the chronic pain patient. Furthermore, both clinicians and administrators pointed out the cost-effective opportunity that exists with having an RN with expertise in the management of chronic pain. Some administrators also mentioned the possibility of an increase in costs due to the implementation of the program within the primary healthcare facility. Other administrators also mentioned the increased burden on the nurses as a result of expanding their duties to take care of such a program. As the program deals with chronic pain patients, monitoring and possibly tapering the patient's opioid intake, where applicable, was one of the goals of the program. Currently, RN's do not have

the authority to prescribe medications. This was noted as a positive quality by the clinicians but also mentioned as a negative quality by both clinicians and administrators.

There were a few intrinsic qualities of the RN that were noted by patients. They all had a positive experience with the RN and were greatly satisfied with the RN taking the lead role, as opposed to a doctor. The positive qualities identified included the RN's supportive and professional qualities that really gave patients a good overall experience with the program. Patients highlighted the importance of having someone who has adequate time to listen and understand them. It was noted that there were no negative qualities mentioned by patients of their experience with the RN. Rather, most patients went so far as highlighting that: "This program (Chronic Pain Nurse) is such an important piece in dealing with daily chronic pain. It should definitely stay in place- very helpful".

Administrators highlighted the accountability segment that the program as a whole can offer for the chronic pain patient. With the RN serving as a case-manager, there is a way to ensure that each and every patients needs are met and as a result continuity of care is a central element of the program. Patients are not left to get lost in the system or navigate themselves through a healthcare system that does not prioritize their needs.

As a self-management program, educating patients is central to the goal of the program. Helping patients become responsible managers of their own health means helping them understand their condition so they are confident to in coping and managing it. In doing so patients gain the confidence, skills and knowledge to manage the physical, emotional and social aspects of their lives using the resources available to them. This was achieved with this program as patients consistently reported improving their understanding of chronic pain and more specifically this program even went so far as showing patients that opioids aren't the only answer to pain management. Patients reported a growth in their understanding of the medication they were being

prescribed, which encouraged them to decrease their use of narcotics and opioids. The PETD was one of the tools patients also recognized as a valuable part of this education they received.

Promoting patient engagement is an important component of self-management. Patients reported feeling more involved in their care plans which was noteworthy as majority related it to their increased understanding of their condition and medication.

The program was also identified by administrators to have a holistic approach to patients, considering all biological, psychological and sociological aspects of the person. This was especially noted with the patients recall of the PETD tool, with majority of the patients reporting it was “extremely important” in their understanding of pain.

8 DISCUSSION

Poorly managed chronic pain can result in significant human suffering, affecting physical and emotional well-being. It is associated with deteriorations in overall quality of life and is a burden to society. This is evidenced by the increase in disability payments, health care utilization, and loss of productivity making the effective management chronic pain in Canada a top priority for clinicians, patients and policy makers alike.

This project was looking at how to better address chronic non-cancer pain within primary care using a registered nurse as the program lead. The literature has established that self-management is an effective technique for the management of chronic pain. While effective pain management needs the collaborative effort of different professionals, nurses have also been specified as effective implementers of other multidisciplinary programs. Moreover, educating nurses in pain management has been shown to be effective. Therefore, there is a potential that exists within the intersection of these two areas: nurses possibly being leaders in the discipline of pain management. The main purpose of the study was to assess the effectiveness of an RN-led Chronic Pain Self-Management Program that is both integrated within primary care and provides comprehensive care through its multidisciplinary team.

The primary outcomes of interest for the quantitative portion of the study didn't present any significant results. The NRS is unidimensional scale, which is presented as an 11-point numeric scale with the label of "no pain" at one end and "worst pain imaginable" at the other. Patients are asked to report their pain intensity in the last 24 hours and supposed to mark their corresponding

pain level scored from 0-10 as whole numbers (Childs, Piva & Fritz, 2005). Variations of the scale exist as it was later developed from its horizontal state to a vertical version and to have more numbers, from 0-100 (Williamson & Hoggart, 2005). Nonetheless, a study done in 1994 with chronic pain patients concluded that the original 11 point scale would essentially provide the same amount of information as a 101-point scale (Jensen, Turner & Romano, 1994). NRS is very easy to administer and score, and hence isn't surprising that it is the most preferred measure of pain intensity for chronic pain patients (Hawker, Mian, Kendzerska, French, 2011). It is a very practical tool in pain research because of its replicability, ease of use, and its wide applicability to a variety of settings including clinical use (Hawker et al., 2011; Ferraz et al., 1990; Williamson & Hoggart, 2005).

Further, when comparing the different tools that one can use to measure pain severity, NRS is the best supported in terms of relative validity being the most responsive pain severity tool (Ferreira-Valente, Pais-Ribeiro & Jensen, 2011). Out of the 125 patients seen, only 52 had their NRS reported for their first appointment and their last appointment. The NRS recorded during their first appointment was the baseline value. All NRS from follow up appointments were recorded, but only the most recently recorded NRS taken during their last follow up appointment was used as their post-treatment values. The mean pain severity for the population at the first appointment was 5.94 ± 2.12 which is rated as mild pain and even though majority of the patient population was female with only 23.2% being male, the interpretation of pain intensity is independent of sex (Boonstra et al., 2016). The results showed that 42.3% reported an improvement in their pain intensity which was not statistically different ($p=0.134$). Not having statistical significance could be attributed to the fact that the patient population were those with chronic, persistent pain. Considering that the patient population of interest here is one with chronic pain, statistical

significance becomes less important as for example, statistical significance with a minute change in pain would not mean a lot. Rather, a more clinically informative and descriptive summarizing statistic of the intervention is the proportion of patients who attain a clinically important improvement.

While statistical significance is important, it isn't always needed to demonstrate clinical significance. In fact, studies looking at the minimal clinically significant difference (MCSDD) in pain severity rated the clinical impact on patients as more important than statistical significance (Kelly, 2001) and demonstrated that statistical significance on NRS scores may have no clinical importance (Todd, 1996). The literature states that on a NRS scale of 0 to 10, an absolute decrease of 1.74 points is best associated with improved pain status among patients with chronic pain (Farrar, Young, LaMoreaux, Werth & Poole, 2001). This amount of decrease aligns with conclusions regarding meaningful changes in VAS according to the Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials (IMMPACT) (Dworkin et al., 2008). Further, comparing means across populations is not very clinically informative and is simply a summary of the statistics (Gabis et al., 2009). Rather, a more informative way to present the statistics is by analysis of proportion of patients who achieved a clinically significant improvement (Farrar, 2000). 14 of 22 patients, or 63% experienced a clinically significant improvement of 1.74 points or greater. Considering the chronicity of the population, having more than a quarter of the total population with two or more sessions, demonstrating clinically significant pain reduction is substantial.

The Brief Pain Inventory (BPI) is a multidimensional pain rating tool, used to capture both intensity of the pain and the interference of the pain in an individual's life. From the study, 44 patients reported an interference score at their first and at their last appointment and of these 61.4%

reported an improvement in severity and interference of their pain. However, this was close to statistical significance but ultimately not statistically significant ($p=0.073$).

According to an analysis performed by Mease et al., similar to the minimum clinically important difference (MCID) (Jaeschke, Singer & Guyatt, 1989) for VAS, the MCID for BPI has been concluded to average around a two-point improvement (Mease et al., 2011). IMMPACT even rates as little as a one-point improvement as being minimally important (Dworkin et al., 2008). For the purpose of our conclusions being relevant to both MCIDs, we will use the greater MICD of the two. Of the patients in the study with a change, that reported an improvement in their BPI ($n=27$), 22 patients had an improvement of 2 points or greater with maximum difference reported at a 50-point decrease. This means that 81% of patients who reported an improvement had a clinically significant improvement in BPI scores. Since majority the patients with improvements met the MCID for BPI, the results can be seen as clinically significant.

Confidence was the third outcome measure of interest. 34 patients or 27.2% of the total population had reported confidence scores at their first and last appointment but the change was not statistically significant. The majority of patients, or 72.8% ($n=91$), had missing data, with 6.4% reporting no change in confidence ($n=8$), and a greater number of patients with a decrease in confidence (11.2%, $n=14$) than increase in confidence score (9.6%, $n=12$). A central aspect of the SMS given in this program comes with the patient generated short term action plan. Bodenhiemer et al., liken this to a short-term New Year's resolution that spans for a few weeks (Bodenhiemer, Lorig, Holman & Grumbach, 2002). The action plan is something realistic that the patient chooses and is recorded as their goal. Following this, patients are asked to assess their confidence, on a

scale of 1-10, to attain this goal. The whole point of setting a goal or action plan is "...to give patients confidence in managing their disease, confidence that fuels internal motivation" (Bodenheimer, Lorig, Holman & Grumbach, 2002). The literature suggests that in order for goals to be successful, the patient's confidence level should be at a 7 on the confidence scale of 1 to 10 (Bodenheimer, Lorig, Holman & Grumbach, 2002; Anderson, Christison-Lagay & Procter- Gray, 2010).

However, the RN did not in any manner try to encourage patients to express a confidence level of 7 or greater so as to not bias their self-reported scales. As a result, this lack of encouragement would have skewed results for the changes in confidence seen as the success of patients to achieve their goals is directly related to having a score of 7 or greater. Bodenheimer et al., even go so far as saying, "if the answer is below 7, the action plan should be made more realistic in order to avoid failure" (Bodenheimer, Lorig, Holman & Grumbach, 2002). Since patients were not told to make a new goal, the achievement of their goal could have potentially been hindered which could possibly negatively affect their confidence scores at follow up visits. The data shows that majority or 61.8% of patients with at least one follow up visit achieved their goal or succeeded with their action plan. This number could be increased by motivating patients to increase their confidence scores or by helping them decide on a goal that is more attainable as determined by their self-reported confidence score.

According to the literature, there is a strong correlation between pain intensity and interference in chronic pain patients (Fayers et al., 2011). The results from the correlation tests performed reflect this phenomenon since the patients that reported higher pain scores at the first visit, reported higher interference scores at their last visit ($r=0.455$, $n=44$, $p=0.002$). When looking at the scores at the

end of the program, those with higher pain scores also ended up with higher final interference scores ($r=0.450$, $n=43$, $p=0.002$). The literature on pain intensity also shows that pretreatment scores of VAS affected the amount of change needed for patients to report a meaningful decrease in their pain (Jensen, Chen & Brugger, 2003). Essentially, when patients have higher levels of pain before treatment, they need a greater decrease in their pain intensity than patients with lower levels of pain intensity, for them to report it as a significant improvement. These correlation results align with the fact that baseline pain intensity has a biasing effect on how the patient interprets their improvements in pain (Jensen, Chen & Brugger, 2003), which goes hand in hand with the aforementioned results.

Opioids are psychoactive substances which can have been shown to be effective in treating acute pain and cancer pain (Todd, 2007). However, due to the risks that come with opioid use for chronic non-cancer pain, critics often debate its effectiveness in the treatment of chronic non-cancer pain (Rosenblum, Marsch, Joseph, Portenoy, 2008; Busse et al., 2017). While we have seen increases in the opioid prescribing rate, with Canada having the highest rate of opioid prescribing in the world looking at morphine equivalents dispensed, there hasn't been a significant change in the prevalence of chronic non cancer pain (Gordon et al., 2010; Busse et al., 2017). The "2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain" supports tapering or rotating opioids to facilitate dose reduction for patients who are currently using opioids (Gordon et al., 2010). More specifically, it is suggested that patients on 90mg morphine equivalents per day or more should taper opioids to the lowest effective dose (Busse et al., 2017). Majority of the patients in this study had an MEQ of less than 90mg per day, with only 6 patients that had an MEQ higher than 90mg per day at their first visit. Of these patients, 2 had the same MEQ at the first and their last visit and 2 had a decrease in their MEQ but it was still more than 90mg morphine per day at

the last visit. The rest had decreased MEQ of lower than 90mg morphine per day by the last visit. Looking at the whole dataset, there was a statistically significant decrease in the patient's MEQs from the first to their last visit. After this program, patients had a decrease in opioid usage (46.1%) and some went so far as a cessation of their opioids all together (33.3%). When opioids are used for a longer period time, it can lead to physical dependency (Passik, Byers & Krish, 2007). Having a program readily available to reduce the amount of people taking opioids would lead to benefits not only for the individual but for society as a whole. This is because costs of opioid epidemic do not only burden the individual and is rather shared among all players in the system (National Association of Attorneys General, 2017; Gudín et al., 2018). The first recommendation in the "2017 Canadian Guideline for Opioids for Chronic Non-Cancer Pain", states to look to non-opioid therapy for patients with chronic non-cancer pain. This program would help alleviate those who were placed on opioids as their first-line treatment. The guideline also strongly recommends a multidisciplinary program for patients on opioids who are experiencing challenges in tapering (Busse et al., 2017). This is a multidisciplinary program that presents an opportunity to satisfy this recommendation as the statistics that support the ultimate goal of identifying a beneficial solution to the opioid crisis for all stakeholders involved.

8.1 Primary Data Analysis- Discussion

The survey had numerous strengths. It was a clinic wide survey, including all active participants of the Bruyère Family Medicine Centre. As a result, it provides a comprehensive illustration of the experience of a broad variety of professionals engaged in chronic pain management within primary care settings. The analysis was multifaceted, looking at the structural components of the chronic pain self-management as outcomes within the surveys. The key themes identified from this survey were grouped into: self-management support, collaboration, approaches to care, and qualities of the RN and showed that the program was acceptable and valuable to all stakeholders. The results

from the study will be used to provide focused feedback for the facilitation of future changes within the program to address all identified issues and build on the positive attributes.

8.2 Self-Management and Self-Management Support

Self-management programs have increasingly been recognized as an important aspect in the delivery of health-care for those with chronic diseases. People with chronic conditions require interventions that focus on giving them the information and helping them gain the confidence to manage their disease. This delivery has been implemented through group programs across Canada. For example, across the province of Ontario the 14 Local Health Integration Networks (LHIN) offer the Chronic Disease Self-Management Program and an internet-based delivery called the Online Chronic Disease Self-Management Program. These programs prioritize the needs of patients with chronic health conditions giving them the skills to manage their symptoms in an effective manner. However, these programs are not enough to reach all Canadians. One of the recommendations set out by the *Health Council of Canada* is to “Broaden and deepen efforts to reach more Canadians who need self-management supports...” (Health Council of Canada, 2012). The recommendations included having newer interventions such as one-on-one interventions to support those Canadians who are in need. This project aimed to do just that, through the provision of self-management support that is integrated within primary care. The framework on which this program was built is on the CDSMP from Stanford University (Lorig et al., 1999).

The goals of a self-management program are to educate and empower patients to have the skills and confidence to understand and appropriately manage their chronic conditions (Health Council of Canada, 2012; Johnston, Liddy & Ives, 2011). Unsurprisingly, the goals of this Bruyère Family Medicine Centre SMS program align with this principle. According to the survey results the

program does meet these goals. Patients reported feeling more involved in their care as a result of this RN-led Chronic Pain Self-Management Program. The Health Council of Canada has identified that patients that feel more involved in their care have better health outcomes (Health Council of Canada, 2011). This demonstrates the pronounced potential weight that patient engagement has on the improvement of health outcomes. Evidence shows that people with chronic conditions require support in both being given information and help understanding that information (Protheroe, Rogers, Kennedy, Macdonald & Lee, 2008). This was reflected in the patient's appreciation for the information given, including the pamphlets and brochures, improving their access to specific resources they needed. Further, research shows that increasing access to information is not the only important success of self-management interventions. More specifically, those self-management interventions tailored to a specific population have are more successful in improving patient engagement with information and resources (Protheroe et al., 2008). The program also helped them improve their understanding of the medication they are prescribed. Patients also reported a decrease in their use of opioids/narcotics, attributing this as a benefit of being involved in the program. The pain management education delivered by the RN in this program was effective as it helped patients understand that opioids aren't the only answer to managing their pain. Further patients attributed their decrease in their reliance of narcotics and opioids to their greater understanding of the medications they are on, which all stemmed from this program. Patients described the materials they were presented in a positive manner as one of the aspects they valued most about the program. The materials given were to help patients easily understand chronic pain, any related factors to their pain and other helpful resources they could access. The most important tool in this program is the PETD as it is used in all appointments had with the RN, ensuring that all relevant aspects of the patient's life are intricately discussed. It has been shown to improve

recall of risk factors, diagnoses and treatment plans (Finestone, Yanni & Dalzell, 2013). The tool is easy to use and very transferable for use in other settings.

Due to its patient-centered approach, self-management fixates on allowing the patient to identify problems and build the confidence and skills to solve these problems. This is also known as self-efficacy, which is a central pillar of self-management (Bodenheimer, Lorig, Holman & Grumbach, 2002). Therefore, patients were encouraged to choose their own goals. The patient feedback on goal-setting was very positive as it was cited as a motivating factor in any health improvements that were noted. Additionally, the concept of accountability was mentioned by patients in relation to goal-setting. Patients saw goal-setting and developing a care plan as a way for them to be held accountable for the goals they set. In order to help patients make good choices and sustain these healthy lifestyle principles, it is important to have accountability (Liddy, Johnston, Irving, Nash & Ward, 2015; Thom et al., 2014; Wolever et al., 2010), which was unsurprisingly identified as a strength of the program.

8.3 Collaboration

Creating standardized framework for program and sharing with colleagues

The program was built as a multidisciplinary self-management program with a network of care specialists and allied health professionals. Having seen how the problem of managing chronic pain is largely grounded on issues with fragmentation of care evidenced by elements including long wait-times, it is hugely advantageous to have an integration of all services within one setting. The findings however suggest a need to increase focus on the collaboration within the program. This was highlighted in the administrator and clinician surveys, which emphasized a need for increased integration of the program within the health care facility and increased knowledge about the program as a whole within the FHT. This was also extended to include the need for creation of

specific guidelines outlining how appointments are conducted with the RN. Morley and Cashell have highlighted the benefits of collaborative practice, identifying it as a fundamental approach in improving quality of care in Canada (Morley & Cashell, 2017). Lack of collaboration has proved to have negative patient outcomes, with increased readmission and mortality rates (Baggs et al., 1997). Additionally, research shows that interventions that are separated and fragmented aren't effective for the treatment of chronic conditions within primary care (Gilbody, Whitty, Grimshaw & Thomas, 2003). The survey responses also showed that doctors highlighted the multidisciplinary nature of the program as one of its positive aspects. Looking to the future, as the program is currently multidisciplinary, increased focus on transforming it to a collaborative, interdisciplinary team could be an important goal as the latter has improved team performance (Körner, 2010). The main distinction between the two is that multidisciplinary models focus on directing services from different team members each with a different goal while interdisciplinary models highlight team members working together toward a common goal (Stanos & Houle, 2006). The survey findings have showed the need and importance of moving toward an interdisciplinary collaboration which is in accordance with the literature (Fewster-Thuente & Velsor- Friedrich, 2008). It is also important to note that the survey was developed by drawing questions from pre-established surveys that evaluate self-management support programs. There were no questions pulled from these surveys that directly addressed "interdisciplinary" topics. Rather these responses related to "collaboration of care" or "multidisciplinary vs. interdisciplinary" came up mostly in the open-ended questions. Therefore, it is hard to say that this survey provides a robust evaluation of the collaboration of care within this program. A deeper investigation on this should be performed.

8.4 Approach of care: Holistic, patient-centered, and continuity of care

Administrators identified the holistic approach of care within the program as a strength. The program does implement a biopsychosocial approach in managing chronic pain as the RN goes through all potential risk factors associated with the patient's pain using the PETD (Finestone et al., 2013; Finestone et al., 2015), (sleep, psychosocial factors, exercise, diet). The findings also showed that the program prioritizes patient centeredness. This is evidenced through the responses that highlighted the focus of the program on patient empowerment, and implementing a holistic approach. Patients reported feeling involved in their care which is an important attribute to the ongoing success of self-management. Chronic pain patients have reported seeking care in the emergency department because of a lack of patient-centered care (Jambunathan, Chappy, Siebers & Deda, 2016). As a result, the finding of this program enhancing patient-centered care is especially noteworthy. Self-management heavily relies on a partnership between patients and professionals that focuses on the specific to the needs of the patient. According to the Health Council of Canada, patients who felt involved in decision making regarding their care plans had better health outcomes, further highlighting its importance (Health Council of Canada, 2011).

Doctors identified the multidisciplinary approach of the program as a strength of the program. The program is led by an RN who meets with the patients on a one-on-one basis. It also employs the shared-care model in which the RN will refer patients to allied health professionals, specialists, or community-resources as needed. As a result, patients do interact with individuals other than the RN as part of the program. Negative experiences with other members of the care team were noted by patients as a barrier to their access to care. This was seen as a potential threat to the program. A potential solution to help mitigate this issue would be to improve the collaboration within the team. Increased collaboration within the team would ensure that all members are up to date and on

the same page regarding the patient's care. Studies show that healthcare practices that embrace interdisciplinary teamwork have a much greater positive perception reported from their patients (Tremblay, Roberge, Touati, Maunsell & Berbiche, 2017).

Continuity of care is associated with positive health outcomes such as better patient satisfaction and shorter hospitalizations (Parchman, Pugh, Noël & Larme, 2002). From the survey results, administrators identified this as a strength of the program. The follow up appointments that the RN has with the patients ensures that they are not lost in the system, and eases access of care. Primary health care is essentially the first line of defense acting as a hub to link patients to specific services or specialists. However, many self-management support programs are delivered outside of primary health care (Williams, Dennis & Harris, 2011). Studies show that better integration of self-management support programs within primary health care leads to more sustainable positive changes in patient health outcomes (Health Council of Canada, 2012; Williams et al., 2011).

The finding of improved accessibility was characteristic across all survey groups. It is clear to all groups that lack of time is a considerable challenge in the management of chronic pain within primary care. With an RN there is a clear advantage that comes with the increased availability to schedule regular appointments compared to that of a physician. Even though the program offers regular follow up appointments, a few patients still reported having too few appointments. While this should be reassessed in the future, it is not a priority area as majority of the patients did report having a sufficient amount of appointments with the RN.

8.5 Registered Nurse Qualities

Some other advantages mentioned specific to the RN by the patients included the continuous support by listening and addressing all issues mentioned, taking adequate time to understand patient's views, and was professional. All patients reported being satisfied or very satisfied with having an RN leading the program instead of a doctor. It is grounded in evidence that patients who were involved in RN-led interventions were more satisfied with their care (Health Quality Ontario, 2013). HQO conducted a review on the topic and concluded that specialized nurses in chronic disease management within primary care achieve the same health outcomes as doctors and have more satisfied patients (Health Quality Ontario, 2013). Using the Chronic Pain Self-Management Survey, a study was conducted in 2015 to understand the perspectives of nurses and patients when examining the role of nurses in chronic pain management in Canada. While patients identified physicians as the "most helpful" health care providers in chronic pain management, majority of primary care nurses reported being engaged in some aspects in the provision of SMS within their healthcare facilities (Lukewich et al., 2015). There remains a lack of research exploring primary care nurses who deliver SMS for chronic pain (Lukewich et al., 2015; Kerns, 2010). However, as nurses are already engaged in the delivery of SMS possibilities exist in extending this role.

Administrators also mentioned the possibility of increasing the burden on RN's duties. This is definitely a possibility that we would have to readily accept as Canadians deserve better access to care. However, it is important to note that while the program is led by an RN, the care is still delivered as part of a team and in that sense responsibility and duties are shared within the team. Nurses have always played an important role in the supporting the provision of care in primary facilities. Given the increasing burden of chronic pain on the Canadian population, there is a need to alleviate that burden by looking at the role that all staff play within the primary care model play.

RN-led services have been rising within primary care settings as one of the solutions to this problem we face (Rosenberg, 2012; Day & Brownie, 2014). Particularly, current research supports the extension of nursing roles to the ongoing clinical management of patients with chronic conditions (Day & Brownie, 2014; Eley et al., 2013; Sargent, Forrest & Parker, 2012). However, as was mentioned by administrators from the survey, with more responsibility comes the possibility of facing burnouts which seems to be common in the nursing field and as a result negative implications to the RN need to be considered (Browning, Ryan, Thomas, Greenberg & Rolniak, 2007). Assessing factors that make nurses more susceptible to burn out shows that burnout varies among nursing specialties and depends on specifics of that specialty. For example, nurse practitioners experience the least burn out, having more control, as opposed to emergency nurses have reportedly less control, less mastery, and greater stress (Browning et al., 2007). The literature supports that less control and less personal accomplishments as precursors of burnout (Browning et al., 2007; Bloom, Buhrke & Scott, 1988). Burnout leads to negative quality of care and should as a result be a particular point of concern when looking at the future of the program (Shirom, Nirel & Vinokur, 2006). There is a lot of research showing that protective factors such as increasing the amount of clinical supervision and social support, decreases the levels of burnout (Edwards et al., 2006; Loyd, King & Chenoweth, 2002). Ensuring that these protective factors are developed as part of the program will increase the longevity and sustainability of the program reducing possibilities of turn overs in relation to RN burnouts.

RN's are not permitted to prescribe medication and this was noted as both a positive and negative quality for the program as a whole. There has been a lot of debate surrounding whether RN's should have the ability to prescribe. The support for it stems from the increased autonomy for RN's, improving nursing practice, increased collaboration within the health care team, and

improvements in access of care that would come with this expansion in their duties (Gielen, Dekker, Francke, Mistiaen & Kroezen, 2014; Canadian Nurses' Association, 2015; Registered Nurses' Association of Ontario, 2012). Currently, the Ontario government is making changes to allow RN's working in long term care or nursing homes to have the ability to prescribe (College of Nurses of Ontario, 2018). A study looked at using a nurse practitioner as the lead in a supportive care intervention for patients with head and neck cancer. The intervention demonstrated a significant difference in treatment completion and medication dose reduction for patients with the intervention than those without (Mason, DeRubeis, Foster, Taylor & Worden, 2013). While a nurse practitioner can prescribe medication and an RN cannot, this program has also shown that an RN with the inability to prescribe is still able to help patients taper down their opioids and in some cases, completely stop taking any opioids. Additionally, there is no apprehension regarding the patient's legitimacy of pain that might stem from the patient's addiction to the medication as it is clear that the RN cannot write them a prescription. There is a level of mistrust between physicians and patients surrounding the topic of opiate treatment as the theme of fear of deception is consistently found in the literature which leads to inappropriate opiate prescribing (De Molina et al., 2002; Dasgupta, Beletsky & Ciccarone, 2018). Studies have also shown that addiction-related stigma from health professionals is a barrier to pain management (Voon et al., 2018). Patients report having to manage their pain by themselves or resorting to risky self-medication as a result of this stigma (Voon et al., 2018). With an RN who is not able to actually increase or decrease their dosage, the RN can shift the focus onto providing that support for self-management.

8.6 Costs

While administrators reported that the program itself could lead to an increase in costs within the primary health care facility, evidence shows that self-management is most effective when given in a timely manner. Essentially introducing a patient to the program as early as possible

is very important in facilitating patient engagement (Protheroe et al., 2008). Additionally, clinicians and administrators also reported that having one principal professional functioning as the expert would lead cost effective. The Canadian Nurses Association has published a fact sheet detailing the different ways in which nurses present cost effective solutions for health care, improving the efficiency of the system as a whole (Canadian Nurses Association, 2009). Study findings are consistent that nurses with specialty roles or nurse-led care can reduce health-care costs, length of stay, admission/re-admissions and be cost-effective (Martin-Misener et al., 2015; Salamanca-Balen, Seymour, Caswell, Whynes & Tod, 2018; Raftery, Yao, Murchie, Campbell & Ritchie, 2005; Ndosi et al., 2014). It is beyond the scope of this study to conclusively say that the program is cost-effective. However, it has the potential to reduce costs with by for example, deferring visits to main providers and reducing opioid use and consequences thereof but that was not investigated here.

9 LIMITATIONS

Even though NRS is a simple and straightforward tool to evaluate pain severity, it has some limitations. NRS is a unidimensional tool and cannot capture the true complexity of the disease, effectively hindering the value of its results (Hush, Refshauge, Sullivan, De Souza & McAuley, 2010). Chronic pain is a multidimensional problem and due to the fact that NRS only measures pain intensity, it has been questioned over the years in evaluating chronic pain (Dorfman et al., 2016; Ballantyne & Sullivan, 2015). In 2016, it was even concluded that reductions in pain intensity were not required for treatment of chronic pain (Sullivan & Ballantyne, 2016). Another issue posed by using NRS as an outcome measure for chronic pain is that it evaluates pain in the last 24 hours (Bond & Pilowsky, 1966). Chronic pain is by definition long lasting and as a result requires an assessment that doesn't just look at the recent incidence of pain. Therefore, NRS report of pain intensity are only seen as reliably reflecting their current level of pain (Hjermstad et al., 2011). Patient's self-reported score of pain intensity has been seen to vary when taken at different time periods and have mentioned that reporting an average pain intensity over time periods is too difficult (Dorfman et al., 2016). Pain intensity has been rated as an unreliable outcome measure for chronic pain (Ballantyne & Sullivan, 2015) and the need for a more comprehensive tools with several outcome measures to assess chronic pain has been identified as a priority in pain research (Turk et al., 2008). However, pain intensity continues to be one of the most clinically relevant dimensions in pain research and experts have concluded that self-report scales are useful in the evaluation of this (Hjermstad et al., 2011). Even with its limitations NRS is still relevant for the evaluation of pain intensity which is an important dimension for pain management (Hjermstad et al., 2011).

While this study looked at the total score on the BPI, other studies have investigated averages of specific items used on the BPI (Hølen et al., 2008). Due to the limitations of the study

being based on secondary data this was not possible. However, for future possibilities, looking at specific variables within the assessment tool could allow for more statistical analysis such as regression analyses looking at the relationship between pain intensity and pain interference on either psychological or physical well-being.

There is also variability in calculating and defining MCID which makes it less reliable as a way to evaluate the outcomes of interest (Jaeschke et al., 1989). Several studies have been done to examine the minimal clinically important difference (MCID) in chronic pain but results vary considerably (Olsen et al., 2018). A systematic review performed in 2018 reviewed assessments of MCID to understand the clinical and methodological factors that influence MCID. The factors that were concluded to impact MCID included baseline pain, with higher baseline pain scores resulting in higher absolute MCID, and the definition of pain relief used (Olsen et al., 2018). To appropriately use the MCID in the assessment of an intervention on a population, “one must use MCID values that were calculated in a *very similar context* to the trial, i.e., for the same pain measure, in a similar patient population...” (Katz, Paillard & Ekman, 2015). The MCID were chosen with this in mind.

Inherent to the nature of all secondary analyses, the data used in the study was not collected to address the research question of this study. As a result, there was a lot of data that was overlooked which might have helped extend the analysis. Additionally, the primary researcher was not the person who collected the data (the RN) and as a result there may be some errors in data collection or interpretation that might be overlooked. This study implemented a one-group pretest-posttest design. Without a control group, the study can only yield strong causal inferences by possibly reducing the plausibility of other explanations to explain the changes in outcomes of interest. The differences observed between the first appointment and last appointment could be due to many reasons unrelated to the program intervention. A future suggestion to rectify this

would be to contact patients who didn't continue with the program, to see if they would still be interested in filling out the self-assessments. By doing so, they could function as the "control" group as they did not proceed with the intervention.

The themes found from the qualitative analysis were not confirmed by a second independent analyst and hence might be subject to bias. While the survey questions are based on previously evaluated surveys, this one is novel and as a result the conclusions drawn from it have to be taken with some caution.

Time was a limiting factor as the surveys were made with questions that would allow for more analysis. Future studies could assess the survey data collected to assess the program using another framework (other than a SWOT analysis) or perform frequency assessments of the responses gathered.

The program was led by one RN. Having one RN heavily influences the capability to generalize the results. Even though these results are generalizable to the Bruyère Family Medicine Centre, the ability to generalize to other settings are limited because of the qualities specific to the RN that led the program. Another limitation from the chosen study design is that the results could very well be due to either the RN or the intervention. With the current study design there is no way to distinguish which one it was.

Adherence to the program was also low. There were a limited number of patients who had pre and post- results for the outcome measures of interest. This might be common for studies on

chronic pain patients. However, there is also a possibility that the population studied had a number of individuals facing numerous barriers to accessing healthcare and hence couldn't come in for their follow up appointments. This would mean that the results would only be generalizable to populations facing similar barriers, but not to populations where such barriers do not exist. The sample size was relatively small for the outcomes of interest. There was a lot of missing data for all of the outcomes. This was most especially true for the one outcome that showed statistical significance- daily opioid MEQ. There were only 21 patients who had valid data for the analysis which should be considered for any interpretations and conclusions drawn. The same is true for all the other outcome measures of interest (VAS, BPI and confidence). A larger sample size and formal randomized control trial are suggested for future projects to draw more meaningful conclusions of the potential efficacy of the program.

10 CONCLUSION:

In conclusion, this project focused on how a nurse led self-management support program in a primary care setting would affect chronic pain patients. With a growing number of individuals living with chronic pain its treatment remains a challenge. Despite the growing evidence demonstrating the numerous positive outcomes for patients, their families, the society and health care system self-management support is not a routine part of care for all Canadians (Health Council of Canada, 2012). The study aimed to evaluate an RN-led self-management support program by focusing on self-reported patient pain scales as primary outcomes and by gathering opinions surrounding the program to understand potential areas of strengths and weaknesses.

There was no statistically significant difference in the patient reported pain, interference, and confidence scores over the time of the study although there was a trend towards improved pain and interference scores and clinical significant changes in majority of those with improved pain and interference scores. The proportion of subjects who improved in terms of decreasing their pain score, decreasing their interference score and decreasing the amount of opioids they were on in comparison to the start of the program were identified. The results show that some patients improved, some stayed the same and some indeed noted worsening of their situation after the program. These numbers do not show any statistical significance for pain, interference and confidence, but clinically the results of the nurse led SMS Program are profound. Importantly patients enrolled in the program had a reduction in their morphine dosage. Providing earlier access to the program with patients who have lesser pain intensity, interference, and less complex opioid dosages could potentially show even greater improvements. Patients and team members identified the program as an important component of chronic pain management noting the patient-centered

and non-pharmaceutical approach of the nurse, as well as the dedicated time the patient had with the nurse.

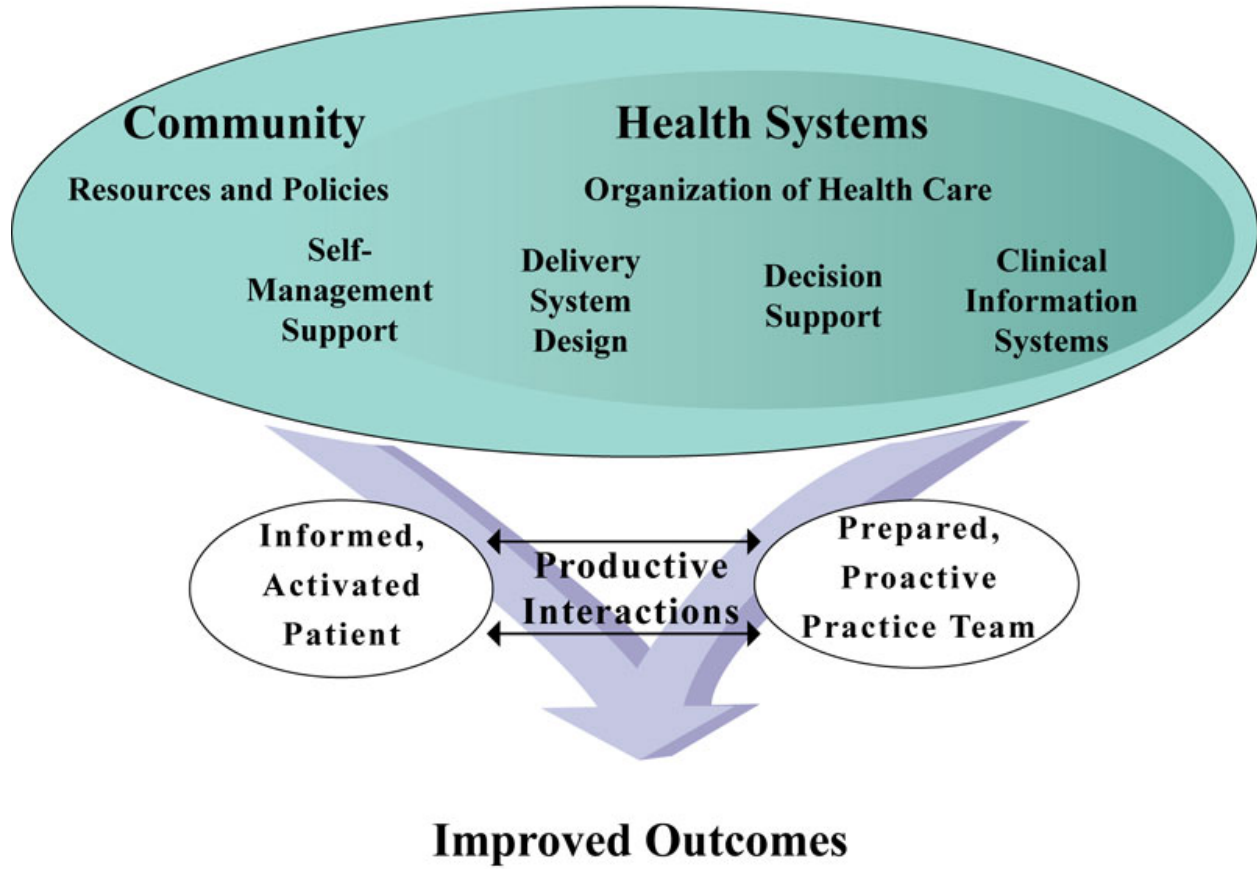
Therefore, the intervention proves to be a feasible and worthwhile investment for patients with chronic pain in a primary care setting. In particular it provides a solution that shifts the focus from opioid pharmacology therapy to one that is multidisciplinary, effective and safe in reducing the patient population on opioids. In turn, this reduces the down-stream burden placed on the individual and society. The program offers a readily accessible, integrated and well-coordinated continued care for chronic pain sufferers. A focus on collaboration of care will be important for the continued success and growth of the program.

In conclusion, this pilot project has demonstrated that there is a lot that we could be doing with the resources that we have to effectively address the widespread problem of chronic pain. Using readily available tools and self-management techniques, it is possible to build an effective and innovative this RN-led Chronic Pain Self-Management Program delivered within primary care. Our findings are relevant for the delivery of care related to chronic non-cancer pain in Canada, and more specifically within primary care facilities in Ontario. The management of chronic pain is continuous process with great opportunity for RNs to play a key role in. By employing self-management strategies, RNs can assume expanded roles to help patients achieve better health outcomes. Benefits are evidenced through the positive changes in pain scores and a decrease in opioid dosage. While it serves as a successful pilot project, investments should be placed into brining this to scale so that everyone with chronic pain has access to such a program. The program could be developed for delivery to larger groups, but this was a pilot study on this novel program.

Future investigations will definitely need to be done to reassess effectiveness as the patient population grows and their duration in the program is longer.

Appendix A: Diagram of the “Chronic Care Model”

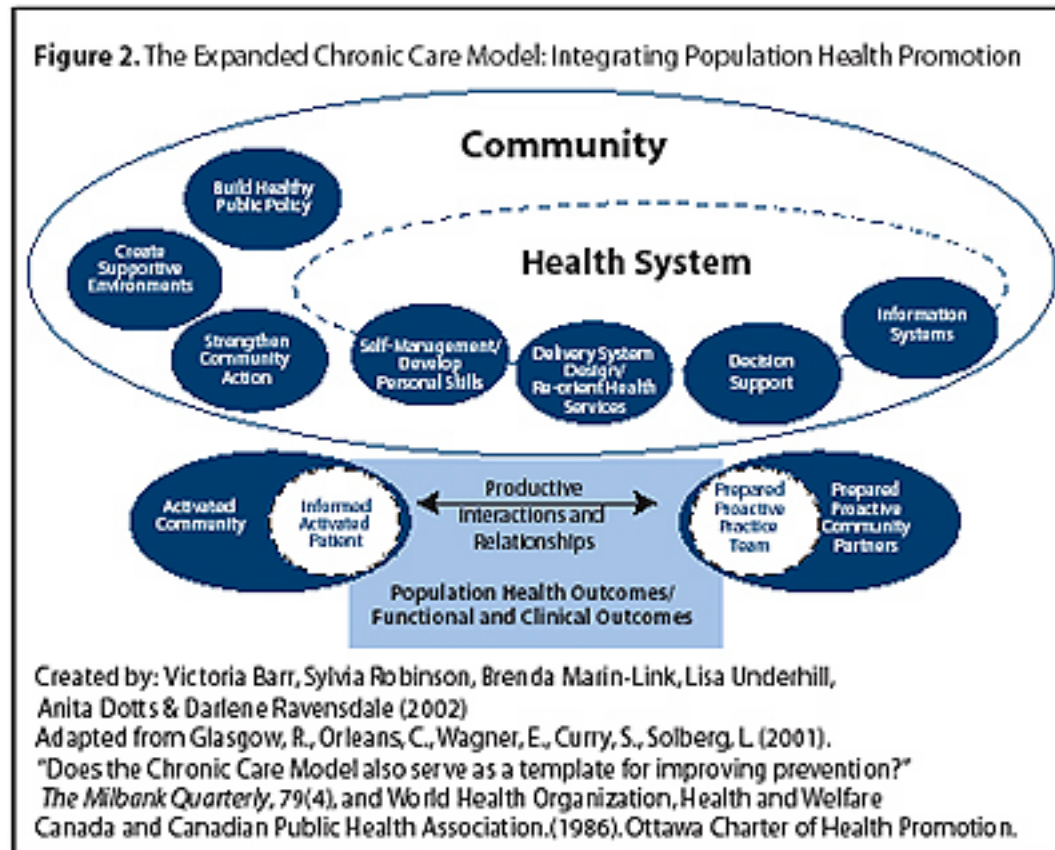
The Chronic Care Model



Developed by The MacColl Institute
© ACP-ASIM Journals and Books

(Wagner, Davis, Schaefer, Von Korff & Austin, 1999)

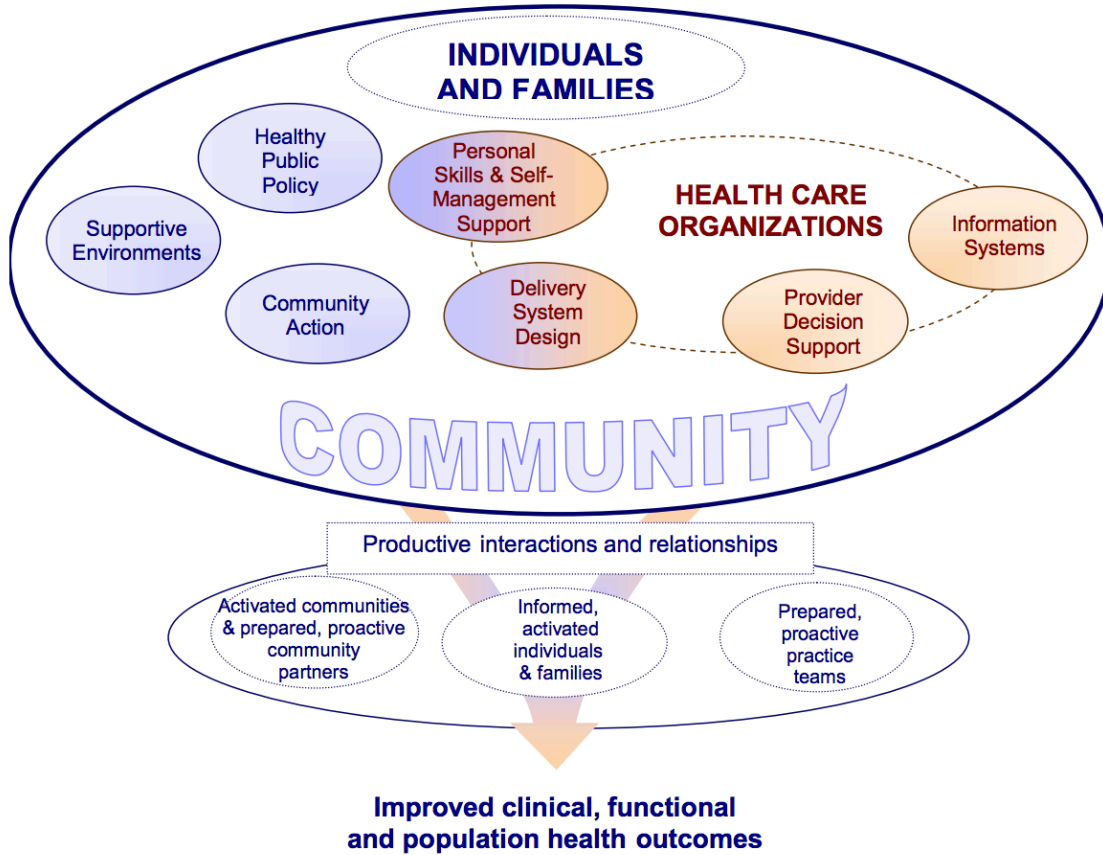
Appendix B: Diagram of “The Expanded Chronic Care Model”



(Barr et al., 2003)

Appendix C: Diagram of the “Ontario Chronic Disease Prevention and Management Framework”

Ontario’s Chronic Disease Prevention and Management Framework



(Government of Ontario, 2007)

Appendix D: Ethics Certificates



Université d'Ottawa University of Ottawa

Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

LETTRE D'APPROBATION ADMINISTRATIVE | LETTER OF ADMINISTRATIVE APPROVAL

Numéro de dossier / Ethics File Number A12-17-01
Titre du projet / Project Title Evaluating the Effectiveness of the PETD Tool in a Nurse-Run Chronic Pain Self-Management Program in Primary Care
Type de projet / Project Type Master's thesis
CÉR primaire / Primary REB Bruyère REB
Statut du projet / Project Status Administrative Approval
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy) 07/12/2017
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy) 04/12/2018

Équipe de recherche / Research Team

<i>Chercheur / Researcher</i>	<i>Affiliation</i>	<i>Role</i>
Raywat DEONANDAN	Faculty of Health Sciences / Interdisciplinary School of Health Sciences	Supervisor
Metasebia Afework ASSEFA	Faculty of Health Sciences / Interdisciplinary School of Health Sciences	Student-Researcher
Isabelle LECLERC	Bruyère Academic Family Health Team	Co-investigator
Elizabeth MUGGAH	Bruyère Academic Family Health Team	Co-investigator
Hillel FINESTONE	Bruyère Continuing Care	Co-investigator

Conditions spéciales ou commentaires / Special conditions or comments:

L'Université d'Ottawa a signé une Entente, conforme aux exigences de la plus récente version de l'EPTC et tout autre règlement ou législation applicable, permettant au CÉR ci-haut nommé d'être désigné comme CÉR primaire pour les projets de recherche où

- 1) les activités principales de recherche sont menées sous l'autorité ou sous les auspices de l'établissement lié au CÉR primaire et
- 2) Une partie du projet est également réalisé sous l'autorité ou sous les auspices de l'Université d'Ottawa.

Cette lettre confirme que l'Université d'Ottawa a autorisé que le CÉR primaire soit le CÉR officiel pour l'évaluation et la supervision de ce projet de recherche. Ceci n'est pas une approbation éthique.

Afin de nous aider à garder votre dossier à jour, veuillez soumettre une copie de toutes demandes de modification, renouvellement d'approbation éthique etc. soumis à et approuvé par le CÉR primaire dès qu'elles sont disponibles.

Cette approbation administrative est valide pour la durée indiquée ci-haut et est sujette aux conditions énumérées dans la section intitulée « Conditions spéciales ou commentaires ».

The University of Ottawa has signed an Agreement, compliant with current TCPS guidelines and any other applicable guidelines or legislation regarding multisite review, allowing the REB named above to serve as Board of Record (BoR) for research projects where

- 1) the main research activities are conducted within the auspices or jurisdiction of the BoR's institution and
- 2) parts of the project are also conducted under the jurisdiction or auspices of the University of Ottawa.

This letter confirms that the University of Ottawa has authorized the REB named above to serve as Board of Record for the review and oversight of this research project. This is not an REB approval.

In order to help us keep your file up to date, please submit a copy of all amendment requests, project renewals or any other changes submitted to and approved by the BoR, as they become available.

Administrative approval is valid for the period indicated above and is subject to the conditions listed in the section entitled "Special conditions or comments".

Catherine Paquet
Directrice/Director

550, rue Cumberland, pièce 154 Ottawa (Ontario) K1N 6N5 Canada 550 Cumberland Street, Room 154 Ottawa, Ontario K1N 6N5 Canada

✉ ethique@uOttawa.ca / ethics@uOttawa.ca

<http://www.recherche.uottawa.ca/deontologie> | <http://www.research.uottawa.ca/ethics>



*Bruyère pour des soins continus.
Bruyère Is Continuing Care.*

Hôpital Élisabeth-Bruyère Hospital
43, rue Bruyère St.
Ottawa ON K1N 5C8
Tél./Tel.: 613-562-6262
Télec./Fax: 613-562-6367

Hôpital Saint-Vincent Hospital
60, rue Cambridge St. N.
Ottawa ON K1R 7A5
Tél./Tel.: 613-562-6262
Télec./Fax: 613-782-2785

Résidence Élisabeth-Bruyère Residence
75, rue Bruyère St.
Ottawa ON K1N 5C8
Tél./Tel.: 613-562-6262
Télec./Fax: 613-562-4223

Résidence Saint-Louis Residence
879, ch. Hiawatha Park Rd.
Ottawa ON K1C 2Z6
Tél./Tel.: 613-562-6262
Télec./Fax: 613-683-5001

Village Bruyère Village
879, ch. Hiawatha Park Rd.
Ottawa ON K1C 2Z6
Tél./Tel.: 613-562-6262
Télec./Fax: 613-683-5001

Centre de médecine familiale Bruyère
Bruyère Family Medicine Centre
75, rue Bruyère St.
Ottawa ON K1N 5C8
Tél./Tel.: 613-241-3344
Télec./Fax: 613-241-1971

Centre de médecine familiale Primrose
Primrose Family Medicine Centre
35, rue Primrose St.
Ottawa ON K1R 0A1
Tél./Tel.: 613-230-7788
Télec./Fax: 613-230-7778

Institut de recherche Bruyère
Bruyère Research Institute
43, rue Bruyère St.
Ottawa ON K1N 5C8
Tél./Tel.: 613-562-6045
Télec./Fax: 613-562-4266

Fondation Bruyère Foundation
43, rue Bruyère St.
Ottawa ON K1N 5C8
Tél./Tel.: 613-562-6319
Télec./Fax: 613-562-6023

Affilié à / Affiliated with



uOttawa

December 4, 2017

Ms. Metasebia Afework
Master's Thesis
Interdisciplinary School of
Health Sciences
University of Ottawa

Re: "Evaluating the effectiveness of the PETD Tool in a Nurse-Run Chronic Pain Self-Management Program in Primary Care"
(Reb Protocol # M16-17-041)

Final Approval

Dear Ms. Afework,

The Bruyère Continuing Care Research Ethics Board (REB) is pleased to give you ethical approval for the above noted study for the period of December 4th, 2017 to December 4th, 2018.

The following documents have been approved:

- COREB application form, received November 14, 2017
- Appendix 1: Consent Text English and French, version dated November 6, 2017
- Appendix 2: Survey English, received November 14, 2017
- Appendix 3: Survey French, received November 14, 2017

The Bruyère Continuing Care REB complies with the membership requirements and operates in compliance with the Tri-Council Policy Statement: Ethics Conduct for Research Involving Humans; the International Conference on Harmonization - Good Clinical Practice: Consolidated Guideline; the provisions of the Personal Health Information Protection Act 2004; and the Food and Drug Act of Health Canada and its applicable Regulations.

Please be advised that any complaints made by participants must be reported to the REB. All changes to the approved protocol must be approved by the REB.

Please complete an Annual Project Update/Notification of Termination form 6 weeks prior to the approval end date as noted above.

We wish you the best of luck with your research endeavors.

*À Bruyère, nous vous promettons... bonté • sécurité • bienveillance
At Bruyère, we promise you... Kind • Safe • Care*

Sincerely,

Gordon DuVal, SJD
Chair, Bruyère Research Ethics Board
Bruyère Continuing Care
gduval@bruyere.org

Appendix E: Recruitment Notice



CALL FOR STUDY PARTICIPANTS

Would you be interested in improving the management of chronic pain in out-patient facilities?

A graduate student from the University of Ottawa is conducting a brief 5-minute online survey based on your knowledge about chronic pain and your opinions about our Chronic Pain program here at Bruyère Family Medicine Centre.

Interested Participants:

You may be eligible if you:

- are a physician or nurse practitioner
- are a manager or administrator
- a clerk
- an allied health professional

If you meet the eligibility requirements and are interested, please use the link that applies to you (in your preferred language) to participate in the survey

- For physicians and nurse practitioners:

<https://www.surveymonkey.com/r/TT28V8J> (ENGLISH)

<https://www.surveymonkey.com/r/TM726GL> (FRENCH)

- For managers/ administrators/ clerks/ allied health professionals:

<https://www.surveymonkey.com/r/TTSXN8V> (ENGLISH)

<https://www.surveymonkey.com/r/TTZPH53> (FRENCH)

Participation in the survey is completely voluntary. Your responses are anonymous and you may stop participating at any time.

Contacts:
Metasebia Assefa (Primary Researcher):

Isabelle Leclerc(RN)
lLeclerc@bruyere.org

Lisa Hall (Contact Person for the Research Ethics Board at
Bruyère Continuing Care)

Appendix F: Consent Text

Consent will be obtained on the opening screen of the survey:

“We are conducting a study on the strengths and weaknesses of the Bruyère Family Health Team’s pain management clinic. We’d very much appreciate your opinions. Your participation is completely voluntary and will have no bearing on your continued care. Your responses are anonymous and you may stop participating at any time. There are minimal risks to you as a study participant in participating in this research study. You may however, be at the risk of a breach of privacy by participating. To ensure reasonable efforts to protect you from a breach of privacy, your name and identifying information will not be incorporated in the study. Any personal information about you will be linked to a unique participant ID code and will be stored on a secure network. All data collected during this research study will be kept confidential and will not be shared with anyone outside the research team. You will not be named in any reports, publications, or presentations that may come from this study. The survey consists of 10-13 questions, which will take about 10 minutes of your time. If you would like to participate, please click to the next page. Doing so will be taken as consent to participate. If you have any questions or concerns with regards to this study please feel free to contact any one of the numbers below:

- Metasebia Assefa (Primary Researcher)
- Lisa Hall (Contact Person for the Research Ethics Board at Bruyère Continuing Care)

Le consentement sera obtenu sur l'écran d'ouverture de l'enquête:

"Nous menons une étude sur les forces et les faiblesses de la clinique de gestion de la douleur d'équipe de santé familiale Bruyère. Nous apprécions beaucoup vos opinions. Votre participation est entièrement volontaire et n'aura aucune influence sur vos soins continus. Vos réponses sont anonymes et vous pouvez arrêter de participer à tout moment. Il y a un minimum de risques pour vous participant à cette étude de recherche. Si vous participez à cette étude, vous pourriez être au risque d'une violation de la vie privée. Afin d'assurer les efforts appropriés pour vous protéger d'une atteinte à la vie privée, votre nom et vos informations d'identification ne seront pas inclus dans l'étude. Toutes les informations personnelles que vous fournissez seront jointes à un code d'identification de participant unique et seront sauvegardées sur un réseau sécurisé. Toutes les informations recueillies au cours de cette étude de recherche resteront confidentielles et ne seront partagées avec personne en dehors de l'équipe de recherche. Vous ne serez pas cité dans les rapports, publications ou présentations pouvant provenir de cette étude. L'enquête se compose de 10-13 questions, qui prendra environ 10 minutes de votre temps. Si vous souhaitez participer, veuillez cliquer sur la page suivante. Cela sera considéré comme un consentement à participer. Si vous avez des questions ou des préoccupations en ce qui concerne cette étude s'il vous plaît n'hésitez pas à communiquer avec l'un des numéros ci-dessous :

- Metasebia Assefa (chercheur principal):
- Lisa Hall (personne-ressource pour le comité d'éthique de la recherche de Soins Continus Bruyère)

The consent text above was displayed as the first screen of the survey on surveymonkey.com. By proceeding with the survey, participants were giving their consent as outlined above.

12 WORKS CITED

- Abdul Hadi, M., Alldred, D. P., Briggs, M., & Closs, S. J. (2012). A combined nurse-pharmacist managed pain clinic: Joint venture of public and private sectors. *International Journal of Clinical Pharmacy*. 34(1):1-3. <https://doi.org/10.1007/s11096-011-9591-1>
- Adams, K., Greiner, A.C., & Corrigan, J.M. (Eds). (2004). Report of a summit. The 1st annual crossing the quality chasm summit: A focus on communities. Washington, CD: National Academies Press. <http://www.selfmanagementbc.ca/SelfManagement>
- Agence d'évaluation des technologies et des modes d'intervention en santé (AETMIS). (2006). Management of Chronic (Non-Cancer) Pain: Organization of Health Services (AETMIS 06-04). Montréal: *AETMIS*, xv-85 pp.
- American Academy of Family Physicians. (n.d.). Opioid Conversion Table. Retrieved from: https://www.aafp.org/dam/AAFP/documents/patient_care/pain_management/conversion-table.pdf
- Anderson, D. R., Christison-Lagay, J., & Procter-Gray, E. (2010). Self-management goal setting in a Community Health Center: The impact of goal attainment on diabetes outcomes. *Diabetes Spectrum*. 23 (2) 97-105. <http://doi.org/10.2337/diaspect.23.2.97>
- Angeles, R. N., Guenter, D., McCarthy, L., Bauer, M., Wolfson, M., Chacon, M., & Bullock, L. (2013). Group interprofessional chronic pain management in the primary care setting: A pilot study of feasibility and effectiveness in a family health team in Ontario. *Pain Research & Management : The Journal of the Canadian Pain Society*, 18(5), 237–242.

- Aryani, F., Lee, S., Chua, S. S., Kok, L. C., Efendie, B., & Paraidathathu, T. (2016). Chronic care model in primary care: can it improve health-related quality of life?. *Integrated pharmacy research & practice*, 5, 11-17. doi:10.2147/IPRP.S92448
- Baggs, J. G., Schmitt, M. H., Mushlin, A. I., Eldredge, D. H., Oakes, D., & Hutson, A. D. (1997). Nurse-Physician Collaboration and Satisfaction with the Decision-making Process in Three Critical Care Units. *American Journal of Critical Care*. 6(5):393-9.
- Bair, M. J., Robinson, R. L., Katon, W., & Kroenke, K. (2003). Depression and Pain Comorbidity: A Literature Review. *Archives of Internal Medicine*. 163(20):2433-45. <https://doi.org/10.1001/archinte.163.20.2433>
- Balamuralikrishna, R., & Dugger, J. C. (1995). SWOT Analysis--A Management Tool for Initiating New Programs in Vocational Schools. *Journal of Vocational and Technical Education*. 12(1). <https://doi.org/http://dx.doi.org/10.1016/B978-008045046-9.00307-7>
- Ballantyne, J. C., & Sullivan, M. D. (2015). Intensity of Chronic Pain — The Wrong Metric? *New England Journal of Medicine*. <http://doi.org/10.1056/NEJMp1507136>
- Bandura, A. (1989) Self-Efficacy Mechanism in Physiological Activation and Health-Promoting Behavior. In: Madden, J., Matthyse, S. and Barchas, J., Eds., *Adaptation, Learning and Affect*, Raven, New York, 1169-1188.
- Barr, V. J., Robinson, S., Marin-Link, B., Underhill, L., Dotts, A., Ravensdale, D., & Salivaras, S. (2003). The expanded Chronic Care Model: an integration of concepts and strategies from population health promotion and the Chronic Care Model. *Hospital Quarterly*. 7(1):73-82. <https://doi.org/10.12927/hcq.2003.16763>

- Battersby, M., Von Korff, M., Schaefer, J., Davis, C., Ludman, E., Greene, S. M., ... Wagner, E. H. (2010). Twelve evidence-based principles for implementing self-management support in primary care. *Joint Commission Journal on Quality and Patient Safety*. 36(12):561-70
[https://doi.org/10.1016/S1553-7250\(10\)36084-3](https://doi.org/10.1016/S1553-7250(10)36084-3)
- BC Ministry of Health. (2011). Self-Management Support- A Health Care Intervention.
<http://www.selfmanagementbc.ca/uploads/What%20is%20Self-Management/PDF/Self-Management%20Support%20A%20health%20care%20intervention%202011.pdf>
- Bloom, K. D., Buhrke, R. A., & Scott, T. B. (1988). Burnout and job expectations of state agency rehabilitation counselors in North Dakota. *Journal of Applied Rehabilitation Counseling*, 19(3), 32-36.
- Bodenheimer, T. (2003). Interventions to Improve Chronic Illness Care: Evaluating Their Effectiveness. *Disease Management*. 6(2):63-71.
<https://doi.org/10.1089/109350703321908441>
- Bodenheimer, T., Lorig, K., Holman, H., & Grumbach, K. (2002). Patient self-management of chronic disease in primary care. *Journal of the American Medical Association*. 288(19):2469–2475. <https://doi.org/10.1001/jama.288.19.2469>
- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness: The chronic care model, Part 2. *Journal of the American Medical Association*. 288(15):1909-14. <https://doi.org/10.1001/jama.288.15.1909>
- Bond, M. R., & Pilowsky, I. (1966). Subjective assessment of pain and its relationship to the administration of analgesics in patients with advanced cancer. *Journal of Psychosomatic Research*. [http://doi.org/10.1016/0022-3999\(66\)90064-X](http://doi.org/10.1016/0022-3999(66)90064-X)

- Bonomi, A. E., Wagner, E. H., Glasgow, R. E. and VonKorff, M. (2002), Assessment of Chronic Illness Care (ACIC): A Practical Tool to Measure Quality Improvement. *Health Services Research*. 37: 791-820. Doi:[10.1111/1475-6773.00049](https://doi.org/10.1111/1475-6773.00049)
- Boonstra, A. M., Stewart, R. E., Albère, A. J., René, R. F., Swaan, J. L., Schreurs, K. M. G., & Schiphorst Preuper, H. R. (2016). Cut-off points for mild, moderate, and severe pain on the numeric rating scale for pain in patients with chronic musculoskeletal pain: Variability and influence of sex and catastrophizing. *Frontiers in Psychology*. 7, 1466. <https://doi.org/10.3389/fpsyg.2016.01466>
- Boulanger, A., Clark, A. J., Squire, P., Cui, E., & Horbay, G. L. A. (2007). Chronic pain in Canada: Have we improved our management of chronic noncancer pain? *Pain Research and Management*. 12(1):39-47. <https://doi.org/10.1155/2007/762180>
- Bourbeau J. (2003). Disease-specific self-management programs in patients with advanced chronic obstructive pulmonary disease: a comprehensive and critical evaluation. *Disease Management and Health Outcomes*. *University of York*. 11(5): 311-319.
- Breuer, B., Cruciani, R., & Portenoy, R. K. (2010). Pain management by primary care physicians, pain physicians, chiropractors, and acupuncturists: A national survey. *Southern Medical Journal*. 103(8):738-47. <https://doi.org/10.1097/SMJ.0b013e3181e74ede>
- Browning, L., Ryan, C. S., Thomas, S., Greenberg, M., & Rolniak, S. (2007). Nursing specialty and burnout. *Psychology, Health and Medicine*. 12(2):248-54. <http://doi.org/10.1080/13548500600568290>
- Brownson, C. A., Miller, D., Crespo, R., Neuner, S., Thompson, J., Wall, J. C., ... Glasgow, R. E. (2007). A quality improvement tool to assess self-management support in primary care.

Joint Commission Journal on Quality and Patient Safety. 33(7):408-16.

[https://doi.org/10.1016/S1553-7250\(07\)33047-X](https://doi.org/10.1016/S1553-7250(07)33047-X)

Busse, J. W., Craigie, S., Juurlink, D. N., Buckley, D. N., Li, W., Couban, R. J., ... Guyatt, G.

H. (2017). Guideline for opioid therapy and chronic noncancer pain. *CMAJ*.

<https://doi.org/10.1503/cmaj.170363>

Butchart, A., Kerr, E. A., Heisler, M., Piette, J. D., & Krein, S. L. (2009). Experience and management of chronic pain among patients with other complex chronic conditions.

Clinical Journal of Pain. 25(4):293-8. <https://doi.org/10.1097/AJP.0b013e31818bf574>

Canadian Nurses Association. (2009). Nurses Offer Solutions for Cost-Effective Health Care.

Retrieved from: https://www.cna-aiic.ca/~media/cna/page-content/pdf-en/roi_solutions_cost_fs_e.pdf

Canadian Nurses' Association. (2015). Framework for Registered Nurse Prescribing in Canada.

Canadian Nurses Association. Retrieved from: https://www.cna-aiic.ca/~media/cna/page-content/pdf-en/cna-rn-prescribing-framework_e.pdf?la=en

Canadian Substance Use Costs and Harms Scientific Working Group. (2018). *Canadian substance use costs and harms (2007–2014)*. (Prepared by the Canadian Institute for Substance Use Research and the Canadian Centre on Substance Use and Addiction.) Ottawa, Ont.: Canadian Centre on Substance Use and Addiction.

Center for the Advancement of Health (Washington, D.C.), & Group Health Cooperative of

Puget Sound. (1996). *An indexed bibliography on self-management for people with chronic disease*. Washington, DC: Center for the Advancement of Health.

Childs, J. D., Piva, S. R., & Fritz, J. M. (2005). Responsiveness of the numeric pain rating scale in patients with low back pain. *Spine*. 30(11):1331-1334.

<https://doi.org/10.1097/01.brs.0000164099.92112.29>

Choinière, M., Dion, D., Peng, P., Banner, R., Barton, P. M., Boulanger, A., . . . Ware, M. (2010). The Canadian STOP-PAIN project – Part 1: Who are the patients on the waitlists of multidisciplinary pain treatment facilities? *Canadian Journal of Anesthesia/Journal Canadien Danesthésie*. 57(6), 539-548. Doi:10.1007/s12630-010-9305-5

Chouinard, M. C., Hudon, C., Dubois, M. F., Roberge, P., Loignon, C., Tchouaket, É., . . . Sasseville, M. (2013). Case management and self-management support for frequent users with chronic disease in primary care: A pragmatic randomized controlled trial. *BMC Health Services Research*. <https://doi.org/10.1186/1472-6963-13-49>

Clark, L. G., & Upshur, C. C. (2007). Family Medicine Physicians' Views of How to Improve Chronic Pain Management. *The Journal of the American Board of Family Medicine*. <https://doi.org/10.3122/jabfm.2007.05.070029>

College of Nurses of Ontario. (2018). Q&A's: RNs Prescribing. Retrieved from: <http://www.cno.org/en/trending-topics/journey-to-rn-prescribing/qas-rn-prescribing/>

Dasgupta, N., Beletsky, L., & Ciccarone, D. (2018). Opioid Crisis: No Easy Fix to Its Social and Economic Determinants. *American Journal of Public Health*. <http://doi.org/10.2105/AJPH.2017.304187>

Day, G. E., & Brownie, S. (2014). Rising to the Challenge: Nursing Leadership via Nurse-Led Service Provision for Chronic Disease Management and Prevention. *Nursing and Health*. 2(2): 30-34. <http://doi.org/10.13189/nh.2014.020202>

- De Molina, A. R., Gutiérrez, R., Ramos, M. A., Silva, J. M., Silva, J., Bonilla, F., ... Lacal, J. C. (2002). Mutual mistrust in the medical care of drug users: The keys to the “Narc” cabinet. *Journal of General Internal Medicine*. <http://doi.org/10.1046/j.1525-1497.2002.10625.x>
- DeWalt, D. A., Davis, T. C., Wallace, A. S., Seligman, H. K., Bryant-Shilliday, B., Arnold, C. L., ... Schillinger, D. (2009). Goal setting in diabetes self-management: Taking the baby steps to success. *Patient Education and Counseling*. 77(2):218-23
<https://doi.org/10.1016/j.pec.2009.03.012>
- Dorflinger, L., Kerns, R. D., & Auerbach, S. M. (2013). Providers’ roles in enhancing patients’ adherence to pain self-management. *Translational Behavioral Medicine*. 3(1):39-46
<https://doi.org/10.1007/s13142-012-0158-z>
- Dorfman, D., George, M. C., Robinson-Papp, J., Rahman, T., Tamler, R., & Simpson, D. M. (2016). Patient reported outcome measures of pain intensity: Do they tell us what we need to know? *Scandinavian Journal of Pain*. <http://doi.org/10.1016/j.sjpain.2015.12.004>
- Dowell, D., Haegerich, T. M., & Chou, R. (2016). CDC guideline for prescribing opioids for chronic pain-United States, 2016. *JAMA - Journal of the American Medical Association*. <https://doi.org/10.1001/jama.2016.1464>
- Du, S., Yuan, C., Xiao, X., Chu, J., Qiu, Y., & Qian, H. (2011). Self-management programs for chronic musculoskeletal pain conditions: A systematic review and meta-analysis. *Patient Education and Counseling*. 85(3):e299-310 <https://doi.org/10.1016/j.pec.2011.02.021>
- Dworkin, R. H., Turk, D. C., Wyrwich, K. W., Beaton, D., Cleeland, C. S., Farrar, J. T., ... Zavisic, S. (2008). Interpreting the Clinical Importance of Treatment Outcomes in Chronic

Pain Clinical Trials: IMMPACT Recommendations. *Journal of Pain*. 9: 105-21.

<http://doi.org/10.1016/j.jpain.2007.09.005>

Edwards, D., Burnard, P., Hannigan, B., Cooper, L., Adams, J., Juggessur, T., ... Coyle, D. (2006). Clinical supervision and burnout: The influence of clinical supervision for community mental health nurses. *Journal of Clinical Nursing*. 1007-1015.

<http://doi.org/10.1111/j.1365-2702.2006.01370.x>

Elder, C. R., Debar, L. L., Ritenbaugh, C., Rumptz, M. H., Patterson, C., Bonifay, A., Cowan, P., Lancaster, L., ... Deyo, R. A. (2017). Health Care Systems Support to Enhance Patient-Centered Care: Lessons from a Primary Care-Based Chronic Pain Management Initiative. *The Permanente journal*, 21, 16-101. <http://doi.org/10.7812/TPP/16-101>

Eley, D. S., Patterson, E., Young, J., Fahey, P. P., Del Mar, C. B., Hegney, D. G., ... Scuffham, P. A. (2013). Outcomes and opportunities: A nurse-led model of chronic disease management in Australian general practice. *Australian Journal of Primary Health*. 45 (12) 912-16. <http://doi.org/10.1071/PY11164>

Ernstzen, D. V., Louw, Q. A., & Hillier, S. L. (2017). Clinical practice guidelines for the management of chronic musculoskeletal pain in primary healthcare: A systematic review. *Implementation Science*. <https://doi.org/10.1186/s13012-016-0533-0>

Every, B. (2007). Better for ourselves and better for our patients: chronic disease management in primary care networks. 10 (3), 70-74. *Healthcare Quarterly*. Doi:10.12927/hcq..18927

Farrar, J. T., Portenoy, R. K., Berlin, J. A., Kinman, J. L., & Strom, B. L. (2000). Defining the clinically important difference in pain outcome measures. *Pain*. 88(3):287-94.

[http://doi.org/10.1016/S0304-3959\(00\)00339-0](http://doi.org/10.1016/S0304-3959(00)00339-0)

- Farrar, J. T., Young, J. P., LaMoreaux, L., Werth, J. L., & Poole, R. M. (2001). Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale. *Pain*. 94(2):149-58. [https://doi.org/10.1016/S0304-3959\(01\)00349-9](https://doi.org/10.1016/S0304-3959(01)00349-9)
- Fashler, S. R., Cooper, L. K., Oosenbrug, E. D., Burns, L. C., Razavi, S., Goldberg, L., & Katz, J. (2016). Systematic review of multidisciplinary chronic pain treatment facilities. *Pain Research and Management*. <https://doi.org/10.1155/2016/5960987>
- Fayers, P. M., Hjermstad, M. J., Klepstad, P., Loge, J. H., Caraceni, A., Hanks, G. W., ... Kaasa, S. (2011). The dimensionality of pain: Palliative care and chronic pain patients differ in their reports of pain intensity and pain interference. *Pain*. 152(7):1608-20. <http://doi.org/10.1016/j.pain.2011.02.052>
- Ferraz, M. B., Quaresma, M. R., Aquino, L. R. L., Atra, E., Tugwell, P., & Goldsmith, C. H. (1990). Reliability of pain scales in the assessment of literate and illiterate patients with rheumatoid arthritis. *Journal of Rheumatology*. 17(8):1022-4. <https://doi.org/10.7463/mathm.0215.0789477>
- Ferreira-Valente, M. A., Pais-Ribeiro, J. L., & Jensen, M. P. (2011). Validity of four pain intensity rating scales. *Pain*. <http://doi.org/10.1016/j.pain.2011.07.005>
- Fewster-Thuente, L., & Velsor-Friedrich, B. (2008). Interdisciplinary collaboration for healthcare professionals. *Nursing Administration Quarterly*. 32(1):40-8. <http://doi.org/10.1097/01.NAQ.0000305946.31193.61>
- Finestone, H. M., Yanni, M., & Dalzell, C. J. (2015). Patients' recall of diagnostic and treatment information improves with use of the Pain Explanation and Treatment Diagram in an

outpatient chronic pain clinic. *Pain Research and Management*.

<https://doi.org/10.1155/2015/897293>

Finestone, H., Yanni, M., & Dalzell, C. (2013). Patient Recall of Diagnosis and Treatment Information Improves with use of Pain Explanation and Treatment Diagram in Chronic Pain Outpatient Clinic. *PM&R*, 5(9), S305. Doi: 10.1016/j.pmrj.2013.08.556

Flood, D., Hawkins, J., & Rohloff, P. (2017). A Home-Based Type 2 Diabetes Self-Management Intervention in Rural Guatemala. *Preventing Chronic Disease*. 14:E65.

<https://doi.org/10.1007/s005310050273>

Frahm Olsen, M., Bjerre, E., Hansen, M. D., Tendal, B., Hilden, J., & Hróbjartsson, A. (2018). Minimum clinically important differences in chronic pain vary considerably by baseline pain and methodological factors: systematic review of empirical studies. *Journal of Clinical Epidemiology*. <http://doi.org/10.1016/j.jclinepi.2018.05.007>

Gabis, L., Shklar, B., Baruch, Y. K., Raz, R., Gabis, E., & Geva, D. (2009). Pain reduction using transcranial electrostimulation: A double-blind “active placebo” controlled trial. *Journal of Rehabilitation Medicine*. 41(4):256-61. <http://doi.org/10.2340/16501977-0315>

Gielen, S. C., Dekker, J., Francke, A. L., Mistiaen, P., & Kroezen, M. (2014). The effects of nurse prescribing: A systematic review. *International Journal of Nursing Studies*. <http://doi.org/10.1016/j.ijnurstu.2013.12.003>

Gifford AL, Laurent DD, Gonzales VM, Chesney MA, Lorig KR. (1998). Pilot Randomized Trial of Education to Improve Self-Management Skills of Men with Symptomatic HIV/AIDS. *Journal of acquired immune deficiency syndromes and human retrovirology* :

official publication of the International Retrovirology Association. 18(2):136-44. DOI:
10.1097/00042560-199806010-00005

Gilbody, S., Whitty, P., Grimshaw, J., & Thomas, R. (2003). Educational and Organizational Interventions to Improve the Management of Depression in Primary Care: A Systematic Review. *Journal of the American Medical Association.* 289(23):3145-51.
<http://doi.org/10.1001/jama.289.23.3145>

Glasby, J., Dickinson, H. and Peck, E. (2006), Guest editorial: Partnership working in health and social care. *Health & Social Care in the Community*, 14: 373-374. Doi:[10.1111/j.1365-2524.2006.00656.x](https://doi.org/10.1111/j.1365-2524.2006.00656.x)

Glasgow, R. E., Wagner, E. H., Schaefer, J., Mahoney, L. D., Reid, R. J., & Greene, S. M. (2005). Development and validation of the Patient Assessment of Chronic Illness Care (PACIC). *Medical Care.* 43(5): 436-444.
<https://doi.org/10.1097/01.mlr.0000160375.47920.8c>

Gomes T, Pasricha S, Martins D, Greaves S, Bandola, D., Tadrous, M., Singh, S... Morin, K. (2017b). Behind the Prescriptions: A snapshot of opioid use across all Ontarians. *Ontario Drug Policy Research Network*. Retrieved from: http://odprn.ca/wp-content/uploads/2017/08/ODPRN-Report_Behind-the-Prescriptions.pdf

Gomes, T., & Juurlink, D. N. (2016). Opioid Use and Overdose: What We've Learned in Ontario. *Healthcare Quarterly.* <https://doi.org/10.12927/hcq.2016.24568>

Gomes, T., Greaves, S., Martins, D., Bandola, D., Tadrous, M., Singh, S., ... Quercia, J. (2017a). Latest Trends in Opioid-Related Deaths in Ontario: 1991 to 2015. *Ontario Drug*

Policy Research Network. Retrieved from: http://odprn.ca/wp-content/uploads/2017/04/ODPRN-Report_Latest-trends-in-opioid-related-deaths.pdf

Gomes, T., Mamdani, M. M., Dhalla, I. A., Cornish, S., Paterson, J. M., & Juurlink, D. N. (2014). The burden of premature opioid-related mortality. *Addiction*.
<https://doi.org/10.1111/add.12598>

Gordon, A., Callaghan, D., Spink, D., Cloutier, C., Dzungowski, P., O'Mahony, W., ... Michalko, K. J. (2010). Buprenorphine transdermal system in adults with chronic low back pain: A randomized, double-blind, placebo-controlled crossover study, followed by an open-label extension phase. *Clinical Therapeutics*. 32(5):844-60.
<http://doi.org/10.1108/MEDAR-09-2012-0031>

Government of Ontario. (2007). Preventing and Managing Chronic Disease: Ontario's Framework. http://www.health.gov.on.ca/en/pro/programs/cdpm/pdf/framework_full.pdf

Grady, P. A., & Gough, L. L. (2014). Self-management: A comprehensive approach to management of chronic conditions. *American Journal of Public Health*. 104(8):e25-31
<https://doi.org/10.2105/AJPH.2014.302041>

Grover, A., & Joshi, A. (2014). An overview of chronic disease models: a systematic literature review. *Global journal of health science*, 7(2), 210-27. doi:10.5539/gjhs.v7n2p210

Grumbach, K. (2003). Chronic illness, comorbidities, and the need for medical generalism. *Annals of Family Medicine*. 1(1), 4-7. <https://doi.org/10.1370/afm.47>

Gudin, J.A., Brennan, M.W., Harris, E.D., Hurwitz, P.L., Dietze, D.T., & Strader, J.D. (2018). Reduction of opioid use and improvement in chronic pain in opioid-experienced patients

after topical analgesic treatment: an exploratory analysis. *Postgraduate medicine*, 130 1, 42-51. DOI: [10.1080/00325481.2018.1414551](https://doi.org/10.1080/00325481.2018.1414551)

Gureje, O., Von Korff, M., Simon, G. E., & Gater, R. (1998). Persistent pain and well-being: A World Health Organization study in primary care. *Journal of the American Medical Association*. ; 280(2):147-51. <https://doi.org/10.1001/jama.280.2.147>

Gustavsson, A., Bjorkman, J., Ljungcrantz, C., Rhodin, A., Rivano-Fischer, M., Sjolund, K.-F., & Mannheimer, C. (2012). Socio-economic burden of patients with a diagnosis related to chronic pain - Register data of 840,000 Swedish patients. *European Journal of Pain*. <https://doi.org/10.1016/j.ejpain.2011.07.006>

Guthrie, B., Payne, K., Alderson, P., McMurdo, M. E. T., & Mercer, S. W. (2012). Adapting clinical guidelines to take account of multimorbidity. *BMJ (Online)*. 345:e6341 <https://doi.org/10.1136/bmj.e6341>

H Yarnall, K. S., Pollak, K. I., Østbye, T., Krause, K. M., & Lloyd Michener, J. (2003). *Primary Care: Is There Enough Time for Prevention? List of Services*. *American Journal of Public Health*. 93(4):635-41. <https://doi.org/10.2105/AJPH.93.4.635>

Haefeli, M., & Elfering, A. (2005). Pain assessment. *European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society*, 15 Suppl 1(Suppl 1), S17-24. Doi: [10.1007/s00586-005-1044-x](https://doi.org/10.1007/s00586-005-1044-x)

Harrison, J. (2010). Strategic Planning and SWOT Analysis. *Essentials of Strategic Planning in Healthcare*. <https://doi.org/10.1080/01425690701737481>

- Hawker, G. A., Mian, S., Kendzerska, T., & French, M. (2011). Measures of Adult Pain. *Arthritis Care & Research*. 63(11): 240-262. <https://doi.org/10.1002/acr.20543>
- Health Council of Canada. (2007). Canadians' Experiences with Chronic Illness Care in 2007: A Data Supplement to *Why Health Care Renewal Matters: Learning from Canadians with Chronic Health Conditions*. Toronto: Health Council. www.healthcouncilcanada.ca.
- Health Council of Canada. (2011). How Engaged Are Canadians in their Primary Care? Results from the 2010 Commonwealth Fund International Health Policy Survey. Canadian Health Care Matters, Bulletin 5. Toronto: *Health Council of Canada*. Retrieved from: https://secure.cihi.ca/free_products/CMWF_Bulletin_5_EN.pdf
- Health Council of Canada. (2012). Self-management support for Canadians with chronic health conditions: A focus for primary health care. Toronto: *Health Council of Canada*. Retrieved from: http://www.selfmanagementbc.ca/uploads/HCC_SelfManagementReport_FA.pdf
- Health Quality Ontario (2013). Specialized nursing practice for chronic disease management in the primary care setting: an evidence-based analysis. *Ontario health technology assessment series*, 13(10), 1-66.
- Health Quality Ontario. (2017a). 9 Million Prescriptions - What we know about the growing use of prescription opioids in Ontario. <http://opioidprescribing.hqontario.ca/>
- Health Quality Ontario. (2017b). Opioid Prescribing for Chronic Pain- Care for People 15 Years of Age and Older. <http://www.hqontario.ca/portals/0/documents/evidence/quality-standards/qs-opioid-chronic-pain-clinician-guide-en.pdf>
- Health Surveillance, Alberta Health. (2003). Chronic pain in Alberta: A portrait from the 1996 National Population Health Survey and the 2001 Canadian Community Health Survey.

Alberta Health and Wellness. <https://open.alberta.ca/dataset/d6d3d375-0bd8-4812-bf01-82a18cdf3d0b/resource/31f6f12f-98dd-46bd-a259-52459a7b83e3/download/28248972003chronic-pain-in-alberta.pdf>

Heen, M. S. J., Lieberman, J. D., & Miethe, T. D. (2014). A comparison of different online sampling approaches for generating national samples. *UNLV, Center for Crime and Justice Policy*. Retrieved from:
https://www.unlv.edu/sites/default/files/page_files/27/ComparisonDifferentOnlineSampling.pdf

Hjermstad, M. J., Fayers, P. M., Haugen, D. F., Caraceni, A., Hanks, G. W., Loge, J. H., ... Kaasa, S. (2011). Studies comparing numerical rating scales, verbal rating scales, and visual analogue scales for assessment of pain intensity in adults: A systematic literature review. *Journal of Pain and Symptom Management*.
<http://doi.org/10.1016/j.jpainsymman.2010.08.016>

Hølen, J. C., Lydersen, S., Klepstad, P., Loge, J. H., & Kaasa, S. (2008). The brief pain inventory: Pain's interference with functions is different in cancer pain compared with noncancer chronic pain. *Clinical Journal of Pain*. 24(3):219-25.
<http://doi.org/10.1097/AJP.0b013e31815ec22a>

Hooten M, Thorson D, Bianco J, Bonte B, Clavel Jr A, Hora J, Johnson C, Kirksson E, Noonan MP, Reznikoff C, Schweim K, Wainio J, Walker N. (2017). Pain: assessment, non-opioid treatment approaches and opioid management. *Institute for Clinical Systems Improvement - Nonprofit Organization Guideline*.

- Hush, J. M., Refshauge, K. M., Sullivan, G., De Souza, L., & McAuley, J. H. (2010). Do Numerical Rating Scales and the Roland-Morris Disability Questionnaire capture changes that are meaningful to patients with persistent back pain? *Clinical Rehabilitation*.
<http://doi.org/10.1177/0269215510367975>
- Institute of Medicine. (1987). *Pain and Disability: Clinical, Behavioral, and Public Policy Perspectives*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/991>.
- International Association for the Study of Pain. (1994). IASP Terminology - IASP.
- International Association of Pain. (2009). Pain Treatment Services. Retrieved from:
<https://www.iasp-pain.org/Education/Content.aspx?ItemNumber=1381>.
- Jaeschke, R., Singer, J., & Guyatt, G. H. (1989). Measurement of health status. Ascertaining the minimal clinically important difference. *Controlled Clinical Trials*. 10(4):407-15.
[http://doi.org/10.1016/0197-2456\(89\)90005-6](http://doi.org/10.1016/0197-2456(89)90005-6)
- Jambunathan, J., Chappy, S., Siebers, J., & Deda, A. (2016). Patient-centered care for chronic pain in the emergency department: A qualitative study. *International Emergency Nursing*. 24:22-7. <http://doi.org/10.1016/j.ienj.2015.05.005>
- Jensen, M. K., Sjøgren, P., Ekholm, O., Rasmussen, N. K., & Eriksen, J. (2004). Identifying a long-term/chronic, non-cancer pain population using a one-dimensional verbal pain rating scale: An epidemiological study. *European Journal of Pain*. [https://doi.org/10.1016/S1090-3801\(03\)00088-0](https://doi.org/10.1016/S1090-3801(03)00088-0)

- Jensen, M. P., Chen, C., & Brugger, A. M. (2003). Interpretation of visual analog scale ratings and change scores: A reanalysis of two clinical trials of postoperative pain. *Journal of Pain*. 4(7):407-14. [http://doi.org/10.1016/S1526-5900\(03\)00716-8](http://doi.org/10.1016/S1526-5900(03)00716-8)
- Jensen, M. P., Turner, J. A., & Romano, J. M. (1994). What is the maximum number of levels needed in pain intensity measurement? *Pain*. 58 (1994), pp. 387-392. [https://doi.org/10.1016/0304-3959\(94\)90133-3](https://doi.org/10.1016/0304-3959(94)90133-3)
- Johnston, S. E., Liddy, C. E., & Ives, S. M. (2011). Self-management support: A new approach still anchored in an Old Model of Health Care. 102(1):68-72. *Canadian Journal of Public Health*.
- Jones, T. L., Baxter, M., & Khanduja, V. (2013). A quick guide to survey research. *Annals of the Royal College of Surgeons of England*. , 95(1): 5-7. <https://doi.org/10.1308/003588413X13511609956372>
- Katz, N. P., Paillard, F. C., & Ekman, E. (2015). Determining the clinical importance of
- Kawi, J. (2012) Self-Management Support in Chronic Illness Care: A Concept Analysis. *Research & Theory for Nursing Practice*. 26, 108-125. <http://dx.doi.org/10.1891/1541-6577.26.2.108>
- Kawi, J. (2013). Self-Management and Support in Chronic Pain Subgroups: Integrative Review. *The Journal for Nurse Practitioners*. 9(2): 110-115.e5.
- Kelly, A.-M. (2001). The minimum clinically significant difference in visual analogue scale pain score does not differ with severity of pain. *Emergency Medicine Journal*. 18(3): 205–207. <https://doi.org/10.1136/emj.18.3.205>

- Kerns, R. D. (2010). Antidepressants combined with self-management of pain improves outcomes in people with comorbid pain and depression. *Evidence Based Mental Health*. <http://doi.org/10.1136/ebmh.13.1.13>
- Körner, M. (2010). Interprofessional teamwork in medical rehabilitation: A comparison of multidisciplinary and interdisciplinary team approach. *Clinical Rehabilitation*. 24(8):745-55. <http://doi.org/10.1177/0269215510367538>
- Körner, M., Bütof, S., Müller, C., Zimmermann, L., Becker, S., & Bengel, J. (2016). Interprofessional teamwork and team interventions in chronic care: A systematic review. *Journal of Interprofessional Care*. <https://doi.org/10.3109/13561820.2015.1051616>
- Lakha, S. F., Yegneswaran, B., Furlan, J. C., Legnini, V., Nicholson, K., & Mailis-Gagnon, A. (2011). Referring patients with chronic noncancer pain to pain clinics: Survey of Ontario family physicians. *Canadian Family Physician*.
- Lalonde, L., Choinière, M., Martin, É., Berbiche, D., Perreault, S., & Lussier, D. (2014). Costs of moderate to severe chronic pain in primary care patients - A study of the ACCORD Program. *Journal of Pain Research*. <https://doi.org/10.2147/JPR.S55388>
- Lalonde, L., Choinière, M., Martin, E., Lévesque, L., Hudon, É., Bélanger, D., ... Laliberté, M. C. (2015). Priority interventions to improve the management of chronic non-cancer pain in primary care: A participatory research of the ACCORD program. *Journal of Pain Research*. <https://doi.org/10.2147/JPR.S78177>
- Langford, A. T., Sawyer, D. R., Gioimo, S., Brownson, C. A., & O'Toole, M. L. (2007). Patient-centered: Goal setting as a tool to improve diabetes self-management. *Diabetes Educator*. <https://doi.org/10.1177/0145721707304475>

- Lavis JN, Boyko JA. (2009). Evidence Brief: Supporting Chronic Pain Management across Provincial and Territorial Health Systems in Canada. *McMaster Health Forum*. Retrieved from: <https://macsphere.mcmaster.ca/bitstream/11375/14861/1/fulltext.pdf>
- Lefort, S. M., Gray-Donald, K., Rowat, K. M., & Jeans, M. E. (1998). Randomized controlled trial of a community-based psychoeducation program for the self-management of chronic pain. *Pain*. 74(2-3):297-306. [https://doi.org/10.1016/S0304-3959\(97\)00190-5](https://doi.org/10.1016/S0304-3959(97)00190-5)
- Liddy, C., Johnston, S., Irving, H., Nash, K., & Ward, N. (2015). Improving awareness, accountability, and access through health coaching: Qualitative study of patients' perspectives. *Canadian Family Physician*. 61(3), e158-64. <http://doi.org/http://dx.doi.org/25932483>
- Liddy, C., Poulin, P. A., Hunter, Z., Smyth, C., & Keely, E. (2017). Patient perspectives on wait times and the impact on their life: A waiting room survey in a chronic pain clinic. *Scandinavian Journal of Pain*. 17:53-57. <https://doi.org/10.1016/j.sjpain.2017.07.015>
- Linzer, M., Bitton, A., Tu, S. P., Plews-Ogan, M., Horowitz, K. R., & Schwartz, M. D. (2015). The End of the 15–20 Minute Primary Care Visit. *Journal of General Internal Medicine*. 30(11):1584-6. <https://doi.org/10.1007/s11606-015-3341-3>
- Lloyd, C., King, R., & Chenoweth, L. (2002). Social work, stress and burnout: A review. *Journal of Mental Health*. <http://doi.org/10.1080/09638230020023642>
- Lorig, K. R., & Holman, H. R. (2003). Self-management education: History, definition, outcomes, and mechanisms. *Annals of Behavioral Medicine*. https://doi.org/10.1207/S15324796ABM2601_01gom

- Lorig, K. R., Mazonson, P. D., & Holman, H. R. (1993). Evidence suggesting that health education for Self-Management in patients with chronic arthritis has sustained health benefits while reducing health care costs. *Arthritis & Rheumatism*. 36(4):439-46.
<https://doi.org/10.1002/art.1780360403>
- Lorig, K. R., Ritter, P., Stewart, A. L., Sobel, D. S., Brown, B. W., Bandura, A., ... Holman, H. R. (2001). Chronic disease self-management program: 2-Year health status and health care utilization outcomes. *Medical Care*. <https://doi.org/10.1097/00005650-200111000-00008>
- Lorig, K. R., Sobel, D. S., Stewart, A. L., Brown, B. W., Bandura, A., Ritter, P., ... Holman, H. R. (1999). Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization a randomized trial. *Medical Care*. 37(1):5-14. <https://doi.org/10.1097/00005650-199901000-00003>
- Lorig, K., Ritter, P. L., Villa, F. J., & Armas, J. (2009). Community-based peer-led diabetes self-management: A randomized trial. *Diabetes Educator*. 35(4):641-51.
<https://doi.org/10.1177/0145721709335006>
- Lukewich, J., Mann, E., Vandenberg, E., & Tranmer, J. (2015). Self-management support for chronic pain in primary care: A cross-sectional study of patient experiences and nursing roles. *Journal of Advanced Nursing*. 71(11):2551-62. <https://doi.org/10.1111/jan.12717>
- Lynch, M. E. (2011). The need for a Canadian pain strategy. *Pain Research and Management*. <https://doi.org/10.1155/2011/654651>
- Lynch, M. E., & Watson, C. P. N. (2006). The pharmacotherapy of chronic pain: A review. *Pain Research and Management*. <https://doi.org/10.1155/2006/642568>

- Lynch, M. E., Campbell, F. A., Clark, A. J., Dunbar, M. J., Goldstein, D., Peng, P., ... Tupper, H. (2007). Waiting for treatment for chronic pain - A survey of existing benchmarks: Toward establishing evidence-based benchmarks for medically acceptable waiting times. *Pain Research and Management*. 12(4):245-8. <https://doi.org/10.1155/2007/891951>
- Lynch, M. E., Campbell, F., Clark, A. J., Dunbar, M. J., Goldstein, D., Peng, P., ... Tupper, H. (2008). A systematic review of the effect of waiting for treatment for chronic pain. *Pain*. 136(1-2):97-116. <https://doi.org/10.1016/j.pain.2007.06.018>
- Mann, E., LeFort, S. & VanDenKerkhof, E.. (2013). Self-management Interventions for Chronic Pain. *Pain Management*. 3(3): 211-222.
- Martin-Misener, R., Harbman, P., Donald, F., Reid, K., Kilpatrick, K., Carter, N., ... DiCenso, A. (2015). Cost-effectiveness of nurse practitioners in primary and specialised ambulatory care: Systematic review. *BMJ Open*. <http://doi.org/10.1136/bmjopen-2014-007167>
- Mason, H., DeRubeis, M. B., Foster, J. C., Taylor, J. M. G., & Worden, F. P. (2013). Outcomes Evaluation of a Weekly Nurse Practitioner-Managed Symptom Management Clinic for Patients With Head and Neck Cancer Treated With Chemoradiotherapy. *Oncology Nursing Forum*. <http://doi.org/10.1188/13.ONF.40-06AP>
- Matthias, M. S., Bair, M. J., Nyland, K. A., Huffman, M. A., Stubbs, D. L., Damush, T. M., & Kroenke, K. (2010). Self-Management Support and Communication from Nurse Care Managers Compared with Primary Care Physicians: A Focus Group Study of Patients with Chronic Musculoskeletal Pain. *Pain Management Nursing*. 11(1): 26-34. <https://doi.org/10.1016/j.pmn.2008.12.003>

- Mattison CA, Wilson MG. (2017) Rapid synthesis: Examining the effects of value-based physician payment models. *McMaster Health Forum*. Retrieved from:
<https://www.mcmasterforum.org/docs/default-source/product-documents/rapid-responses/examining-the-effects-of-value-based-physician-payment-models.pdf?sfvrsn=2>
- McColl, M. A., Shortt, S., Godwin, M., Smith, K., Rowe, K., O'Brien, P., & Donnelly, C. (2009). Models for Integrating Rehabilitation and Primary Care: A Scoping Study. *Archives of Physical Medicine and Rehabilitation*. 90(9):1523-31.
<https://doi.org/10.1016/j.apmr.2009.03.017>
- McCormack, H. M., Horne, D. J. d. L., & Sheather, S. (1988). Clinical applications of visual analogue scales: A critical review. *Psychological Medicine*. 18(4):1007-19.
<https://doi.org/10.1017/S0033291700009934>
- Mease, P. J., Spaeth, M., Clauw, D. J., Arnold, L. M., Bradley, L. A., Russell, I. J., ... Chappell, A. S. (2011). Estimation of minimum clinically important difference for pain in fibromyalgia. *Arthritis Care and Research*. 63(6):821-6. <http://doi.org/10.1002/acr.20449>
- Mechanic, D., McAlpine, D. D., & Rosenthal, M. (2001). Are Patients' Office Visits with Physicians Getting Shorter? *New England Journal of Medicine*. 344(3):198-204.
<https://doi.org/10.1056/NEJM200101183440307>
- Merskey, H., & Bogduk, N. (1994). Classification of Chronic Pain: Descriptions of Chronic Pain Syndromes and Definitions of Pain Terms. In *2nd ed. Seattle, WA: IASP Press*.
<https://doi.org/10.1002/ana.20394>

- Miller, J., MacDermid, J. C., Walton, D. M., & Richardson, J. (2015). Chronic pain self-management support with pain science education and exercise (COMMENCE): study protocol for a randomized controlled trial. *Trials*, *16*, 462. Doi:10.1186/s13063-015-0994-5
- Morley, L., & Cashell, A. (2017). Collaboration in Health Care. *Journal of Medical Imaging and Radiation Sciences*. *48* (2): 207-16. <http://doi.org/10.1016/j.jmir.2017.02.071>
- Morley-Forster, P. K., Clark, A. J., Speechley, M., & Moulin, D. E. (2003). Attitudes toward opioid use for chronic pain: A Canadian physician survey. *Pain Research and Management*. *8*(4):189-94. <https://doi.org/10.1155/2003/184247>
- Moulin, D. E., Clark, A. J., Speechley, M., & Morley-Forster, P. K. (2002). Chronic pain in Canada - Prevalence, treatment, impact and the role of opioid analgesia. *Pain Research and Management*. <https://doi.org/10.1155/2002/323085>
- Nasmith L., Ballem P., Baxter R., Bergman H., Colin-Thomé D., Herbert C., Keating N., Lessard R., Lyons R., McMurchy D., Ratner P., Rosenbaum P., Tamblyn R., Wagner E., & Zimmerman B. (2010). Transforming care for Canadians with chronic health conditions: Put people first, expect the best, manage for results. *Canadian Academy of Health Sciences*. Retrieved from: <https://www.caahs-acss.ca/wp-content/uploads/2011/09/cdm-final-English.pdf>
- National Association of Attorneys General. (2017). Bridging the Gaps to Reduce Prescription Drug and Opioid Abuse and Misuse. *NGATRI Journal*. *2*(3). Retrieved from: <http://www.naag.org/assets/redesign/files/nagtri-PDF/NAGTRI-Announcements/Bridging%20the%20Gaps%20FINAL%20-%20Apr%202010.pdf>

Ndosi, M., Lewis, M., Hale, C., Quinn, H., Ryan, S., Emery, P., ... Hill, J. (2014). The outcome and cost-effectiveness of nurse-led care in people with rheumatoid arthritis: A multicenter randomized controlled trial. *Annals of the Rheumatic Diseases*.

<http://doi.org/10.1136/annrheumdis-2013-203403>

Nelson, S., Turnbull, J., Bainbridge, L., Caulfield, T., Hudon, G., Kendel, D., Mowat, D., Nasmith, L., Postl, B., Shamian, J., Sketris I. (2014) Optimizing Scopes of Practice: New Models for a New Health Care System. *Canadian Academy of Health Sciences*. Retrieved from: https://www.caahs-acss.ca/wp-content/uploads/2014/08/Optimizing-Scopes-of-Practice_REPORT-English.pdf

Newman, S., Steed, L., & Mulligan, K. (2004). Self-management interventions for chronic illness. In *Lancet*. 364(9444):1523-37. [https://doi.org/10.1016/S0140-6736\(04\)17277-2](https://doi.org/10.1016/S0140-6736(04)17277-2)

Nolte, E., Knai, C., Hofmarcher, M., Conklin, A., Erler, A., Elissen, A., ... Vrijhoef, H. J. M. (2012). Overcoming fragmentation in health care: Chronic care in Austria, Germany and the Netherlands. *Health Economics, Policy and Law*. 7(1):125-46.

<https://doi.org/10.1017/S1744133111000338>

Ontario Ministry of Health and Long-Term Care. (2017). Primary Care Payment Models.

Retrieved from: <http://www.health.gov.on.ca/en/pro/programs/pcpm/>

Orthopaedic Sur. 10:24. Doi: 10.1186/s13018-014-0144-x.

Parchman, M. L., Pugh, J. A., Noël, P. H., & Larme, A. C. (2002). Continuity of care, self-management behaviors, and glucose control in patients with type 2 diabetes. *Medical Care*.

40(2):137-44. <http://doi.org/10.1097/00005650-200202000-00008>

- Passik, S. D., Byers, K., & Kirsh, K. L. (2007). Empathy and the failure to treat pain. *Palliative and Supportive Care*. 5(2):167-72. <http://doi.org/10.1017/S1478951507070241>
- Peng, P., Choiniere, M., Dion, D., Intrater, H., LeFort, S., Lynch, M., ... Veillette, Y. (2007). Challenges in accessing multidisciplinary pain treatment facilities in Canada. *Canadian Journal of Anesthesia*. <https://doi.org/10.1007/BF03016631>
- Peppin, J. F., Cheatle, M. D., Kirsh, K. L., & Mccarberg, B. H. (2015). The Complexity Model: A Novel Approach to Improve Chronic Pain Care. *Pain Medicine (United States)*. 16(4):653-66. <https://doi.org/10.1111/pme.12621>
- Phelan, M., Foster, N. E., Thomas, E., Hay, E. M., & Blenkinsopp, A. (2008). Pharmacist-led medication review for knee pain in older adults: content, process and outcomes. *International Journal of Pharmacy Practice*. 16: 347-355. <https://doi.org/10.1211/ijpp.16.6.0003>
- Phillips, C. J., & Schopflocher, D. (2008). The Economics of Chronic Pain. In *Chronic Pain: A Health Policy Perspective*. <https://doi.org/10.1002/9783527622665.ch4>
- Poquet, N., & Lin, C. (2015). The Brief Pain Inventory (BPI). *Australian Physiotherapy Association*. 62(1): 52. <https://doi.org/10.1016/j.jphys.2015.07.001>
- Prasad, S., Dunn, W., Hillier, L. M., McAiney, C. A., Warren, R., & Rutherford, P. (2014). Rural geriatric glue: A nurse practitioner-led model of care for enhancing primary care for frail older adults within an ecosystem approach. *Journal of the American Geriatrics Society*. 62(9):1772-80. <https://doi.org/10.1111/jgs.12982>
- Protheroe, J., Rogers, A., Kennedy, A. P., Macdonald, W., & Lee, V. (2008). Promoting patient engagement with self-management support information: A qualitative meta-synthesis of

processes influencing uptake. *Implementation Science*. 3:44. <http://doi.org/10.1186/1748-5908-3-44>

Raftery, J. P., Yao, G. L., Murchie, P., Campbell, N. C., & Ritchie, L. D. (2005). Cost effectiveness of nurse led secondary prevention clinics for coronary heart disease in primary care: Follow up of a randomized controlled trial. *British Medical Journal*.
<http://doi.org/10.1136/bmj.38342.665417.8F>

Rayner, L., Hotopf, M., Petkova, H., Matcham, F., Simpson, A., & Mccracken, L. M. (2016). Depression in patients with chronic pain attending a specialised pain treatment center: Prevalence and impact on health care costs. *Pain*. 157(7):1472-9.
<https://doi.org/10.1097/j.pain.0000000000000542>

Registered Nurses' Association of Ontario. (2012). Primary solutions for primary care: Maximizing and expanding the role of the primary care nurse in Ontario. *Registered Nurses' Association of Ontario (RNAO)*. Retrieved from: https://rnao.ca/sites/rnao-ca/files/Primary_Care_Report_2012.pdf

Reid, M. C., Engles-Horton, L. L., Weber, M. B., Kerns, R. D., Rogers, E. L., & O'Connor, P. G. (2002). Use of opioid medications for chronic noncancer pain syndromes in primary care. *Journal of general internal medicine*, 17(3), 173-9. Doi: [10.1046/j.1525-1497.2002.10435.x](https://doi.org/10.1046/j.1525-1497.2002.10435.x)

Reimer, M., Hüllemann, P., Hukauf, M., Keller, T., Binder, A., Gierthmühlen, J., & Baron, R. (2017). Prediction of response to tapentadol in chronic low back pain. *European Journal of Pain (United Kingdom)*. <https://doi.org/10.1002/ejp.926>

Reitsma, M., Tranmer, J. E., Buchanan, D. M., & VanDenKerkhof, E. G. (2012). The epidemiology of chronic pain in Canadian men and women between 1994 and 2007:

- longitudinal results of the National Population Health Survey. *Pain research & management*, 17(3), 166-72.
- Roberts, N. J., Younis, I., Kidd, L., & Partridge, M. R. (2013). Barriers to the implementation of self-management support in long term lung conditions. *London Journal of Primary Care*. 5(1):35-47. <https://doi.org/10.1080/17571472.2013.11493370>
- Rosenberg, K. (2012). Nurse-Led Teams in Chronic Disease Management. *American Journal of Nursing*. 112(4): 16. Doi: 10.1097/01.NAJ.0000413443.13207.83
- Rosenblum, A., Marsch, L. A., Joseph, H., & Portenoy, R. K. (2008). Opioids and the Treatment of Chronic Pain: Controversies, Current Status, and Future Directions. *Experimental and Clinical Psychopharmacology*. <http://doi.org/10.1037/a0013628>
- Rosser, W. W., Colwill, J. M., Kasperski, J., & Wilson, L. (2010). Patient-Centered Medical Homes in Ontario. *New England Journal of Medicine*. 362:e7. <https://doi.org/10.1056/NEJMp0911519>
- Russell, G. M., Dahrouge, S., Hogg, W., Geneau, R., Muldoon, L., & Tuna, M. (2009). Managing chronic disease in Ontario primary care: The impact of organizational factors. *Annals of Family Medicine*. <https://doi.org/10.1370/afm.982>
- Salamanca-Balen, N., Seymour, J., Caswell, G., Whynes, D., & Tod, A. (2018). The costs, resource use and cost-effectiveness of Clinical Nurse Specialist-led interventions for patients with palliative care needs: A systematic review of international evidence. *Palliative Medicine*. <http://doi.org/10.1177/0269216317711570>
- Samuel-Hodge, C. D., Keyserling, T. C., Park, S., Johnston, L. F., Gizlice, Z., & Bangdiwala, S. I. (2009). A randomized trial of a church-based diabetes self-management program for

African Americans with type 2 diabetes. *Diabetes Educator*. 35(3):439-54.

<https://doi.org/10.1177/0145721709333270>

Sánchez-Nieto, J. M., Andújar-Espinosa, R., Bernabeu-Mora, R., Hu, C., Gálvez-Martínez, B., Carrillo-Alcaraz, A., Álvarez-Miranda, C. F., Meca-Birlanga, O., ... Abad-Corpa, E. (2016). Efficacy of a self-management plan in exacerbations for patients with advanced COPD. *International journal of chronic obstructive pulmonary disease*, 11, 1939-47. doi:10.2147/COPD.S104728

Sargent, G. M., Forrest, L. E., & Parker, R. M. (2012). Nurse delivered lifestyle interventions in primary health care to treat chronic disease risk factors associated with obesity: A systematic review. *Obesity Reviews*. 13(12):1148-71. <http://doi.org/10.1111/j.1467-789X.2012.01029.x>

Scascighini, L., Toma, V., Dober-Spielmann, S., & Sprott, H. (2008). Multidisciplinary treatment for chronic pain: A systematic review of interventions and outcomes. *Rheumatology*. 47(5):670-8. <https://doi.org/10.1093/rheumatology/ken021>

Schoen, C., Osborn, R., Doty, M. M., Bishop, M., Peugh, J., & Murukutla, N. (2007). Toward higher-performance health systems: adults' health care experiences in seven countries, 2007. *Health Affairs (Project Hope)*. 26(6):w717-34. <https://doi.org/10.1377/hlthaff.26.6.w717>

Schoen, C., Osborn, R., How, S. K. H., Doty, M. M., & Peugh, J. (2009). In chronic condition: Experiences of patients with complex health care needs, in eight countries, 2008. *Health Affairs*. 28(1):w1-16. <https://doi.org/10.1377/hlthaff.28.1.w1>

Schopflocher, D., Taenzer, P., & Jovey, R. (2011). The prevalence of chronic pain in Canada. *Pain*

Research and Management. <https://doi.org/10.1155/2011/876306>

Schraeder, C., Fraser, C. W., Clark, I., Long, B., Shelton, P., Waldschmidt, V., ... Lanker, W. K. (2008). Evaluation of a primary care nurse case management intervention for chronically ill community dwelling older people. *Journal of Clinical Nursing*.
<https://doi.org/10.1111/j.1365-2702.2008.02578.x>

Sharpe, L., McDonald, S., Correia, H., Raue, P. J., Meade, T., Nicholas, M., & Arean, P. (2017). Pain severity predicts depressive symptoms over and above individual illnesses and multimorbidity in older adults. *BMC Psychiatry*. 17(1). <https://doi.org/10.1186/s12888-017-1334-y>

Shirom, A., Nirel, N., & Vinokur, A. D. (2006). Overload, autonomy, and burnout as predictors of physicians' quality of care. *Journal of Occupational Health Psychology*.
<http://doi.org/10.1037/1076-8998.11.4.328>

Skinner, K., Hanning, R. M., Sutherland, C., Edwards-Wheesk, R., & Tsuji, L. J. S. (2012). Using a SWOT analysis to inform healthy eating and physical activity strategies for a remote first nations community in Canada. *American Journal of Health Promotion*. 26(6):e159-70. <https://doi.org/10.4278/ajhp.061019136>

Stanos, S., & Houle, T. T. (2006). Multidisciplinary and Interdisciplinary Management of Chronic Pain. *Physical Medicine and Rehabilitation Clinics of North America*. 17(2):435-50. <http://doi.org/10.1016/j.pmr.2005.12.004>

Suh, ES., Bartlett, M., Inguanti, J., Folstad, J. (2004). Evaluation of a pharmacist pain management education program and associated medication use in a palliative care

population, *American Journal of Health-System Pharmacy*. 61(3): 227-280

<https://doi.org/10.1093/ajhp/61.3.277>

Sullivan, M. D., & Ballantyne, J. C. (2016). Must we reduce pain intensity to treat chronic pain?

Pain. 157(1):65-9. Doi: 10.1097/j.pain.0000000000000336.

Thom, D. H., Hessler, D., Willard-Grace, R., Bodenheimer, T., Najmabadi, A., Araujo, C., &

Chen, E. H. (2014). Does health coaching change patients' trust in their primary care provider? *Patient Education and Counseling*. 96(1):135-8

<http://doi.org/10.1016/j.pec.2014.03.018>

The Association of Faculties of Medicine of Canada. (2017). Final Report on the AFMC

Response to the Canadian Opioid Crisis. Retrieved from:

[https://afmc.ca/sites/default/files/documents/2017-11-AFMC-](https://afmc.ca/sites/default/files/documents/2017-11-AFMC-HealthCanadaOpioidReport_en.pdf)

[HealthCanadaOpioidReport_en.pdf](https://afmc.ca/sites/default/files/documents/2017-11-AFMC-HealthCanadaOpioidReport_en.pdf)

Tinetti, M. E., Fried, T. R., & Boyd, C. M. (2012). Designing health care for the most common

chronic condition--multimorbidity. *JAMA*, 307(23), 2493-4. Doi: [10.1001/jama.2012.5265](https://doi.org/10.1001/jama.2012.5265)

Todd, K. H. (1996). Clinical versus statistical significance in the assessment of pain relief. In

Annals of Emergency Medicine. 27:439-41 [http://doi.org/10.1016/S0196-0644\(96\)70226-3](http://doi.org/10.1016/S0196-0644(96)70226-3)

Todd, K. H., Ducharme, J., Choiniere, M., Crandall, C. S., Fosnocht, D. E., Homel, P., &

Tanabe, P. (2007). Pain in the Emergency Department: Results of the Pain and Emergency Medicine Initiative (PEMI) Multicenter Study. *Journal of Pain*.

<https://doi.org/10.1016/j.jpain.2006.12.005>

- Toivanen, T., Lahti, S., & Leino-Kilpi, H. (1999). Applicability of SWOT analysis for measuring quality of public oral health services as perceived by adult patients in Finland. *Community Dentistry and Oral Epidemiology*. 27(5):386-91. <https://doi.org/10.1111/j.1600-0528.1999.tb02035.x>
- Tomblin Murphy, G., & MacKenzie, A. (2013). Using evidence to meet population health care needs. *Health Care Papers*, 13(2). doi:10.12927/hcpap.2013.23521
- treatment benefits for interventions for painful orthopedic conditions. *Journal of*
- Tremblay, D., Roberge, D., Touati, N., Maunsell, E., & Berbiche, D. (2017). Effects of interdisciplinary teamwork on patient-reported experience of cancer care. *BMC health services research*, 17(1), 218. Doi:10.1186/s12913-017-2166-7
- Tshiananga, J. K. T., Kocher, S., Weber, C., Erny-Albrecht, K., Berndt, K., & Neeser, K. (2012). The Effect of Nurse-led Diabetes Self-management Education on Glycosylated Hemoglobin and Cardiovascular Risk Factors: A Meta-analysis. *The Diabetes Educator*. 38(1):108-23. <https://doi.org/10.1177/0145721711423978>
- Turk, D. C., Dworkin, R. H., McDermott, M. P., Bellamy, N., Burke, L. B., Chandler, J. M., ... Witter, J. (2008). Analyzing multiple endpoints in clinical trials of pain treatments: IMMPACT recommendations. Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials. *Pain*. <http://doi.org/10.1016/j.pain.2008.06.025>
- Upshur, C. C., Luckmann, R. S., & Savageau, J. A. (2006). Primary care provider concerns about management of chronic pain in community clinic populations. *Journal of general internal medicine*, 21(6), 652-5. Doi: [10.1111/j.1525-1497.2006.00412.x](https://doi.org/10.1111/j.1525-1497.2006.00412.x)

- Veteran Affairs Canada and Canadian Academy of Health Sciences. (2017). Review of Chronic Care. Retrieved from http://www.caahs-acss.ca/wp-content/uploads/2017/09/Review-of-Chronic-Care_Veterans-Affairs-Canada.pdf
- Voon, P., Greer, A. M., Amlani, A., Newman, C., Burmeister, C., & Buxton, J. A. (2018). Pain as a risk factor for substance use: a qualitative study of people who use drugs in British Columbia, Canada. *Harm Reduction Journal*. <http://doi.org/10.1186/s12954-018-0241-y>
- Wagner, E. H. (1998). Chronic Disease Management. *Effective Clinical Practice*. 1(1):2–4. <https://ecp.acponline.org/augsep98/cdm.pdf>
- Wagner, E. H., Austin, B. T., Davis, C., Hindmarsh, M., Schaefer, J., & Bonomi, A. (2001). Improving chronic illness care: Translating evidence into action. *Health Affairs*. 20(6):64-78. <https://doi.org/10.1377/hlthaff.20.6.64>
- 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. <http://doi.org/10.1097/00001786-200201000-00008>
- Wait Time Alliance. (2014). Chronic Pain- Wait Time Benchmarks for Patients with Chronic Pain. Retrieved from: <http://www.waittimealliance.ca/benchmarks/chronic-pain/>
- Watts, S. A., Gee, J., O'Day, M. E., Schaub, K., Lawrence, R., Aron, D., & Kirsh, S. (2009). Nurse practitioner-led multidisciplinary teams to improve chronic illness care: The unique strengths of nurse practitioners applied to shared medical appointments/group visits. *Journal of the American Academy of Nurse Practitioners*. 21(3):167-72. <https://doi.org/10.1111/j.1745-7599.2008.00379.x>

- Weir, R., Browne, G. B., Tunks, E., Gafni, A., & Roberts, J. (1992). A profile of users of specialty pain clinic services: Predictors of use and cost estimates. *Journal of Clinical Epidemiology*. 45(12):1399-415. [https://doi.org/10.1016/0895-4356\(92\)90202-X](https://doi.org/10.1016/0895-4356(92)90202-X)
- Williams, A. M., Dennis, S., & Harris, M. F. (2011). How effective are the linkages between self-management programs and primary care providers, especially for disadvantaged patients? *Chronic Illness*. <http://doi.org/10.1177/1742395310383339>
- Williamson, A., & Hoggart, B. (2005). Pain: A review of three commonly used pain rating scales. *Journal of Clinical Nursing*. <https://doi.org/10.1111/j.1365-2702.2005.01121.x>
- Wilson MG, Lavis JN, Moat, KA, Guta A. (2016) Evidence Brief: Strengthening Care for People with Chronic Diseases in Ontario. *McMaster Health Forum*. Retrieved from: <https://www.mcmasterforum.org/docs/default-source/product-documents/evidence-briefs/strengthening-chronic-disease-care-eb.pdf?sfvrsn=2>
- Wolever, R. Q., Dreusicke, M., Fikkan, J., Hawkins, T. V., Yeung, S., Wakefield, J., ... Skinner, E. (2010). Integrative health coaching for patients with type 2 diabetes: A randomized clinical trial. *Diabetes Educator*. 36(4):629-39. <http://doi.org/10.1177/0145721710371523>
- Younger, J., McCue, R., & Mackey, S. (2009). Pain outcomes: a brief review of instruments and techniques. *Current pain and headache reports*, 13(1), 39-43. <https://doi.org/10.1007/s11916-009-0009-x>