

**Nutrition Care Practices of Family Physicians and Nurse Practitioners in Primary
Health Care Settings in Ontario – A Qualitative Study**

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Abstract

This study aimed to provide an in-depth understanding of the way in which the macro, meso, and micro levels of the health care system affects nutrition care practices of family physicians (FPs) and nurse practitioners (NPs). It also examined how current practices compare to the clinical practice guidelines on the management and prevention of obesity. Three different types of team-based primary care settings were included: 2 Family Health Teams, 3 Community Health Centres and 1 Nurse Practitioner-Led Clinic. Within each type of setting, six to eight FPs and NPs were interviewed (for a total n= 20). Site-specific documents and government reports were also analyzed. Findings suggest that the team-based nature improves nutrition care due to the accessibility to dietitians and cost-free service. Electronic Medical Records was an important enabler for chronic disease management. Duration of medical visits and increasing prevalence of complex patients were barriers for addressing nutrition and weight. Despite the importance of addressing obesity in primary care, the topic was approached in terms of chronic disease management rather than prevention. FPs and NPs spared the dietitian on site for patients who have more severe chronic conditions. Nevertheless, the presence of a dietitian on site increased the likelihood of primary care providers bringing up the topic of nutrition. Addressing site-specific barriers could improve nutrition care practices for weight management and chronic disease prevention in the primary care setting.

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Abbreviations

AOHC: Association of Ontario Health Centres
BMI: Body Mass Index
CAHS: Canadian Academy of Health Sciences
CHC: Community Health Centre
CIHI: Canadian Institute for Health Information
CMA: Canadian Medical Association
COMP-PC: Comparison of Models of Primary Care in Ontario
EMR: Electronic Medical Record
FFS: Fee-for-service
FHN: Family Health Network
FHT: Family Health Team
FP: Family Physician
LHIN: Local Health Integration Network
NP: Nurse Practitioner
NPAO: Nurse Practitioners' Association of Ontario
NPLC: Nurse Practitioner-Led Clinic
OECD: Organization for Economic-operation and Development
OMHLTC: Ontario Ministry of Health and Long-Term Care
PCP: Primary Care Provider
PHAC: Public Health Agency of Canada
PHCTF: Primary Health Care Transition Fund
REAP: Rapid Eating Assessment for Patients
RD: Registered Dietitian
WHO: World Health Organization

CHAPTER 1: INTRODUCTION

1.1 Importance of diet and food literacy

The World Health Organization (WHO) highlights the importance of diet and food literacy as an integral part of prevention and management of obesity (2015). Overweight and obesity are defined as a Body Mass Index (BMI) of ≥ 25.0 kg/m²- 29.9 kg/m² and ≥ 30.0 kg/m², respectively. In 2015, the Canadian Medical Association (CMA) classified obesity as a chronic disease – emphasizing the importance of its prevention and management (2015). The Canadian Clinical Practice Guidelines on the management and prevention of obesity underscore the importance of nutritional assessment and dietary intervention as part of an integrated approach within the primary care setting (Lau et al., 2007). Registered dietitians (RD) are health care professionals who possess the expertise to plan and implement individualized nutrition interventions, provide adequate education, counsel in the areas of nutrition and weight management, as well as monitor and evaluate intervention outcomes (Lau et al., 2007; Atkins, Basualdo-Hammond & Hotson., 2012).

1.2 Guidelines for weight management

Family physicians (FPs) and nurse practitioners (NPs) are gatekeepers of our primary health care system (Bryant, 2009). It is recommended that the health care provider (FP or NP) screen their patients for nutrition-related conditions such as obesity, provide the initial advice, refer patients requiring additional individualized assistance to a dietitian and reinforce the importance of the nutrition advice provided by the dietitian (Brauer, Dietrich & Davidson, 2006; Pomeroy & Worsley, 2009; Truswell, Hiddink & Breytenbach, 2003; Lau et al., 2007). There is a substantial gap, however, between the proportion of patients

who would benefit from nutrition counselling and the proportion of patients who actually receive such counselling (Wynn et al. 2010; Nicholas, Roberts & Ponds, 2003; Coombs, Barrocas & White, 2004; Dolor et al., 2010; Padwal et al., 2011).

1.3 The primary health care system

It has been shown that many elements at the macro, meso, and micro levels of the health care system can affect everyday practice of primary care providers (Milliken et al., 2011). In the past, dietitians were not integrated in primary health care settings. This had a negative impact on patient care as it decreased access and communication between health care professionals (Witt et al., 2006). In 2011, First Ministers highlighted the importance of multidisciplinary teams in the renewal of health services. In response to this agreement, the Federal Government established the \$800M Primary Health Care Transition Fund (PHCTF) (Government of Canada, 2007). One of the objectives of this fund was to increase the emphasis on health promotion and chronic disease management and ensure that “the most appropriate care is provided by the appropriate provider” (Government of Canada, 2007).

Multidisciplinary clinics include Family Health Teams (FHT), Community Health Centres (CHC), and Nurse Practitioner-Led Clinics. It is important to note, however, that CHCs have been around for a longer time than the other two types of primary care settings. These three types of multidisciplinary clinics differ in terms of governance structure, health human resources and funding models. Nonetheless, all multidisciplinary primary care settings are relatively new compared to the historical system of a lone physician office (Saba, et al., 2012; Crustolo et al., 2005) and offer RD services free of charge. By examining macro, meso and micro elements of these different types of multidisciplinary

primary care settings, it will be possible to elucidate which factors have enabling or hindering effects on nutrition care practices of FPs and NPs.

1.4 Research purpose, central question and objectives

The purpose of this qualitative study is to provide an in-depth understanding of FPs' and NPs' nutrition care practices for weight management. This study addresses two central questions: 1) How do various elements at the macro, meso, and micro levels of different types of multidisciplinary clinics affect nutrition care practices of family physicians and nurse practitioners? 2) What are the current nutrition care practices of FPs and NPs in regards to nutrition care for adult patients (20-64 years) with excess weight ($BMI \geq 25.0 \text{ kg/m}^2$) in multidisciplinary primary health care settings? Three different sites reflecting three different models of interprofessional practice were purposively sampled to include: 2 FHTs, 3 CHCs, and 1 NPLC.

Firstly, governmental reports and literature were used to describe each type of organization. Within each type of health care setting, I interviewed 6 to 8 FPs and NPs (n=20). Semi-structured individual interviews (approximately 30-60 minutes) were used to collect data on how the macro, meso, and micro levels of each type of primary health care setting might be affecting participants practice. Interview questions also addressed the objectives of evaluating the current practices of FPs and NPs in the following areas 1) screening/nutritional assessment of patients with excess weight 2) approaching the topic of nutrition with patients with excess weight to provide initial advice, 3) dietetic referrals and 4) reinforcing the message (healthy eating advice).

1.5 Main Contribution

Maintaining and achieving healthier weights is paramount in decreasing the incidence of chronic diseases and maintaining overall health. This is especially important today because obesity rates have been climbing and this has negative consequences on the health care system. Studies have shown that the topic of nutrition in terms of weight management is rarely brought up during medical visits with PCPs. This is due to many barriers such as lack of time and knowledge, and cost of RD services. No study, to my knowledge, has provided an in-depth understanding of how the multidisciplinary nature of relatively new team-based settings and how their different models at the macro, meso and micro levels can affect nutrition care practices of the gatekeepers of our health care system. The study also aimed to understand nutrition care at the practice level. Ultimately, this study is of importance to the practice of family physicians, nurse practitioners, and registered dietitians. It will also be of interest to all other health care professionals, managers, and stakeholders who are interested in optimizing the quality of health care services in the area of weight management and chronic disease prevention. It can also inform future policy in primary health care by shedding light on if and how health promotion practices in multidisciplinary clinics may differ from non-multidisciplinary settings.

1.6 Thesis organization

In chapter 2, I provide a theoretical framework that guided my research. Following this will be a literature review that highlights the key findings related to my research area and the knowledge gaps that still need to be addressed. The fourth chapter explains the methodology used to answer the research questions. It also provides an explanation on how

the data were collected and analyzed. In chapter 5 and 6, two separate manuscripts address the first and second central questions, respectively. I conclude this thesis by providing a discussion on how the results answer the research question and objectives of this study. My contribution to the field, recommendations, limitation of this study, and areas for future research will also be discussed.

CHAPTER 2: CONCEPTUAL FRAMEWORK

As outlined in the Canadian Academy of Health Sciences report on health professional scopes of practice, there are current insufficiencies in the health care system including chronic care management and effective health promotion (Nelson et al., 2014). The report also highlights the importance of coordinated and comprehensive care and optimizing scopes of practice in order to deliver quality care to all Canadians (Nelson et al., 2014). In line with the recommendations of the CAHS report, the purpose of this study was to explore how the multidisciplinary nature of relatively new team-based clinics can better optimize the scope of practice of dietitians and more broadly, the nutrition care practices of FPs and NPs including referrals to dietitians. The conceptual model of the CAHS report delineated the influences of the macro/policy, meso/organizational and micro/practice level on scope of practice optimization. The macro and meso levels will be evaluated in this study as they can have an effect on the individual practitioner at the micro level (Nelson et al., 2014). As such, this study drew upon this model and a broader health systems approach in order to understand if the various models of team-based clinics provide an optimal environment for health professionals to carry out their health care services effectively.

As stated by the WHO, health systems operate at, and across, the macro, meso and micro levels (2012). The macro level focuses on policies, resource allocation and coordination across functions, service delivery, and interventions (WHO, 2012). The meso level focuses on the organizational level, such as clinics, and responds to local needs and circumstances, in terms of provision of health services, health workers, and interprofessional collaboration (WHO, 2012). Finally, the micro-level is the level of the individuals in the system such as attitudes and knowledge of health care professionals

(WHO, 2012). These different levels interact and are interrelated (Frenk, 1994). **Figure 1** below is a simplified framework of the three levels to consider when using a health systems approach. Importantly, delineation between the three levels may be ambiguous (WHO, 2002).

This framework is especially important to answer my first central question that focuses on these levels and their effects on nutrition care. My second question explored what is being done at the micro (practice) level in more detail. These practices are then compared to the clinical practice guidelines on the management and prevention of obesity and the 5As of obesity framework.

Figure 1 - World Health Organization's Health Systems Approach Framework



Reprinted from the Innovative Care for chronic conditions: building blocks for action, In the World Health Organization, by Pruitt S et al. page 30, Copyright (2002) with permission, Retrieved from <http://www.who.int/chp/knowledge/publications/icccglobalreport.pdf>.

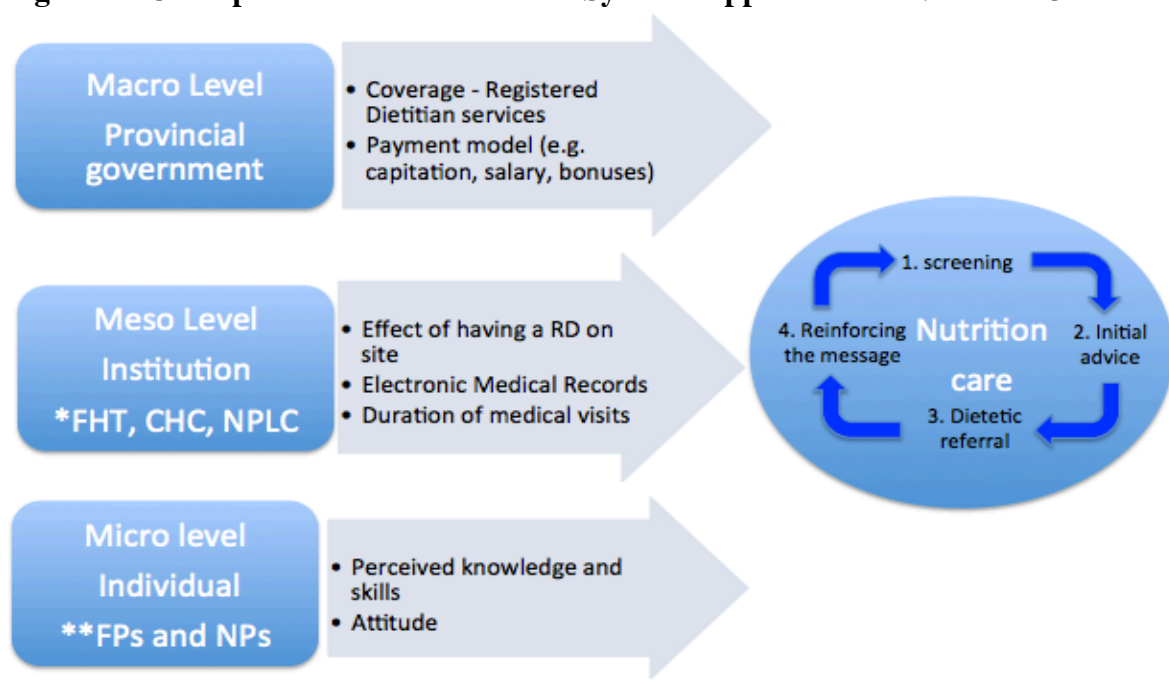
Similar to the conceptual model used for the CAHS optimizing scopes of practice study, this research highlights 1) where we are in terms of nutrition care practices for

weight management, 2) where we want to be as highlighted in various clinical practice guidelines and in the end, 3) how we can get there by providing specific recommendations based on study findings.

Proposed conceptual frameworks

In theory, team-based primary health care settings offer an optimal environment for effective nutrition care. From a health systems point of view, these health care settings operate differently, which may have an effect on nutrition care. As seen in **figure 2**, there are certain elements at the macro, meso, and micro levels that can have an effect on nutrition care. These elements vary based on the type of health care setting. In **figure 3**, nutrition care is explained in more detail. At the practice level, I aimed to understand what is currently being done as well as the enablers and barriers for nutrition care.

Figure 2 - Conceptual framework: Health Systems Approach and Nutrition Care

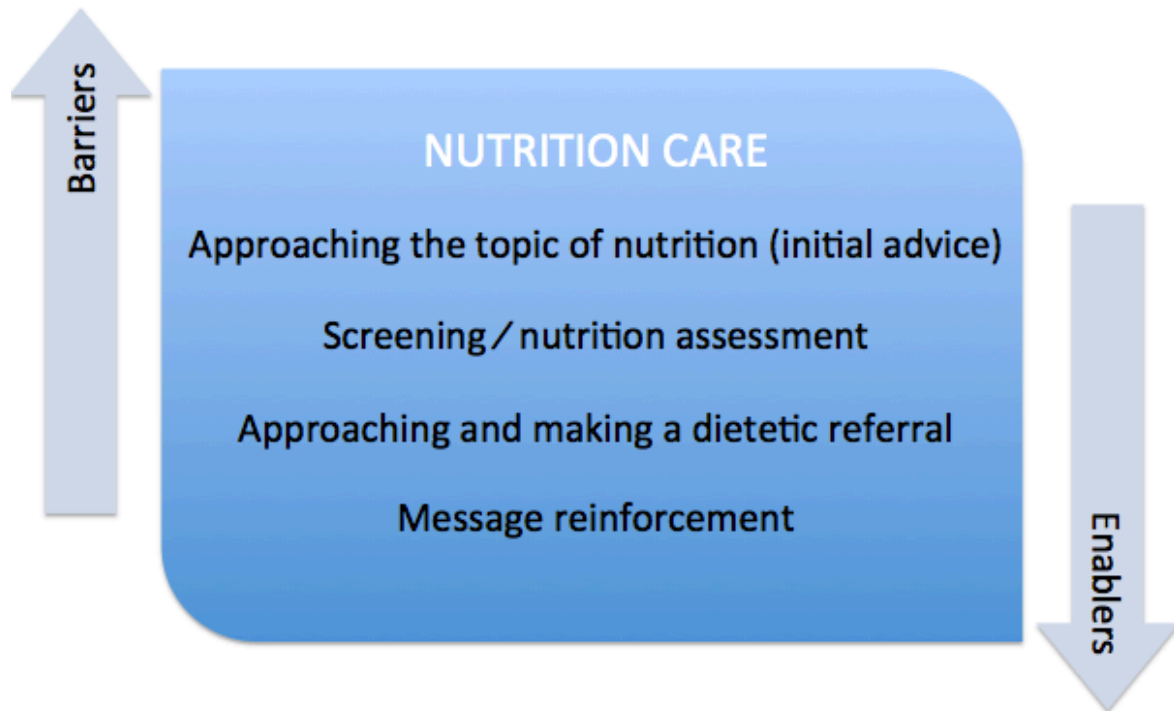


Adapted from the Innovative Care for chronic conditions: building blocks for action, In the World Health Organization, by Pruitt S et al. Retrieved February 25, 2016, from <http://www.who.int/chp/knowledge/publications/icccglobalreport.pdf>.

*FHT: Family Health Team; CHC: Community Health Centre; NPLC: Nurse Practitioner-Led Clinic

** FPs: Family Physicians; NPs: Nurse Practitioners

Figure 3 – Conceptual Framework: Nutrition Care for Weight Management



CHAPTER 3: LITERATURE REVIEW

Historically, the Canadian health care system was designed to treat acute and infectious diseases (WHO, 2002). With the advance of technology, vaccines, and other medical procedures, infectious diseases are less apparent and chronic diseases have become more prevalent (WHO, 2002). This calls for primary health care settings to evolve based on the current chronic conditions affecting an important proportion of Canadians (Nelson et al., 2014).

3.1 Weight management and nutrition counseling

3.1.1 Overweight and obesity

The WHO states that the risk of health problems starts when someone is only slightly overweight, and that the likelihood of problems increases as someone becomes more and more overweight or obese (WHO, 2016). Obesity is multifactorial and is an important individual and population health issue. It contributes to a wide variety of chronic diseases, such as type 2 diabetes, hypertension, cardiovascular and liver diseases, as well as certain cancers including breast, endometrial, colorectal, esophageal, gallbladder, kidney, liver, pancreas, prostate and uterine (Lau et al., 2007; Senate Canada, 2016). Obesity and obesity-related diseases can also have negative consequences on quality of life, mental well-being, and health service costs (Curioni, André & Veras, 2006; Government of Canada, 2015). In fact, “economic burden due to direct health care costs and indirect costs due to lost productivity associated with obesity is estimated to be between \$4.6 billion and \$7.1 billion in Canada annually” (Senate Canada, 2016). About 10% of premature deaths among Canadian adults 20–64 years of age is directly attributable to overweight and obesity (Lau et al., 2007). In 2014, 54% of Canadians aged 18 years

and older were classified as overweight or obese (Statistics Canada, 2015). In comparison with Organization for Economic-operation and Development (OECD) countries, Canada is in fifth place in terms of obesity prevalence (Senate Canada, 2016).

3.1.2 The role of nutrition in overweight and obesity

The fundamental cause of overweight and obesity is energy imbalances as the calories consumed are more than the calories expended (WHO, 2016). The WHO states that “dietary and physical activity patterns leading to overweight and obesity are often the result of environmental and societal changes associated with lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing and education” (WHO, 2016). This stresses the importance of supporting patients achieve a healthier lifestyle and ultimately a healthy weight by carefully adapting counselling based on their respective experiences, level of motivation, and circumstances. In fact, a study showed that an individualized therapeutic program is essential for patients to adhere to nutrition counselling and improve their dietary behaviours (Endevelt & Gesser-Edelsburg, 2014). It is essential to address eating behaviours because the benefit-to-harm ratio is more favourable to behavioural interventions than for pharmacologic interventions (Lau et al., 2007). Additionally, even if pharmaceutical or surgical avenues are chosen for weight loss, lifestyle modifications still need to occur.

3.1.3 Clinical outcomes of nutrition counselling by a Registered Dietitian (RD)

A Cochrane review demonstrates the possible outcomes of seeking the services of a RD. Patients may lose more weight after a year if the care was provided by a dietitian (by 5.6 kg, 95% CI 4.8 to 6.4 kg) or by a doctor-dietitian team (by 6 kg, 95% CI 5 to 7 kg), as compared with standard care, which consists of a medical visit with no special instructions

or referral to a dietitian (Flodgren et al., 2010). Patients BMI significantly decreased after dietetic treatment with a RD (Tol et al., 2014). Many other studies have established the effectiveness of dietary counselling in the management or prevention of certain chronic diseases, such as type 2 diabetes (Franz et al., 1995; Orozco et al., 2008; Willaing et al., 2004; Parker et al., 2014). Specifically, intensive interventions delivered by RDs can reduce the risk of developing type 2 diabetes by up to 60% in clients at risk (Canadian Diabetes Association, 2013), reduce glycated haemoglobin (A1C) (similar to outcomes with two medications but with reduced cost and risk) (PEN nutrition, 2016), lower total cholesterol blood levels, low density lipoprotein (LDL), as well as blood pressure (PEN nutrition, 2016).

3.2 The primary health care system

Family physicians and nurse practitioners are gatekeepers of our primary health care system (Bryant, 2009). Primary health care settings include lone physician offices and team-based clinics such as FHTs, CHCs and NPLCs. Although the objectives of the primary health care reform differ between provinces and territories, recurring themes include: expansion of team-based approaches, prevention and management of chronic diseases, improved quality and appropriateness of care, and the implementation and use of electronic medical records (EMRs) (Hutchison et al., 2011). By examining certain elements at the macro, meso, and micro levels of these health care settings, it will be possible to elucidate if and how they have an impact on nutrition care practices of FPs and NPs. Although lone-physician offices are not included in this study due to the saturation of research in this setting, they will be included in the literature review as they provide a clear example on how elements at the macro, meso, and micro levels can have a substantial

impact on everyday practice. Indeed, as Milliken et al., (2011) has noted, “the way in which primary care is organized can have a profound impact on the amount and quality of care provided to patients” (p.87).

3.2.1 Macro level – Provincial government

Registered dietitian services – Coverage

Coverage of RD services is a critical issue. Patients who do not have a private insurance plan and are referred to a dietitian by a physician or nurse practitioner that works in a non-multidisciplinary clinic often have to pay for their services. These services are not publicly funded in Ontario and in most other provinces (Bryant, 2009). Patients who are registered in team-based clinics receive the service free of charge. In some of these clinics, patients can self-refer or require a referral from a FP or NP. This influential factor at the macro level has been shown to affect physicians’ practice at the micro level. Despite the need for nutrition counselling by a dietitian, some physicians do not refer patients due to the cost of the service to patients (Padwal et al., 2011; Wynn et al., 2010; Nicholas et al., 2003).

Physicians and nurse practitioners payment models

As part of the “Comparison of Models of Primary Care in Ontario” (COMP-PC) project, some studies have examined the effects of physician payment models on health promotion and chronic disease management. The longest-standing model of payment is the fee-for-service arrangement, which has been argued to be a model that is volume driven and may induce unnecessary services (Arrow 1986; McGuire 2000; Pauly 1980). Physicians working in lone-physician offices and family health groups are paid through this model. As per the physicians who work in a FHT, they are paid a monthly capitation fee that is based on the number of patients rostered, as well as their age and gender (Milliken et al., 2011). In Family Health Networks (FHN), physicians are paid a capitation fee for rostered

patients but also receive bonuses and small fee-for-service payments to provide preventive services (mixed method payment) (Milliken et al., 2011). The fourth model used by CHCs, pays physicians a salary (Milliken et al., 2011). The vast majority of NPs are also paid by salary, regardless of the health care setting in which they work (NPAO, 2017). Studies have shown that CHCs performed better than fee-for-service practice, capitation and blended models in chronic disease management, health promotion and community orientation (Hogg et al., 2009; Muldoon et al., 2010; Russell et al., 2009). Although salaried physicians see fewer patients in any given time, relative to FSS physicians (Devlin & Sarma, 2008; Gosden et al., 2000; Sorensen & Grytten, 2003), it has been shown that quality of care may be higher in this arrangement (Yalnizyan & Macdonald, 2005).

3.2.2 Meso level – Institution

Effect of having a dietitian on site

Supporting interdisciplinary, team-based primary health care in treatment and management of chronic diseases is growing (Harvey et al., 2002). A survey collecting data on physicians' satisfaction on integrating a RD in their practice showed that working with a RD has increased their skills and comfort in handling nutrition issues (Curstolo et al., 2005). They also indicated that RDs are a good resource and complement their practice (Curstolo et al., 2005). No study, to my knowledge, has provided an in-depth understanding of family physicians' and nurse practitioners' perception regarding the integration of RDs in team based clinics and its effect on their nutrition care practices for weight management.

Electronic Medical Records

Implementing EMRs in the primary care setting was also an initiative in the primary health care reform. Although the adoption and use of EMRs vary widely between provinces and

clinical settings, government support has increased over the years (Hutchison et al., 2011). The Canadian Institute for Health Information (CIHI) also highlights that EMRs can provide the data needed to fill a major gap in managing chronic diseases (2014). Some have suggested that EMRs programmed to provide disease management reminders and physician decision aids might enhance patient outcomes (O'Connor et al., 2005). There are, however, certain limitations as some EMR users use it solely for scheduling and billing (CIHI, 2014). Also, some studies have shown that overweight and obesity are under diagnosed in patient medical records (Baer et al., 2013; Bardia et al., 2007; Ko et al., 2008). Most of these studies did not provide an in-depth understanding of how EMRs may be facilitating patient care in relation to obesity and nutrition care.

Duration of Medical visits

Another factor that can affect health promotion practices of FPs and NPs is the duration of medical visits (Hogg et al., 2009). It seems that high quality clinical care is more achievable with longer consultation times (Campbell et al., 2001). For example, health promotion seemed to be significantly higher in CHCs for many reasons, including longer duration of medical visits (average of 20 minutes as opposed to 15 minutes in other practices) (Hogg et al., 2009). It was shown that a 10-minute increase of medical visits increased health promotion by 30% (Hogg et al., 2009). In terms of health promotion in nutrition, some physicians agree that diet and weight counselling require more time than smoking cessation counselling (Dolor et al., 2010; Wynn et al., 2010).

3.2.3 Micro level – Individual

Knowledge and perceived skills

The literature also highlights that nutrition counselling by FPs is suboptimal due to lack of knowledge and perceived skills (Wynn et al., 2010; Nicholas et al., 2003; Coombs

et al., 2004; Dolor et al., 2010; Forman-Hoffman, Little & Wahls, 2006). Also, primary care physicians' discussion about weight issues with obese and overweight patients is not as intensive as many patients would like (Potter, Vu & Croughan-Minihane, 2001). Inadequate knowledge was also perceived by NPs to be a barrier in providing effective nutrition care to patients (Cass, Ball & Leveritt, 2014; Martin et al., 2014). Nevertheless, a study found that NPs were willing to opportunistically provide nutrition care to patients regardless of a perceived low level of nutrition knowledge (Cass et al., 2014).

Attitude

Another element that is important to consider is the FPs' and NPs' attitude regarding nutrition counseling and weight management. Previous studies found that both FPs and NPs who had a positive attitude towards nutrition were more likely to address the topic with their patients (Wynn et al., 2010; Martin et al., 2014). Additionally, PCPs' personal health behaviours might affect their attitude and in turn, nutrition care (Bleich et al., 2012). Health professionals who have a healthy lifestyle are more likely to discuss weight management options with their patients (Bleich et al., 2012; Spencer et al., 2006; Zhu, Norman & While, 2011; Forman-Hoffman et al., 2006).

3.3 Weight management and nutrition care

Now that certain elements at the macro, meso, and micro levels have been highlighted due to their effect on nutrition care, I will now discuss in more detail the proposed 5As framework for weight management and what nutrition care entails as highlighted below.

3.3.1 5As framework of obesity management for adults

The 5As framework was developed to guide health practitioners in managing obesity and related health issues (Canadian Obesity Network, 2017). Briefly, the 5 steps of this framework are: ask, assess, advise, agree and assist. Should the root cause of obesity be nutritional, it is recommended that health practitioners refer to appropriate resources or providers (Canadian Obesity Network, 2017). Studies have suggested a way to approach nutrition care in terms of weight management.

3.3.2 Nutrition care

Once the primary care provider 1) screens their patients for nutrition-related conditions such as obesity, it is recommended that they 2) provide the initial advice by approaching the topic of nutrition, 3) refer patients requiring additional individualized assistance to a dietitian and, 4) reinforce the importance of the nutrition advice provided by the dietitian. This section provides more information at the practice level, as it is also imperative to understand how current practices in multidisciplinary clinics compare to the Canadian Clinical Practice Guidelines on the management and prevention of obesity.

3.3.3 Screening for obesity and nutrition assessment

Guidelines from various countries encourage screening for patients with obesity and to provide nutrition guidance (Moyer., 2012; National Institute for Health and Care Excellence, 2014; Lau et al., 2007). It is recommended that health professionals use BMI and waist circumference to screen for overweight and obesity in individuals (Lau et al., 2007; Plourde & Prudhomme, 2012). Laboratory parameters can also be used such as fasting blood glucose level and lipid profile as they are highly related to overweight and obesity (Lau et al., 2007). As for nutrition assessment, the Rapid Eating Assessment for

Patients (REAP), has been suggested as a tool to quickly assess who would benefit from further nutrition counselling (Plourde & Prudhomme, 2012; Gans et al., 2003). It has been shown, however, that obesity is under diagnosed and under managed in primary care (Campbell-Scherer & Sharma, 2016; Plourde & Prudhomme; 2012). Also, PCPs seemed to attribute a lower overall support to screening for nutrition-related conditions such as obesity (Brauer et al., 2006). Multidisciplinary clinics are relatively new and it is unclear if the team-based nature of these clinics has an effect on obesity screening and nutrition assessment of patients.

3.3.4 Approaching the topic of nutrition

Despite the Clinical Guidelines on the Management and Prevention of obesity stating that the topic of nutrition should be addressed in weight interventions, previous studies have shown that the topic is rarely brought up during medical visits (Lau et al., 2007; Wynn et al., 2010; Nicholas et al., 2003; Coombs et al., 2004; Dolor et al., 2010; Forman-Hoffman et al., 2006). Certain factors included lack of time, knowledge, and perceived skills, lack of reimbursement, and failure to believe that diet change will be helpful (Wynn et al., 2010; Nicholas et al., 2003; Coombs et al., 2004; Dolor et al., 2010; Forman-Hoffman et al., 2006). Nonetheless, it is important to note that patients value their PCPs advice and their recommendations have been shown to be an important driver of patient weight loss intentions (Jay et al., 2010; Huang et al., 2004; Kant & Miner, 2007). Also, patients may be told to lose weight but not given any directions on how to do so successfully (Plourde & Prudhomme, 2012).

3.3.5 Dietetic referrals

A study provided a detailed report of Canadian physicians' use of anti-obesity pharmacotherapy and referral patterns to additional obesity management programs and providers, such as dietitians (Padwal et al, 2011; Population Health Research Institute, 2006). Findings show that referral to additional weight management provider or programs was recommended less than 50% of the time for overweight and obese patients (Padwal et al., 2011). Another survey-based study showed that 76% of nurses did not suggest weight management interventions to their overweight and obese patients (Miller, Alpert & Cross, 2008). Similar to other weight management options, dietetic referrals are also suboptimal and the contributors to this include: 'not considered by the health care provider', and 'patient refusal' (Padwal et al., 2011; Wynn et al., 2010; Nicholas et al., 2003). A limitation that was stated in these studies is that they do not use follow-up probes examining why the physician failed to consider referral or why the patient refused the actions (Padwal et al., 2011; Wynn et al., 2010). Fewer studies examined the dietetic referrals of nurses, however, a study showed that practice nurses make the most dietetic referrals compared to other nurses (Brown et al., 2007). Practice nurses differ from nurse practitioners as they generally do not take on specific diagnostic tasks independent of the doctor (Lorentzon & Hooker., 2006). No study, to my knowledge, has examined differences in nutrition care practices, including dietetic referral of primary health care providers working in various multidisciplinary primary health care settings.

It is important to note that if the FP or NP deems that nutrition counselling for a given patient is warranted, the way in which they approach the dietetic referral plays an important role in the acceptance and adherence to the nutrition counselling (Endevelt &

Gesser-Edelsburg, 2014). A National survey showed that 40% of overweight or obese respondents described themselves as “about right” (PHAC, 2012). As shown in other studies, increasing obesity rates cause a normalization of excessive weight gain (Johnson et al., 2008; Pulvers et al., 2008; Burke, Heiland & Nadler, 2010). The Public Health Agency of Canada noted “this has implications for health care professionals who may need to raise awareness of the health risks of overweight or obesity before offering any weight management advice” (2012). An understanding of how FPs and NPs approach a dietetic referral and how their patients perceive it can provide insight on potential practices that increase uptake.

3.3.6 Reinforcing healthy eating advice

Reinforcing the message is also an important step in nutrition care practice by FPs and NPs. After seeing the dietitian and setting out individualized goals, it is recommended that FPs and NPs follow up on these goals and reinforce the dietitian’s message (Lau et al., 2007; Dietz et al., 2015). This is important for regular monitoring and providing ongoing support to the patient. Given the importance that patients attribute to their PCP’s recommendations, it may help patients adhere to the nutrition care plan (Post et al., 2011). This may not be possible in settings where communication between the PCP and RD are not possible. This is because the PCP will not be aware of what was discussed during the session with the RD (Pomeroy & Worsley, 2009).

Synthesis of the literature

Table 1 provides essential information that was captured during the literature review. It offers an overview of the important aspects that revolve around overweight and obesity, health care professionals in primary care, dietary promotion and interventions used

in weight management. Once I reviewed and became familiar with the current literature, it was possible to identify knowledge gaps that warrant further exploration. **Table 2** provides an insight on areas of knowledge gaps.

Table 1 - Literature Synthesis

Overweight and obesity	
As BMI increases, health risks increase, mental well-being decreases and health care costs increase.	WHO, 2016; Curioni et al., 2006; GOC, 2015; Senate Canada, 2016 ; Lau et al., 2007
In 2014, 54% of Canadian adults were classified as overweight or obese.	Statistics Canada, 2015
The role of nutrition in overweight and obesity	
Dietary habits are caused by many factors, which stresses the importance of an individualized therapeutic program.	WHO, 2016; Endevelt & Gesser-Edelsburg, 2014
Behavioural interventions are essential, as the benefit-to-harm ratio appears more favourable than for pharmacologic interventions.	Lau et al., 2007
Effectiveness of nutrition care provided by a dietitian	
Patients may lose more weight with a dietitian or a doctor-dietitian team, as compared to no special instruction or referral to a dietitian.	Flodgren et al., 2010
Dietitian services have been shown to decrease patients' BMI, decrease the risk of developing type 2 diabetes, reduce A1C levels, cholesterol and lower blood pressure.	Tol et al., 2014; Franz et al., 1995; Orozco et al., 2008; Willaing et al., 2004; Parker et al., 2014; CDA, 2013; PEN nutrition, 2016
The primary health care system	
Family physicians and nurse practitioners are the gatekeepers of our primary health care system.	Bryant, 2009
Dietitian services are not publicly funded in Ontario (as in most provinces) but are provided free at point of access in team-based clinics such as FHTs, CHCs and NPLCs.	Bryant, 2009; AOHC, 2015
The primary health care reform has many objectives including emphasizing health promotion, chronic disease prevention and implementing EMRs.	Hutchison et al., 2011
The way in which the primary care system is organized has an impact on primary care providers' practice. As such, it is important to consider certain elements at the macro, meso, and micro levels of the primary health care system.	Milliken et al., 2011; WHO, 2002; Nelson et al., 2014
Macro level – Provincial government	
Registered dietitian services are not publicly funded. Some physicians refrain from providing a dietetic referral due to the cost of the service.	Bryant, 2009; Padwal et al., 2011; Wynn et al., 2010; Nicholas et al., 2003
Payment models have been shown to have an effect on health promotion and chronic disease management with a salary-based model showing to perform better than other models of payment.	Arrow, 1986; McGuire, 2000; Pauly, 1980; Milliken et al., 2011; NPAO, 2017; Hogg et al., 2009; Muldoon et al., 2010; Russell et al., 2009; Devlin & Sarma, 2008;

	Gosden et al., 2000; Sorensen & Grytten, 2003; Yalnizyan & Macdonald, 2005
Meso level – Institution	
Having a dietitian on site seemed to increase interaction and work between physicians and dietitians and increased dietetic referrals as dietitians are in proximity.	Harvey et al., 2002; Curstolo et al., 2005
Although the numbers of institutions implementing EMRs are increasing and that there is potential for its use in chronic disease management, some EMR users might not be using this tool to its full capacity.	Hutchison et al., 2011; CIHI, 2014; O'Connor et al., 2005; Baer et al., 2013; Bardia et al., 2007; Ko et al., 2008; Baer et al., 2013
The duration of medical visits has been shown to affect PCPs' practice with longer medical visits being positively correlated with health promotion and chronic disease management.	Hogg et al., 2009; Campbell et al., 2001; Dolor et al., 2010; Wynn et al., 2010
Micro level – Individual	
Lack of knowledge in nutrition may be a factor affecting nutrition care practices of primary care providers. PCPs with less knowledge in nutrition tend to bring it up less.	Wynn et al., 2010; Nicholas et al., 2003; Coombs et al., 2004; Dolor et al., 2010; Potter et al., 2001; Cass et al., 2014; Martin et al., 2014
A positive attitude towards nutrition increases the likelihood of including the topic of nutrition in medical visits.	Wynn et al., 2010; Martin et al., 2014
Weight management	
The 5As framework of obesity management for adults suggests health practitioners: to ask, assess, advise, agree and assist. Should the cause of obesity be nutritional, referring to the recommended nutrition care process is warranted.	Canadian Obesity Network, 2017
Nutrition care	
Screening and nutrition assessment – Despite the guidelines indicating measures, laboratory parameters and screening tools that should be used, primary care providers are under diagnosing obesity and underutilizing nutrition assessment tools.	Moyer., 2012; National Institute for Health and Care Excellence, 2014; Lau et al., 2007; Plourde & Prudhomme, 2012; Gans et al., 2003; Campbell-Scherer & Sharma, 2016; Brauer et al., 2006
Approaching the topic of nutrition –Patients place value on the recommendations given by their PCPs. As such, PCPs are recommended to provide the initial advice on nutrition in terms of weight management. Studies have shown, however, that the topic is rarely brought up during medical visits.	Lau et al., 2007; Wynn et al., 2010; Nicholas et al., 2003; Coombs et al., 2004; Dolor et al., 2010; Forman-Hoffman et al., 2006; Jay et al., 2010; Huang et al., 2004; Kant & Miner, 2007; Plourde & Prudhomme, 2012
Dietetic referrals – Patients who would benefit from further nutrition counselling should be referred to a dietitian. Dietetic referrals are shown to be under-utilized in primary care due to many barriers such as lack of access and cost of service. Additionally, the way in which PCPs suggest the dietetic referral has an influence on patients' initiation and adherence to the nutrition counselling with the dietitian.	Population Health Research Institute, 2006; Padwal et al., 2011; Miller et al., 2008; Wynn et al., 2010; Nicholas et al., 2003; Brown et al., 2007; Endevelt & Gesser-Edelsburg, 2014; PHAC, 2012; Johnson et al., 2008; Pulvers et al., 2008; Burke et al., 2010
Reinforcing healthy eating advice – After referring the patient to a dietitian, PCPs are recommended to reinforce the message	Lau et al., 2007; Dietz et al., 2015; Post et al., 2011; Pomeroy &

Table 2 - Areas of Knowledge Gaps

Critical knowledge gaps
<p>Macro level</p> <ul style="list-style-type: none"> • How are dietetic referrals utilized in team-based clinics where RD services are covered? • How do payment models affect nutrition care practices of FPs and NPs?
<p>Meso level</p> <ul style="list-style-type: none"> • How do FPs and NPs perceive the integration of RDs in the primary health care setting and what effect does it have on their practice? • Are FPs and NPs using this technology and how does it affect their practice? • How long do FPs and NPs have with patients in every type of primary care setting and does it have an effect on their nutrition care practices?
<p>Micro level</p> <ul style="list-style-type: none"> • Does working in a multidisciplinary setting improve FPs' and NPs' perception regarding their knowledge in nutrition (e.g. through clinical meetings discussing nutrition) and how does it affect their practice? • Do FPs and NPs agree that nutrition assessment is important in weight management and how does it affect their nutrition care practices?
<p>Screening</p> <ul style="list-style-type: none"> • How do current practices compare with the Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity? • How do FPs and NPs screen for patients who would benefit from nutrition counselling with a RD?
<p>Approaching the topic of nutrition</p> <ul style="list-style-type: none"> • How and when do FPs and FPs approach the topic of nutrition with their patients with excess weight? • What are the enablers and barriers of approaching the topic of nutrition?
<p>Dietetic referrals</p> <ul style="list-style-type: none"> • How do FPs and NPs approach the dietetic referral? Are they raising awareness before referring? • When do PCPs decide to refer a patient to a dietitian? • What are the enablers and barriers of making a dietetic referral?
<p>Reinforcing healthy eating advice</p> <ul style="list-style-type: none"> • How does the team-based nature of the clinic affect PCPs' practice in terms of reinforcing the dietitian's message?

CHAPTER 4: METHODS

4.1 Methodological approach

This research was conducted using a qualitative research design. This design enabled me to explore various dimensions of the social world, including the experiences, motivations, and actions of participants (Mason, 2002; Myers, 2013). As I am interested in a deeper understanding of what FPs and NPs do regarding nutrition care, as well as how and why they approach nutrition care, a qualitative approach is warranted (Bourgeault, Dingwall & Vries, 2010). I chose this design because it provides an in-depth understanding of how nutrition care practices are carried out by FPs and NPs in particular contexts (Creswell, 2013). This was achieved by following up with probes and asking additional questions that helped accurately reflect current practices. Using this approach also enabled participants to share ideas and experiences that helped immensely in understanding how they provide nutrition care. More importantly, this research design was used to address the limitation of previous studies that have used quantitative research methods.

4.2 Comparative case study

To answer the first central question, a comparative case study approach was used. A case study enables a researcher to either develop an in-depth understanding of a single case or explore an issue or problem using the case as a specific illustration (Creswell, 2013). It is defined as a research strategy that focuses on understanding the dynamics present within single settings (Eisenhardt, 1989). As described by Yin, case studies can involve single or multiple cases, as well as numerous levels of analysis (1984). A case study can be used to provide description, test theory (Pinfield, 1986; Anderson, 1983), or

generate theory (Gersick, 1988; Harris & Sutton, 1986). By using a replication strategy, the findings are more robust (Yin, 2009). The cases were carefully selected, as they are similar in some ways but differ in others. By understanding this, it will be possible to elucidate and reinforce the factors at the macro, meso, and micro levels that are contributing to FPs and NPs practices. Cases were chosen based on the likelihood of being able to replicate and extend theory (Eisenhardt, 1989). Because the cases differ, my findings can be extended to more than one type of team.

For the purpose of this study, three different types of health care settings were used as unit of analysis. Three cases (with 1-3 sites for each case were included to yield the required number of interviewees) were purposefully sampled to understand different practices (Creswell, 2013) of nutrition care. To yield more comparable findings, a tightly bound research design was used (Miles & Huberman, 1994). This was achieved by having a well-defined research purpose and scope, a confirmed theoretical framework, a selective set of research questions and specific sampling and analysis techniques (Miles & Huberman, 1994).

4.3 Research sites

In this research, three different team-based health care settings were included, 2 family health teams, 3 community health centres, and 1 nurse practitioner-led clinic. All these health care settings have an important aspect in common, which is the variety of health care professionals who comprise these teams (family physicians, nurse practitioners, registered nurses, social workers, dietitians, pharmacists and other health care professionals). Nonetheless, they were put in place for different reasons and their models differ.

Family Health Teams were created to expand access to comprehensive care in the community (Ontario Ministry of Health and Long-Term Care, 2016). Since 2005, 184 locations have opened with 10 of them being located in Ottawa (OMHLTC, 2016). Community health centres have been established for a longer time (approximately 40 years) and resonates with Tommy Douglas' original vision of Medicare of keeping people well rather than treating diseases once they occur (AOHC, 2015). There are currently 6 community health centres in Ottawa. Another team-based health care setting is the nurse practitioner-led clinic where nurse practitioners assess, diagnose, treat, and monitor a wide range of health problems (OMHLTC, 2015).

4.4 Sample and recruitment

Once the Research Ethics Board of the University of Ottawa approved the study (**Appendix A**), primary health care settings in Ottawa and the vicinity were invited to participate. The order of the invitation was determined randomly. The director of each health care setting was contacted and asked for permission to interview the health care professionals working in the site. The Executive Director then contacted the staff to let them know about the study and its inclusion criteria.

The first inclusion criterion was: FPs and NPs who provide health care to adult patients. This is important as questions that were asked during the interview pertain to excess weight in adult patients. The second inclusion criterion was: FPs and NPs who have been working at the site for at least 6 months. This ensures that the health care professional has been working at the site for a considerable amount of hours in order to accurately convey their practices at the site.

Interested individuals contacted me via email. The snowball sampling technique was then used. Most participants reminded their colleagues of the study and this helped reach the target number of participants. Once the respondents agreed to participate, the study and the consent form were explained further. They were then asked to sign the consent form (**Appendix B**) and to complete the background questionnaire (**Appendix C**) before the individual interview. As incentive, participants were given a \$50 coffee shop gift card.

4.5 Data collection

Case studies typically combine many data collection methods such as archives, interviews, questionnaires, and observations (Eisnerhardt, 1989). Various methods of data collection allow for ‘triangulation’, which allows the researcher to examine the data from different angles and gain a ‘fuller’ picture of what is happening (Myers, 2013). Another way of achieving triangulation is for a single study to include multiple researchers (Myers, 2013). In this case, each researcher examines the data using their own expertise or experience (Myers, 2013). This is of importance for this study as interviews were the sole method of data collection in terms of the current practices of primary health care providers (micro level).

The standardized open-ended interview (**Appendix D**) approach was used as it allows for comparability across sites (Patton, 2002). This is achieved by asking the interviewee the same questions in the same way and in the same order, including probes (Patton, 2002). This approach has some weaknesses such as it does not permit the interviewer to pursue topics or issues that may warrant further questioning (Patton, 2002). To overcome this limitation, the combination approach suggested by Patton was used

(2002). The interview began by using a standardized open-ended approach and ended with the interviewer being free to explore any subjects of interest during the latter parts of the interview. As explained by Patton, “This combined strategy offers the interviewer flexibility in probing and in determining when it is appropriate to explore certain subjects in greater depth, or even to pose questions about new areas of inquiry that were not originally anticipated in the interview instrument’s development” (2002, p. 347). All interviews were audiotaped with the permission of the respondent.

In order to obtain information regarding the meso and macro levels of each team-based health care system, site-specific websites and documents were analyzed for the programs offered at the site and other pertinent information that will help describe the characteristics of the site involved in the study. For example, the governance documents found on the association of family health teams website and the Association of Ontario Health Centres (AOHC) were analyzed. This enabled the understanding of the health care context in which the health care professionals are working. Governmental reports pertaining to the funding and governance of each type of health care setting were also analyzed.

4.6 Data analysis

Once all interviews were transcribed verbatim, the transcripts were imported into NVivo software for coding. Data analysis occurred concomitantly with data collection. This enabled me to reflect on the existing data and to refine the interview questions to ensure that the data collected addressed the study’s objectives (Miles, Huberman, & Saldaña, 2014). Participants were contacted again if I needed to ask an additional question. As Hennink and colleagues explain, data analyses involve many steps and are interlinked;

as such it is possible to repeat certain tasks in order to obtain a deeper and more refined understanding of the issues (2011).

First, I immersed myself in the data to comprehend its meaning in its entirety (Crabtree & Miller 1999; Pope, Ziebland, & Mays, 2000). This helped me detect emergent codes without losing the connections between concepts and their context (Bradley, Curry, & Devers, 2007). While reading the transcripts, memos were made to make note of major ideas and any salient information that may warrant further exploration (Creswell, 2013). I then used line-by-line for the initial coding (Charmaz, 2006). This technique enabled me to look at the data carefully and to reduce the likelihood of superimposing preconceived notions on the data (Charmaz, 2006). This step of initial coding generated descriptive codes. Even though this is not a grounded theory approach, the constant comparative method was used to ensure that what the participant is saying is consistent with what has been said throughout the interview (Charmaz, 2006). This sheds light on whether or not responses differ based on the question or context (Charmaz, 2006). The steps suggested by Miles & Huberman were used for the analysis (1994). As such, once descriptive codes were elucidated, inferential and pattern codes were identified.

The integrated approach allowed me to use deductive and inductive codes. I started by coding under predetermined codes that were generated from the literature, the interview protocol and my pilot study. Examples of deductive codes under the theme “barriers for approaching the topic of nutrition” included “lack of time; lack of knowledge”. Nevertheless, due to the limitations of prefigured codes, inductive codes were also generated based on the interviewees’ responses. The inductive analysis process consisted of starting with a line-by-line coding approach. Examples of line-by-line codes included

“Body Mass Index and body weight”. Once all descriptive codes were identified, I searched for similarities among the codes in order to group and organize them under categories. For instance, the codes “Body Mass Index and body weight” were grouped under the category “screening”. Codes changed and developed as more interviews were conducted and as field experience continued (Miles, Huberman, & Saldaña, 2014). Categories were analyzed and narrowed down to answer the research questions and objectives of this study.

For the first central question, categories and codes were integrated under their respective macro, meso, or micro level. For example, categories and codes pertaining to the coverage of dietitian services were integrated at the macro level. As for the second central question, categories were grouped based on the recommended clinical practice guidelines. Approaching the topic of weight management is the first step in initiating nutrition care for weight management. Codes and categories that helped provide an in-depth understanding of how this step is approached were grouped under that step. The next step would be screening and so codes related to how PCPs screen were grouped under “screening”. This approach was used for the following recommended steps outlined in the clinical practice guidelines on the management and prevention of obesity.

When analyzing interviews from cases, it is recommended by various authors to start with a within-case analysis before conducting a cross-case analysis (Eisenhardt, 1989; Yin, 2003; Miles & Huberman, 1994). Once the analysis of all the transcripts and documents from one site was complete, the same within-case analysis was conducted for the other two sites. This resulted in three different write-ups. Once unique elements of each

case were identified, it was then be possible to carry out a thematic analysis across the cases, or a cross-case analysis (Creswell, 2013). The second step was mostly a pattern matching activity (Eisenhardt 1989; Yin, 2003; Miles & Huberman, 1994). This comparison enabled me to identify similarities and differences between sites.

4.7 Trustworthiness

Lincoln and Guba's terms were used to establish trustworthiness in this study (1985). They argue that in order to reach trustworthiness, one must ensure credibility, authenticity, transferability, dependability, and confirmability (Lincoln & Guba, 1985). When using a case study approach, it is preferable to gather data from multiple sources in order to triangulate (Creswell, 2013). For the objective of this study, semi-structured interviews and documents were the two methods of data collection. These two methods collected different types of data. Site-specific documents informed the researcher regarding the various programs offered at the primary care setting and helped characterize the cases involved in the study. This is important for transferability of results.

Interviews were the only method of data collection for understanding nutrition care practices. As such, investigator triangulation was used for the data analysis of the interviews (Myers, 2013). Once I completed the data analysis of an interview, two students who were part of the Undergraduate Research Opportunity Program (UROP) at the University of Ottawa analyzed the data. The study design was explained to the students prior to their analysis of the data. Involving multiple researches in data analysis ensured that the data were looked at from various angles (Myers, 2013). Subsequent to the data analysis, researchers met to compare codes. Also, discussions among the research team allowed for different perspectives to be exchanged.

Another mean of establishing credibility is to have member checks. When the data analysis was complete, participants who were interested in a member check were contacted. This preference was an option on the consent form. Five participants were interested in a member check. They were then contacted once analysis was complete. One participant was still interested in checking the way in which the data was analyzed. The participant approved of the analysis and modifications were not needed. Member checking solicits participants' views of the credibility of the findings and interpretations (Lincoln & Guba, 1985; Miles & Huberman, 1994). In fact, Lincoln and Guba described member checking to be "the most critical technique for establishing credibility" (1985, p.314). As recommended by Yin (2009) for case study research, a pilot test of this study has been conducted in order to test and refine data collection plans and develop relevant lines of questions.

In chapter 5 and 6, interpretations are supported with quotes from participants' responses. This ensures that their voices are heard and establishes authenticity (Creswell, 2013). Additionally, by providing a thick description of each type of setting included in the study, the reader is allowed to make decisions on whether or not these results apply to another similar setting (Lincoln & Guba, 1985). All transcripts, audio recordings, and researcher notes will be kept for ten years after my thesis defense. This will allow for a dependability audit if needed (Creswell, 2013). Finally, by being thorough on how data were collected and analyzed, as well as the process of the research, it will be possible for future researchers to conduct a similar study and confirm or contradict my findings (Given, 2008).

CHAPTER 5: Health Systems approach to understanding nutrition care practices of family physicians and nurse practitioners working in various types of multidisciplinary primary care settings in Ontario

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Abstract

Background: Nutrition counseling is integral in weight management but there is a substantial gap between the patients who would benefit from this service and those who actually receive it.

Methods: This qualitative comparative case study used a health systems approach to assess nutrition care in three different types of multidisciplinary clinics (2 Family Health Teams, 3 Community Health Centers, 1 Nurse Practitioner-Led Clinic). One-on-one semi-structured interviews were conducted with family physicians and nurse practitioners (n=20) and relevant government documents were reviewed to inform macro and meso elements. NVivo software was used for thematic analysis to elucidate salient themes.

Principal findings: Increased access and cost-free dietitian services, electronic medical records and a positive attitude towards nutrition seemed to improve nutrition care. According to participants, barriers such as lack of knowledge and time due to increasing number of complex patients hindered the prevention of chronic diseases.

Conclusions: Site-specific barriers need to be addressed such as duration of medical visits, incentive programs, sufficient numbers of RDs on site and continuous education.

Introduction

Obesity is multifactorial and is an important health issue, as it contributes to a wide variety of chronic diseases, such as type 2 diabetes, hypertension, cardiovascular disease, liver diseases, and certain types of cancers (Lau et al. 2007, Senate Canada. 2016). Obesity and its comorbidities can also have negative consequences on quality of life, mental well-being, and health service costs (Curioni et al. 2006, Government of Canada. 2015). Its prevalence has increased over the years and data suggests that this trend is worsening (Brauer et al. 2015). Obesity has been recently classified as a chronic disease, highlighting the importance of its prevention and treatment (Canadian Medical Association, 2015).

Addressing dietary behaviours in an individualized therapeutic program is essential for patients to adhere to nutrition counselling and improve their eating habits (Lau et al. 2007; Endevelt and Gesser-Edelsburg. 2014). Studies have demonstrated the effectiveness of using dietitian services for excess weight loss (Flodgren et al. 2010; Tol et al. 2014), and prevention of chronic diseases (Franz et al. 1995; Orozco et al. 2008; Willaing et al. 2004; Parker et al. 2014).

Current Canadian guidelines suggest that primary care providers (PCPs), namely family physicians and nurse practitioners should screen their patients for nutrition-related conditions such as obesity and provide the initial advice. Patients requiring additional individualized assistance should be referred to a dietitian and healthy eating recommendations should be reinforced (Lau et al. 2007; American Dietetic Association. 1998; Brauer et al. 2006; Pomeroy and Worsley. 2009; Truswell et al. 2003).

Despite these guidelines, it seems that many patients who would benefit from nutrition counseling do not receive it. Many barriers were highlighted in the literature such as lack of access and cost of dietitian services (Wynn et al. 2010; Nicholas et al. 2003; Padwal et al. 2011), physicians' payment models – specifically the fee for service model (Hogg et al. 2009; Muldoon et al. 2010; Russell et al. 2009; Devlin and Sarma. 2008; Gosden et al. 2000; Sorensen and Grytten. 2003; Yalnizyan and Macdonald. 2005;), shorter medical visits (Wynn et al. 2010; Dolor et al. 2010; Campbell et al. 2001; Hogg et al. 2009), suboptimal use of Electronic Medical Records (EMRs) and under diagnosis of obesity (Canadian Institute for Health Information. 2014; Baer et al. 2013; Bardia et al. 2007; Ko et al. 2008), as well as individual PCP factors including negative attitude (Wynn et al. 2010) and lack of knowledge (Wynn et al. 2010; Nicholas et al. 2003; Coombs et al. 2004; Dolor et al. 2010; Forman-Hoffman et al. 2006; Cass et al. 2014; Martin et al. 2014; Potter et al. 2001).

Nevertheless, since the primary care setting is the patient's first contact with the healthcare system (Bryant. 2009), it is the ideal place to address obesity (Campbell-Scherer and Sharma. 2016). Relatively new multidisciplinary settings were formed as part of the primary health care reform in the early 2000s. This reform aimed to address a gap in care and had as objectives to help preventing and managing chronic diseases, improving quality and appropriateness of care and implementing EMRs (Hutchison et al. 2011).

Other important factors to consider when examining health promotion practices include governance and funding models. For instance, Family Health Teams (FHTs) and Nurse Practitioner-Led Clinics (NPLCs) receive funds directly from the Ministry of Health and Long Term Care (MOHLTC) and are accountable to them, whereas in the case of Community Health Centres (CHCs), accountability is enforced by the Local Health Integration Networks (LHINs) (Glazier et al. 2012; LHIN 2014). LHINs are responsible for funding and the ongoing monitoring of CHCs (LHIN 2014). CHCs are required to sign a Multi-Sector Accountability Agreement and to provide a year-end report on their performance (LHIN 2014). LHINs are in turn accountable to the MOHLTC. Other important differences are physician payment models and incentives, duration of medical visits and programs offered on site. The organizational structure of health human resources is also difference as NPs are the main primary care providers in NPLCs and FPs are consulted on a need basis (NPAO 2017). Therefore, the services available to patients with obesity may vary from one type of primary care setting to another.

The following question guided this study:

How do various elements at the macro, meso and micro levels of different types of multidisciplinary clinics affect nutrition care practices for weight management of family physicians and nurse practitioners working in different types of primary care settings in Ontario?

Conceptual framework

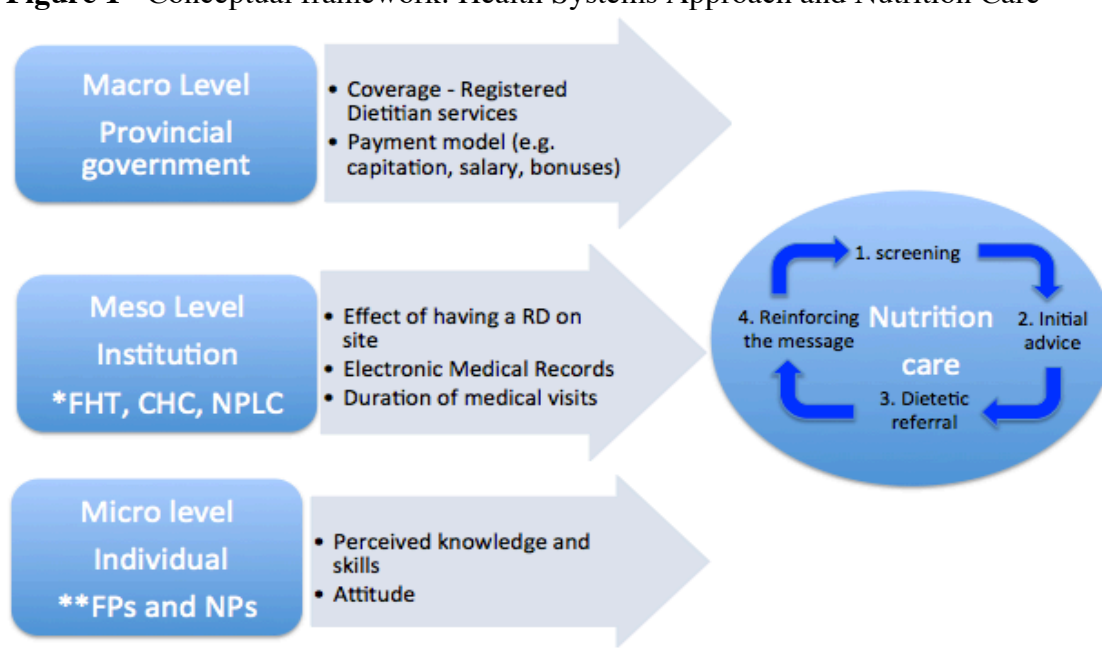
As outlined in the Canadian Academy of Health Sciences (2014) optimizing scopes of practice report and the theoretical framework of the World Health Organization, Innovative Care for chronic conditions: building blocks for action (2002), macro, meso and micro levels of the health care system need to be considered in health services research in order to best document and understand the care available and required for clients. This may assist in helping to increase quality of care and health care efficiencies (Nelson et al. 2014; WHO, 2002).

Macro level elements focus on funding, regulations and broader provincial health policy. Meso elements focus on the organizational structure such as technology available on site. Micro level elements focus on the individual practitioner level, which can be affected by the meso and macro levels. For instance, PCPs' knowledge can be affected by the presence or absence of continuous education at the organizational level, which in turn can be affected by policies put in place at the macro level.¹

¹ Although lone-physician offices are not included in this study due to the saturation of research in this setting, they are included in the literature review as they provide a clear example on how elements at the macro, meso, and micro levels can have a substantial impact on everyday clinical practice.

Examining certain elements at the macro, meso, and micro levels of different health care settings helps to elucidate if and how certain elements have an impact on nutrition care practices of family physicians (FPs) and nurse practitioners (NPs) (Figure 1).

Figure 1 - Conceptual framework: Health Systems Approach and Nutrition Care



* FHT: Family Health Team; CHC: Community Health Centre; NPLC: Nurse Practitioner-Led Clinic

**FP: Family Physician; NP: Nurse Practitioner

Methods

A qualitative comparative case study approach was used for this research project. The cases were purposively selected to vary so as to elucidate the factors at the macro, meso, and micro levels that are contributing to FPs and NPs practices. Specifically, the cases included three different types of primary health care settings: two FHTs, three CHCs, and one NPLC. All three settings had an important aspect in common, which is the variety of health care professionals who comprised these teams; however, the models of care delivery differed in some key ways.

Data collection

Data were collected through documents and individual semi-structured interviews.

Documents: Websites of the study sites and documents were analyzed for the programs offered at the site and other pertinent information that will help describe the characteristics of the site involved in the study. For example, the governance documents found on the Association of family health teams website and the Association of Ontario health centres were analyzed. This enabled the understanding of the context in which the health care professionals are working. These characteristics are outlined in Table 3.

Interviews: The conceptual framework and current gaps in knowledge framed the interview protocol. Semi-structured interviews were conducted with a total of 20 participants. The Clinical Directors were contacted and informed about the study. FPs and NPs were then asked if they were interested in participating. Out of 10 FPs and 13 NPs who were asked to participate, 7 and 13 accepted, respectively. All participants worked in the clinical setting for at least 6 months. More details regarding their characteristics can be found in table 4.

Data analysis

Using NVivo software (QSR International Pty Ltd. Version 11) for analysis, the integrated approach was used where deductive codes from the research questions and literature were used and inductive codes emerged from the data. As suggested by Miles and Huberman (1994), the lead author read the transcripts in their entirety and made notes of major themes and salient information that warrant further exploration. Line-by-line coding was used for the initial coding step and the constant comparative method was used to shed light on whether or not responses differed based on the question or context (Charmaz 2006). Once descriptive codes were elucidated, inferential and pattern codes were identified. The priori codes included the themes that were identified in the literature review, which in turn inspired the conceptual framework and research questions (e.g. duration of medical visits, coverage for dietitian services). Subthemes emerged inductively from the data and came to deepen our understanding of different types of multidisciplinary clinics.

A within-case analysis was conducted for each of the three sites when documents and interviews from each site were first analyzed. This resulted in three different write-ups (one for each site). Themes were then compared across cases, also known as cross-case analysis (Miles and Huberman. 1994). This step mostly consists of a pattern matching activity (Yin. 2003). At this step, similarities and differences between each type of setting were made clearer.

Trustworthiness was established based on Lincoln and Guba's terms (credibility, authenticity, transferability, dependability and confirmability; Lincoln & Guba. 1985). Credibility was achieved through investigator triangulation and member checking (Myers, 2013; Lincoln & Guba, 1985). When the data analysis was complete, participants who were interested in a member check were contacted as this is known to be the most critical technique to establish credibility (Lincoln & Guba, 1985). Interpretations were supported with quotes from participants' responses. This ensured that their voices were heard and established authenticity (Creswell, 2013). Additionally, by providing a detailed description of each type of setting included in the study, the reader is allowed to make decisions on whether or not these results apply to another similar setting.

Ethics approval was received from the University of Ottawa Research Ethics Board.

Results

In this section, we start by describing the comparable themes that emerged at each level for each type of primary care setting. A comparison between the three settings is then made.

MACRO LEVEL

Coverage for dietitian services

Data suggests that cost plays an important factor on nutrition care practices, which includes a referral to a dietitian for further nutrition education and counseling. Regardless of the type of primary care setting in which the FPs and NPs work, they all felt that having the service free of charge enabled them to provide a referral to their patients for weight management. Most of the clinics included in the sample did not have more than one full-time dietitian on site. As such, in order to spare the dietitian for patients who could not afford the service, patients with an insurance plan were often referred to an outside dietitian.

“I think 90 percent of my patients wouldn’t go if they had to pay for it (session with a dietitian).” NPLC, NP – Participant 5

Certain participants who previously worked in a non-team based setting were also asked about the effect of cost of service on their nutrition care practices. There seemed to be a noticeable difference between practices based on which clinical setting they worked in.

“I worked solo with a family health group and I would say the people who saw the dietitian was practically nil unless they worked for the government and had it covered by insurance. When I worked there I think I referred about 10 to 20 people per year so it is definitely less than my referrals now.” FHT, FP – Participant 14

“I guess if I was in solo practice I would probably ramp up my skills in terms of counseling around nutrition. I am not sure if dietitians are covered. If they were covered then I would definitely make a referral if the patient can pay for them. I definitely feel that the CHC model is a more comprehensive approach.” CHC, FP – Participant 22

In terms of coverage for dietitian services, it seemed that the free service in all of these team-based clinics had a substantial impact on the dietetic referral practices of FPs and NPs. This element at the macro level highlights an important similarity in multidisciplinary clinics that have dietitian services covered.

Family physicians’ and nurse practitioners’ payment models

NPs are paid a salary regardless of the site in which they work. As such, they did not elaborate on the effect of payment models on nutrition care. As for FPs, there seemed to be an effect. The following examples illustrate how the funding model can impact nutrition care practices in relation to weight management:

“I work four hours a week in a FFS model and have I ever talked about weight management? Very rare because it is designed for more acute conditions and because it is not incentivized. There is no extra billing for diabetes management. In the FHT we have regular diabetes sessions. In this setting we get incentivized to see diabetic patients every 3 months and we talk about weight then.” FHT, FP – Participant 10

Another FP working in a CHC and getting paid through a salary model had a different view:

“Here I can practice the way I was trained to in medical school rather than focus on money. A collaborative team also makes a huge difference because I can tell other allied health that they should call a certain patient because they’re at risk. We don’t get incentivized for seeing diabetic patients.” CHC, FP – Participant 17

Some felt that having a remuneration model that incentivizes physicians to initiate weight management could increase the likelihood of it happening.

“If you’re incentivized to do weight management and have diabetes visits you’re more likely to do it. Anyone who is diabetic will get offered the four times a year visit where there are special fee codes where you get additional money on top of normal billings and for a lot of physicians they will see those patients in that context more often. That’s why we don’t see patients about salt if they have congestive heart failure because there aren’t any structures in place to make that happen.” FHT, FP – Participant 10

MESO LEVEL

Effects of having a RD on site

At the institutional level, participants were asked about their perspectives regarding the integration of RDs in the clinical setting and how it affected their nutrition care practices. Although some of these primary care settings have been around for a longer time, such as in the case of CHCs, dietitians were integrated years after their implementation. This phenomenon is similar in the two other primary care settings included in this study. Questions regarding interprofessional collaboration were also asked.

All participants highlighted positive aspects of having a RD on site. Many sub-themes emerged from the data. These included:

Theme 1: Evidence-based resource

All participants, regardless of the primary care setting, felt that even if they did not refer a patient to a dietitian, they can still benefit from the dietitian's expertise by asking questions.

“So for us it's not only about referring patients but also being able to consult for various nutrition issues and conditions.” NPLC, FP –

Participant 9

Theme 2: Improvement of the uptake of services

The dietitian being in proximity also has an effect on FPs and NPs nutrition care practices.

“I think it makes it easier. It's one of the first thing we think of if we see that a patient has an issue with weight or nutrition because it's so easy for them to get in it's an automatic that we would refer. Whereas if she wasn't here, and we have to think of wait times it might not happen.”

FHT, NP – Participant 12

Theme 3: Contributions to clinical meetings

All the clinics included in this study sample have at least one clinical meeting every month. The objectives of the meetings varied but most meetings addressed complex patients and served as a time for continuous learning and exchange information regarding new processes at the clinic.

“We have clinical meetings and talk about different clinical issues and so there is that so she (RD) can help us with our knowledge which is great.” NPLC, NP – Participant 1

Theme 4: Economy of time for the PCP

Having a dietitian on site also seemed to have a positive effect on care as it enabled the PCP to offload the topic of nutrition to the dietitian as s/he would have more time to complete the nutrition care process with the patient. This allowed the PCP to perform other aspects of care that are in their scope of practice. This theme came up with certain participants working in FHTs.

“It helps because we don't know anything about nutrition and diet so I think it provides expertise and provides focus to an issue that will never get focused in the MD or NP visit. And what is also good is that they have time because there is no way that we can spend 5 to 10 minutes to talk about nutrition because there is so much to cover.” FHT, FP –

Participant 10

Theme 5: Facilitation of initiating nutrition discussion

Certain participants working in different types of settings felt that having a dietitian on site enabled them to initiate the topic of nutrition because they are able to refer to further nutrition counselling if needed.

“I think it’s definitely more accessible for the patient and I think because they are more accessible, I tend to bring up the topic of nutrition more because I know something can be done about it. Whereas if I was working at the family health team where there isn’t a nutrition counsellor on site, I tend to bring up the subject less because it is not something I can easily offer to patients.” CHC, FP – Participant 21

Only one participant did not feel that having a dietitian on site affected her nutrition care practices in terms of initiating the topic of nutrition with patients.

“I don’t initiate the topic of nutrition because we are in a team. I think that if I worked alone or as a group I would do that no matter what.”
NPLC, NP – Participant 4

Electronic Medical Records

The implementation of EMRs was one of the main objectives of the primary health care reform. All primary health care clinics included in this study had EMRs in their workplace. They all used the EMRs to the fullest. Similarly, most participants, regardless of where they practiced, thought that EMRs had a positive impact on their nutrition care practices. Some clinics had a flagging system in the EMRs that prompted them to bring up the subject of weight management when the patient’s BMI was higher than 30 kg/m². EMRs both can increase dietetic referrals and improve care.

Theme 1: Increases dietetic referrals

EMRs seemed to increase dietetic referrals in two ways. First, it provided a visual trend of the patient’s weight history and so it was easier for the PCP to identify if the patient has been gaining significant weight over the years. As a couple of participants noted:

“It’s also nice for weights and blood work because it is all on there so you can see the trends. This will prompt me to address the topic of nutrition and refer if needed. As with paper charting you might not know because you do not see it.” NPLC, NP – Participant 1

“When the height and weight are put in the system, it automatically calculates the BMI and if it is over 30, the EMR flags us to talk about it. Sometimes I will click it away if I do not have time but it does facilitate the process and increases referrals.” FHT, FP – Participant 10

Secondly, it facilitated the referral process, as it only required seconds to complete.

“It is very easy we just send a quick note and there are standardized templates so it makes things easier.” FHT, FP – Participant 10

“I look at her schedule and I will see if she has anything available as soon as possible and try to facilitate the visit as much as possible.”
NPLC, MD – Participant 9

Although most participants (18 out of 20) felt that EMRs increased and facilitated their dietetic referrals, two of them did not believe that it had an effect.

“It is more important to have the RD in the clinic than the EMR.” FHT, NP – Participant 11

Theme 2: Improves care

In addition to increasing dietetic referrals for most participants, EMRs seemed to improve care in many ways such as allowing all health care professionals to be on the same page as to what they were telling the patient, saving them time by decreasing repetition of certain tasks and facilitating communication.

Improves message reinforcement

“If we’re all telling people the same thing but it’s coming from different angles or explanations, whether it’s weight loss or cutting down drinking or smoking or any kind of change, I think it really helps to hear it from everybody.” CHC, NP – Participant 18

Prevents task repetition

“It is easier for me to assess progress and it saves me time because if the dietitian already took the weight and recorded it, then I wouldn’t have to do it.” CHC, FP – Participant 21

Facilitates communication between health professionals

“Once in a while I’ve had a dietician send me a message saying: Before I see so-and-so the next time, would you mind ordering this test?” CHC, NP – Participant 18

Duration of medical visits

Although the duration of medical visits varied based on the type of primary care setting, it seemed that the topic of nutrition was pushed aside frequently. Medical visits in FHTs were the shortest (15 minutes), with NPLCs having longer time slots (30 minutes) and CHCs having the longest based on medical complexity (up to 40 minutes). Time seemed to be an important issue for PCPs working in FHTs. Most participants felt that even if the topic of nutrition was warranted, they were unable to address it because of competing demands and other priorities.

“Time is the biggest issue. I rarely have a patient coming in for weight management alone. Weight is almost a side effect or contributing factor for whatever they came in for. So if they come in for diabetes, we talk about nutrition and weight in the context of diabetes.” FHT, FP – Participant 10

Some NPs working in NPLCs felt that their 30-minute medical visits had a positive impact on health promotion practices, such as bringing up the topic of nutrition in terms of chronic diseases. Others recognized that the 30-minute medical visit was favorable but felt that it did not guarantee discussion about the topic due to other medical conditions that might need to be addressed.

“Also, we do have longer appointment times than other providers. If you go to your typical family doctor, you’re there for 10-15 minutes but we have 30-minute appointments so it gives me extra time to go over things if I need to go into detail.” NPLC, NP – Participant 1

As for CHCs, although they offered the longest medical visits, participants expressed that most of the patients they saw were from low-socioeconomic backgrounds and had multiple medical conditions or more pressing issues to discuss than nutrition. Mental health and drug abuse were two main conditions that prevented the PCPs to bring up the topic of nutrition. In these cases, nutrition was not brought up in terms of prevention but rather in management of chronic diseases, if appropriate.

“Most patients come in with 3 or 4 issues and some are maybe more pressing than talking about their cholesterol or sugars getting worse. For example, sometimes they talk about depression or they have other stressors that they are more concerned about than nutrition... If they were already diagnosed with diabetes then nutrition would be more of a priority.” CHC, FP – Participant 21

MICRO LEVEL

At the micro level, we studied how individual aspects can affect nutrition care. Our findings suggest that the type of primary care setting did not affect these aspects. Rather, they were influenced by the PCP’s professional education, clinical and personal experiences.

Attitude

The PCP’s attitude towards the topic of nutrition can also affect their nutrition care practices. Using a 5-point Likert scale, participants were asked about their attitude regarding the importance of nutrition assessment in weight management. All participants, regardless of the setting in which they work; strongly agreed or agreed that nutrition assessment is important when addressing weight management. Although most participants

(19/20) had a positive attitude regarding nutrition, some elements at the meso and macro levels, such as lack of incentives and lack of time in the FHT model, could prevent the discussion of nutrition in terms of weight management. One participant stood out from the sample, as they strongly believed that a higher importance should be placed on nutrition and weight status. This was due to previous clinical experience in a bariatric program.

“There are so many other things in primary care that are paramount that not everyone is thinking of weight and nutrition as really important things to assess but it should really be another vital sign because it’s so important. People can gain weight and it can increase their risk for other diseases in a short amount of time.” NPLC, NP – Participant 2

Knowledge and perceived skills

In terms of knowledge and perceived skills in nutrition for weight management, we found that participants felt that they had inadequate knowledge. Some felt that they would be more inclined to bring up the topic if they had more knowledge as it would facilitate the assessment of patients’ need of consulting a dietitian.

“We don’t have training in nutrition and I can’t even remember how many lectures I got on nutrition. It is just not part of the curriculum. We know that you shouldn’t take salt if you have congestive heart failure, you shouldn’t eat simple sugars if you’re diabetic like simple stuff. But the biggest disabler is that we don’t have enough training in medical school and residency to talk about nutrition in an informed way.” FHT, FP – Participant 10

“I think I have a basic understanding of nutrition but they didn’t cover it in depth. In the NP schools we did have something on physical activity and nutrition, a one-time three-hour module for an entire two-year program and it just points to Canada’s Food Guide and activity guidelines. I don’t even have a beginner’s understanding. I know what I think is healthy but I don’t think I am well educated.” FHT, NP – Participant 11

Discussion

Our comparative approach enabled us to highlight differences and similarities at the macro, meso and micro levels of three types of multidisciplinary primary care setting and their effect on FPs and NPs nutrition care practices in terms of obesity management. Our findings suggest that there were more similarities across the three cases, although there were some differences at the macro and meso levels.

Coverage for dietitian services has been shown in other research to have an impact on dietetic referrals of PCPs (Wynn et al. 2010; Nicholas et al. 2003; Padwal et al. 2011). Our findings suggest that this element not only has an impact, but also is the main enabling factor for providing a dietetic referral. PCPs who compared their practice in team-based

and non-team based settings confirmed this. The cost of service is an issue to the extent that some PCPs would consider taking the role of providing the nutrition counselling themselves if they were to work in a non-multidisciplinary clinic. This might not be a sustainable approach for the health care system, as the physician would be paid more than a registered dietitian for the same service.

Our findings confirm previous studies suggesting a relationship between the remuneration scheme and preventive services of FPs (Hogg et al. 2009; Muldoon et al. 2010; Russell et al. 2009). Although obesity is classified as a chronic disease, it seemed that participants who worked in a FHT would address the topic if it were related to another chronic disease diagnosis such as diabetes due to incentives attached to diabetes management in this type of setting. Nonetheless, incentives did not seem to have an effect on FPs working in CHCs as they were paid through salary and did not get bonuses for preventive care. There were no differences between NPs working in different types of clinics, as their remuneration scheme was the same in all settings.

Having a dietitian on site seemed to have had a positive effect in all types of primary care settings. In addition to augmenting the PCPs' nutrition knowledge (Crustolo et al. 2005) they contributed in clinical meetings, improved uptake of services, saved time for the PCP and facilitated the PCPs' discussions about nutrition. The most notable finding is that FPs and NPs were more likely to bring up the subject of nutrition during medical visits because they knew they had an accessible referral option if needed.

Most participants believed that using EMRs improved their nutrition care practices for obesity management in many ways. This confirms what some have demonstrated about the positive effects of EMRs on practice (O'Connor et al. 2005; Friedberg et al. 2009; King et al. 2014). Unlike what was found in the systematic review regarding the lack in clarity of EMRs' effect in helping PCPs address overweight and obesity, we found that having visual trends (e.g. weight and blood work results) and a flagging system seemed to increase the likelihood of bringing up the topic of nutrition in terms of weight management. Although not all settings had the flagging system, it seemed that this reminder encouraged weight management only when there was time and in absence of other more pressing demands.

Time was a constraining factor in all of these primary care settings for addressing nutrition. Nonetheless, participants working in FHTs felt that they were most constrained in terms of time. Despite the importance of addressing nutrition and longer medical visits such as in the cases of CHCs and NPLCs, it seemed that other topics took precedence. For example, PCPs in the CHC setting felt that the co-morbidities and more pressing issues such as depression and drug or alcohol abuse were barriers for providing nutrition care. In all health care settings, PCPs reported that patients were now coming in with multiple chronic conditions (e.g. diabetes, hypertension, congestive heart failure) pushing aside the topic of nutrition in terms of prevention and management of obesity with the absence of chronic disease. This trend will likely worsen with the number of Ontarians living with multimorbidity has steadily been increasing from 17.4% in 2003 to 24.3% in 2009 (Pefoyo et al. 2015) and affecting mostly people who are less educated and have lower incomes

(Fortin et al. 2006; Health Council of Canada 2007, 2011; Roberts et al. 2015; Stewart et al. 2013).

Participants felt that adequate knowledge was important in order to feel comfortable about bringing up the subject of nutrition and assess if further nutrition counseling was warranted. This is in line with previous studies that showed that perceived knowledge and skills are important predictors for initiation of weight management (Forman-Hoffman et al. 2006; Cass et al. 2014; Martin et al., 2014). Most participants had a positive attitude about addressing nutrition in terms of weight management. In particular, a participant who had previous experiences in a bariatric clinic had an even more positive attitude than others towards the topic of nutrition in terms of weight management.

Conclusion

Our study provides insights on the effect of various types of primary care settings on nutrition care practices of FPs and NPs in terms of weight management. This sheds light on similarities and differences of patient care approaches and services between these settings while highlighting certain benefits of relatively new multidisciplinary clinics. Primary care settings may use this research to address factors that are hindering nutrition care practices in order to optimize chronic disease prevention, which after all, is an objective of these multidisciplinary primary care settings. Future studies exploring the cost-effectiveness of certain suggestions highlighted by participants in this study as well as the patients' perception of a multidisciplinary approach are warranted.

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Competing interests

The authors declare that they have no competing interests.

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Table 3 - Characteristics of Each Type of Participants' Practices

Characteristics	Family Health Teams	Community Health Centres	Nurse Practitioner-Led Clinics
Health professions on the team	Varied based on location but most are composed of family physicians, nurse practitioners, registered nurses, social workers, and dietitians.	Varied based on location but most are composed of family physicians, nurse practitioners, registered nurses, social workers, and dietitians.	Predominantly NPs with FPs being consulted based on a need basis, nurses, social workers, and dietitians.
Accountability	Ministry of Health and Long Term Care	Local Health Integration Networks	Ministry of Health and Long Term Care
Clinical programs and services	Vary based on local health and community needs but most sites include programs for diabetes, hypertension, smoking, and weight management (Healthy You) and more.	Specific to local communities health care needs in order to address social and environmental issues. They offer many health promotion programs including cooking classes for different age groups, hypertension, diabetes, parent-baby drop ins and more.	Most sites include programs for diabetes, weight management, hypertension, seniors and more.
Dietitian on site	Yes	Yes	Yes
Dietitian services covered	Yes	Yes	Yes
Payment model	FP (capitation + bonuses) NP (salary)	FP (salary) NP (salary)	FP (FSS) NP (salary)
Electronic medical records	Yes	Yes	Yes
Duration of medical visits	Vary based on clinics but for the ones included in the study, FP visits were around 15 minutes each and NP visits were 20 minutes each.	20 to 40 minutes (based on patients' medical condition)	30 minutes

**Table 4 - Demographic Characteristics of Participants
(n=20)**

		FHT	CHC	NPLC
		(n)	(n)	(n)
Profession	FP	3	3	1
	NP	3	3	7
Self-identified gender	Female	4	4	8
	Male	2	2	0
Experience in profession (years)	≤ 5	2	2	2
	6 – 15	3	1	5
	15 – 25	1	0	1
	≥ 25	0	3	0
Experience in organization (years)	≤ 1	1	1	0
	2 – 5	3	2	3
	6 – 10	2	0	5
	≥ 11	0	3	0

CHAPTER 6: Nutrition care practices of family physicians and nurse practitioners for weight management in multidisciplinary primary care settings in Ontario

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Abstract

Objective: To examine nutrition care practices of primary care providers for weight management in multidisciplinary primary care settings in Ontario. Methods: A study design with in depth, one-on-one semi-structured interviews was used. Interviews were conducted with 20 providers (7 Family physicians (FPs) and 13 nurse practitioners (NPs)) across family health teams, community health centres and a nurse practitioner-led clinic. Interviews were transcribed, coded and analyzed using thematic analysis. Results: Approaching the topic of nutrition mostly occurred during physical examinations, when patients were diagnosed with a chronic disease or when blood markers were out of normal range. Although there were no standard screening tools to assess patients who would benefit from nutrition counseling, most participants used anthropometric measures for screening. All participants reported utilizing dietetic referrals, as there were many enablers for doing so. Nonetheless, the referral seemed to be done in terms of management of obesity related co-morbidities rather than prevention. Having a dietitian on site and electronic medical records enhanced communication between professionals and allowed for primary care providers to reinforce the dietitian's message during follow up visits. Conclusion: The team-based nature of these multidisciplinary primary care clinics seemed to have had a positive effect on nutrition care practices of FPs and NPs. There were, however, certain barriers that prevented them from providing nutrition care for prevention of chronic diseases. These included lack of time and competing demands, patients not showing interest, and providers not thinking about it.

Keywords: nutrition care, clinical practice, multidisciplinary, primary care, family physicians, nurse practitioners, weight management.

Introduction

In 2014, Canadian adults living with obesity numbered around 5.3 million.¹ Obesity is multifactorial and its prevalence has been steadily increasing over the years.² Recent data suggest that this trend is worsening.³ Given its complexity and that it is an important risk factor for many chronic diseases, it has been recently classified as a chronic disease.⁴ Poor diet and lack of physical activity are the main contributors to obesity.² Addressing lifestyle factors are essential as the benefit-to-harm ratio favors this approach.⁵ In terms of diet, it has been shown that an individualized medical nutrition therapy program is essential for adherence to nutrition counseling for weight management.⁶

Making use of dietitian services and nutrition expertise has been proven to be effective in managing excess body weight.^{7,8} There are, however, many barriers to accessing Registered Dietitian (RD) services due to lack of accessibility and cost of care.^{9,10,11} Moreover, the rise in obesity rates has caused a normalization of excess weight.^{12,13} This suggests that primary care providers (family physicians and nurse practitioners) should raise awareness about the importance of weight management in chronic disease prevention before referring patients to a dietitian.¹⁴ This increases the likelihood that the patient will initiate and adhere to the nutrition counseling.⁶

In terms of initiating a discussion about weight management, the 5As (Ask, Assess, Advise, Agree, Assist) obesity framework was designed to guide health practitioners in the management of obesity.¹⁵ Should the root cause of obesity be nutritional, a referral to an expert in nutrition, such as a dietitian is warranted.⁵ In terms of nutrition care for obesity management, it is recommended that primary care providers screen for patients who would benefit from nutrition counseling, provide the initial advice, refer patients to a dietitian, and then reinforce the message.^{5,16,17,18} Despite these recommendations, however, many patients who would benefit from nutrition counseling do not receive it.^{9,10,11, 19, 20}

In 2000, the primary health care reform had as its main goal to move towards multidisciplinary clinics. This reform had many objectives including health promotion, prevention and management of chronic diseases, including obesity, and ensuring that “the most appropriate care is provided by the most appropriate healthcare provider”.²¹ These relatively new multidisciplinary clinics include family health teams (FHTs) and nurse practitioner-led clinics (NPLCs). Community health centres (CHCs), however, have been around for longer with their first sites being piloted in the 1970s.²²

Given the importance of preventing and managing obesity in primary care²³, it is pivotal to evaluate how primary care providers working in multidisciplinary clinics provide nutrition care to adult patients with obesity. This study sheds light on the effect of the team-based nature of multidisciplinary primary care clinics on obesity prevention and management by examining nutrition care practices of family physicians (FPs) and nurse practitioners (NPs).

Methods

Settings and participants

Our sample included FPs and NPs working in various types of multidisciplinary clinics who routinely provided care to adult patients. Participants had to be working at the team-based setting for at least 6 months in order to accurately convey their nutrition care practices at the site. Using the snowball sampling strategy, we began by approaching the director of each clinical setting and used participant recommendations to build the sample.

Data collection and analysis

A semi-structured interview protocol focused on approaching the topic of nutrition with patients with excess weight (enablers and barriers of doing so), screening for patients who would benefit from further nutrition counseling, providing a dietetic referral (approaching the referral as well as enablers and barriers of doing so), and message reinforcement. Interviews were conducted by the study PI over a 5-month period (October 2016 to February 2017). Ethics approval was obtained from the University of Ottawa's Research Ethics Board.

Individual interviews were recorded after receiving each participant's informed consent. They were transcribed verbatim and analyzed using NVivo software (QSR International Pty Ltd. Version 11). An integrated approach was used where deductive codes were informed by the literature review and interview questions while inductive codes emerged from the data. Constant comparative analysis was used to group major themes, which were then refined in an iterative process. Major themes and interpretations are illustrated below with interview quotes.

Family physicians (n=7) and nurse practitioners (n=13) working in 2 FHTs, 3 CHCs and a 1 NPLC were included. The higher number of NPs is explained by the inclusion of the NPLC setting who is mainly comprised of NPs. The ratio of FPs to NPs is the same for the two other settings (3 FPs and 3 NPs).

Results

Screening

Participants were asked about how they screen for patients who would benefit from further nutrition counseling with a dietitian. It did not seem that a specific screening tool was used but the following measures, markers, or questions were used to screen patients: body mass index (BMI) or body weight (9/20), general questions on food intake (7/20), blood work tests results (5/20), the presence of chronic disease (3/20), and waist circumference (1/20).

Most primary care providers used patients' BMI or body weight to assess patients who would benefit from lifestyle modifications.

“Dietary intake is always done in the context of weight. If the patient is skinny and has a poor diet we won't talk about it. If the person is normal weight, we will not bring it up.” FHT, FP – participant 10

As for assessing eating habits, questions asked by health professionals varied. Here is an example of questions asked to assess the diet of clients:

“In the general assessment I ask specific things: ‘do you eat healthy?’ and then they say yes so then I challenge them and ask ‘what is healthy?’ and then they would say ‘I eat Wendy’s instead of McDonald’s and often it’s not really what I am looking for.’” FHT, FP – participant 15

Approaching the topic of nutrition

Participants enumerated many instances in which the topic of nutrition would be brought up. In decreasing order, the topic of nutrition in terms of weight management was discussed: 1- during physicals (12/20), 2- when the patient is diagnosed with a chronic disease such as diabetes or hypertension (11/20), 3- when blood work indicates hypercholesterolemia or hyperglycemia (6/20), 4- BMI over 30 kg/m² (5/20), 5- patients bringing it up (4/20), 6- menopause (1/20), 7- every encounter (1/20), and 8- pregnancy (1/20).

Although the topic is mostly brought up during physical examinations, participants reported that these exams were not occurring annually anymore. Episodic care is now favored with patients having physicals every 2 to 3 years.

“The topic is usually brought up either if they’re in for an annual physical or a problem affected by obesity like diabetes, hypertension, or sleep apnea. Physicals are now every 2 or 3 years and I am going to stop them. Most family doctors are not doing them anymore and are moving towards episodic care.” FHT, FP – participant 14

Most participants felt that nutrition was discussed more in terms of management of chronic diseases rather than prevention. Many reasons for this occurrence were identified including fear of offending patients. However, they believed that a patient’s chronic disease diagnosis justified their discussion regarding nutrition.

“Quite commonly if we’re doing chronic disease management – diabetes, hypertension, lipid control – those types of things come up very early in the conversation. Some people associate weight discussion as a negative thing, instead of something that carries them forward into a positive role for their health management.” NPLC, NP – participant 5

Blood work test results indicating elevated blood cholesterol and/or glucose concentrations, high blood pressure and an elevated BMI were also data that prompted PCPs to bring up the topic of nutrition.

“It is usually during physicals if I see that their BMI is above 30 or if their A1C is in the diabetic or pre-diabetic range or if they have dyslipidemia.” CHC, FP – participant 21

The patients also seemed to play an important role in the discussion of nutrition as some were reported to be interested in learning more about healthy diets. This was especially the case when they were diagnosed with a chronic disease.

“Obviously sometimes patients will bring it up and say that weight is an issue and will say that they have problems with good diets or what they should eat. It happens quite frequently when people have early pre-diabetes or diabetes. When they get diagnosed more often they are overweight and the first question they ask is what should I be eating.”

FHT, FP – participant 10

Many enablers and barriers were identified during the interviews. Being diagnosed with a chronic disease was the most frequent enabler mentioned, whereas lack of time was the most important barrier. The enablers and barriers of approaching the topic of nutrition are outlined in table 5 in terms of frequency and exemplars are provided.

Dietetic referrals

Approaching the dietetic referral

As indicated below, PCPs used many different approaches when suggesting a dietetic referral with some using a combination. Table 6 outlines the various approaches used when providing a dietetic referral as well as the number of participants who utilized these approaches.

Assessing patients' level of readiness

“Patient readiness is number one. If they're not ready, we will drop it and pick it up next time.” CHC, NP – Participant 19

Proposing the referral while explaining its importance

“Explaining in more detail why the referral is being made and how important it is in disease management and prevention. And explain that lifestyle changes can really affect a lot of organs and multiple diseases.”

FHT, FP – participant 15

Explaining what a RD does

“I think that they often think it's like a finger wagging session. I present it in the way that it would help with what is currently in your diet and with what you can add, change or modify the time to eat certain food.”

NPLC, NP – participant 6

Providing general information on how body weight is affecting health

“If I think that their diabetes is out of control because of their weight I will explain that this is getting out of control because no matter what we give you, you're intake is going to super exceed that. If its cholesterol we

talk about Framingham² and risk disease, if its diabetes we talk about the complications, if it's chronic pain I explain that it is important to reduce weight. So I think it's general counselling on what the weight is doing to their health." FHT, FP – participant 10

One participant elaborated on a new approach of not giving an option to the patient as it increased the likelihood of initiating nutrition counseling with a dietitian.

"I actually changed my technique when it comes to referring to the RD. If I give them the option, more often they are going to decline. I've actually changed how I bring it up. I say 'I would like you to see the RD, I think she would be able to give you some good advice, I think she can give a good assessment of how your diet could be affecting your weight, cholesterol, blood pressure. My new technique of being taking away their choice really does help.'" NPLC, NP – participant 1

When asked if they believed that their patients were convinced of the importance of the dietetic referral, some felt that almost half of patients did not understand the importance. Some participants felt that explaining the importance of changing their lifestyle behaviours had an influence on their willingness to initiate nutrition counseling. There were, however, some who felt that no matter what they did, the patient would not understand the implications of their lifestyle behaviours on their health.

"I feel that they understand the importance over time. So if they are coming in for back pain, and then another time for knee pain, or trouble sleeping. When they start complaining about different things then I can kind of rule out everything else and come back on the topic of nutrition and their weight. Sometimes the light goes off and they say: oh really, I didn't realize it was that important, I didn't realize how many aspects of my mental wellness or physical wellness that are contributed to that (nutrition)." CHC, NP – participant 19

When a dietetic referral is made

Participants were asked when they refer patients to a dietitian for weight management. Some PCPs listed different instances in which a dietetic referral is made. Most referrals seemed to be made when there is another diagnosis related to obesity rather than obesity alone. Table 7 outlines the instances in which dietetic referrals were made and the number of participants who reported using them.

Patient asking for the dietetic referral

"If they are asking about weight loss I would then tell them that we have a RD for some counselling regarding weight." CHC, NP – participant 20

² The Framingham assessment risk tool predicts a person's chance of developing a cardiovascular disease in the next ten years.

Patient diagnosed with a chronic disease

“So any new diagnosis I automatically refer to the dietician. For example, any of the triad of cardiac disease, renal failure disease, diabetes, the lipids; those types of patients I refer.” NPLC, NP – participant 5

“There are only one and a half FTE RDs so you want to prioritize people and so secondary and tertiary prevention usually takes a hold. Patients are more motivated when they’re sick and in medicine we don’t value prevention as much.” FHT, FP – participant 10

Patient showing motivation or readiness for change

“Their readiness to change. I don’t go on weight or BMI. It is their readiness. It is the same as smoking; I would never refer for smoking cessation if they are not ready. I bring up the topic but then they have to bring it back up to me and show me that they are ready and committed and want to change. If not the failure rates are close to 100%.” FHT, FP – participant 15

Patient at risk of developing a chronic disease

“I refer for weight management when it’s related to a medical problem or when they are at risk for a disease to develop” CHC, FP – participant 17

Patient with an elevated BMI

“Everyone that has an elevated BMI, or that come in specifically asking to see the dietician.” NPLC, NP – participant 4

Patient experiencing pain related to obesity

“For people that are obese, it is something I will bring up, like those pain patients.” NPLC, NP – participant 1

To get a better understanding of why PCPs made referrals to a RD when they did, we asked about the enablers and barriers for providing such a referral. These factors are outlined in Table 9. Few barriers were mentioned while many enablers were highlighted. Accessibility to the RD and cost-free service were the main enablers of providing a dietetic referral.

Reinforcing the message

Working in a team-based clinic and having tools to communicate more easily can seemed to increase the likelihood of PCPs reinforcing the message conveyed during the dietitian visit.

“If I have time we talk about what the RD suggested and I’ll see her note in the file and I’ll give a bit of positive reinforcement.”

FHT, FP – participant 14

“And also, the next time I see the person I say, “How did it go with the dietician?” And if they need a follow up on what was discussed I can look it up and I will see that she [dietitian] also assessed their readiness to change and likeliness to make the change, so I think it’s terrific for follow-up.” CHC, NP – participant 18

Discussion

Primary care is the first point of contact of all patients with health care and is seen as the ideal place to address obesity.²³ With the increasing rate of obesity and its normalization, PCPs play an important role in raising awareness about obesity and its complications, many of which can be prevented or delayed, and offering patients weight management avenues.^{12,13,14} Addressing diet is an important aspect of weight management.^{2,5} Our findings suggest that the topic of nutrition was mostly brought up during physical examinations, which are now occurring less frequently. Therefore, this might decrease health promotion opportunities for PCPs.

Questions on the screening process showed that most participants used objective measures, such as BMI and out of range blood test markers, for assessing which patients would benefit from further nutrition counseling. This is aligned with the recommended guidelines on the prevention and management of obesity.⁵ Furthermore, some participants asked general questions regarding eating habits during the screening. It was unclear, however, if the screening process led to a dietetic referral.

Due to competing demands and lack of time, nutrition was at the forefront when a patient was diagnosed with a chronic disease. This is confirmed by other studies as well.^{24,25} However, only in fewer instances is it discussed when blood test result markers and BMI are out of normal range. It seemed that the higher the BMI, the more likely the discussion would occur. In addition, patients bringing up the topic was a huge enabler because most participants stated that they gear their care plan based on their patients’ interests. This may be an issue, however, if patients are unaware of the consequences that poor nutrition and obesity might lead to. As such, it is important to increase education efforts to raise awareness about healthy weight standards.²⁵ As highlighted in other studies^{10,24}, PCPs were more likely to bring up the topic as they had an on-site free referral option after the discussion with the RD on site.

Only a quarter of participants interviewed followed the 5As of obesity management framework by asking or assessing patients’ readiness to discuss. Although the framework suggests asking for permission to discuss weight and explore readiness for change¹⁵, most participants did one or the other. Participants who explored readiness for change directly asked their patients if they are ready to make lifestyle changes. Some participants were aware that raising awareness before referring was important but some felt that they did not

have the time to provide details regarding the benefits of changing eating habits. Others felt that raising awareness had no influence on patients and that the choice of initiating nutrition counseling is solely patient dependent.

Many enablers for providing a dietetic referral were listed including RD being on site, (which was reported to increase access and patient comfort), the service being free, RD having a flexible schedule and having a relationship with the RD. As such, multidisciplinary clinics seemed to mitigate the barriers highlighted by PCPs working in non-team based settings.^{26,27} While most participants felt that there were no barriers, some believed that the wait times to see the RD was an issue and some participants initiated the nutrition counseling because of this. Some felt that it was important to initiate nutrition counseling right away when patients are motivated. Not thinking about the referral, patient not buying in, patient perception of the RD session, and patient not wanting to come in were other barriers. Some of these factors were also highlighted in previous studies.^{9,27}

Reinforcing the message seemed to be possible due to the team-based nature of the clinics and technology facilitating communication between health professionals. EMRs were reported to enable PCPs to see what was discussed during the session with the dietitian and follow up with the patient regarding their progress. This is confirmed by other studies showing that not having a RD on site hinders communication and in turn, prevents message reinforcement.^{28,29,30}

Conclusion

This study examined nutrition care practices in terms of weight management of FPs and NPs working in multidisciplinary primary health care clinics in Ontario. Their practices were then compared to the recommended clinical practice guidelines on the management and prevention of obesity as well as the 5As of the obesity management framework. Although the team-based nature mitigated many barriers in addressing nutrition and managing obesity, it seemed that nutrition care is done in terms of management of chronic diseases rather than prevention. Addressing the barriers highlighted in this study will move multidisciplinary clinics and PCPs towards improving the outlook of the chronic disease burden on our health care system.

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Table 5 - Enablers and barriers of approaching the topic of nutrition for weight management reported by multidisciplinary primary care providers (n=20*)

Enablers:

Chronic disease diagnosis (8)

“Sadly, when people have a chronic illness, it is much easier to talk about nutrition. I find the blood pressure helps, if there is an increase; I talk about weight, diet, and exercise.” CHC, NP – participant 20

Patients showing interest (6)

“I would say a lot of times patients actually bring up the topic if I am talking to them about their cholesterol, they will ask what they can do that is not medication. If I am talking about diabetes or cholesterol, I let them know about the non-medical management, which is obviously the preferred route because there are no side effects as opposed to medications that have side effects.”
CHC, FP – participant 21

Dietitian on site (4)

“If somebody is coming in and they are here for a prescription renewal, it’s hard to focus time but because I do have the option to refer them to the dietitian, it’s a huge help.”
NPLC, NP – Participant 1

Out of normal range blood test markers (3)

“If cholesterol is elevated, glucose is elevated, fatty liver based on lab results, regardless of the age of the person. If none of these issues are there, it is possible that I would not bring it up.”
NPLC, FP – participant 9

Tools (2)

“I like handouts because sometimes I know they are not necessarily listening and taking in the information as I am giving them. Let’s say their blood pressure is out of whack and they don’t want to come back to see the dietitian, I will print out the handout.” NPLC, NP – participant 1

Trusting relationship with the patient (2)

“A trusting relationship between the health professional and the patient is number one.”
CHC, NP – participant 19

Other minor enablers (only mentioned once or twice) included: longer medical visits, wellness exams (physicals), the whole family are obese, on-site programs chronic disease programs that address nutrition.

Barriers:

Lack of time (9)

“Time is the biggest issue. I rarely have a patient coming in for weight management

alone.” FHT, FP, participant 10

Patients not open to discussing it (7)

“There are many clients who don’t want to hear about it. They’re unstably housed, they’re in abusive relationships... they have a lot of priorities and talking about nutrition and/or weight management is not among them.” CHC, NP – participant 18

Lack of rapport with the client (3)

“Sometimes it’s the rapport. Some patients don’t care to interact.” NPLC, NP – participant 1

Competing demands (3)

“They just have so many complex issues, mostly psychosocial issues that are predominant in their daily lives that nutrition is not something I can bring up.” CHC, NP – participant 19

Primary care providers’ education (1)

“I think so; I think also having more education on it. I recognize in my brain that it’s a problem but I don’t recognize that I need to bring it up. This talk is making me think now. Maybe I’ll get brave.”
FHT, NP – participant 11

Other minor barriers (mentioned twice) included: patient perceiving they already know what they need to do, low comfort level of provider to address nutrition, not having patients rostered (seeing patients mostly for acute conditions), lack of time with each patient due to large practice (many patients), and clients’ perception of weight (do not understand the implications of excess body weight).

* 7 Family physicians (FPs) and 13 nurse practitioners (NPs)

CHC: Community Health Centre; FHT: Family Health Team; NPLC: Nurse Practitioner-Led Clinic

Table 6 – Approaches used when making a dietetic referral by multidisciplinary primary care providers
(n=20*)

Approaches used by participants	Number of participants using the approach (%)
Assessing patients' level of readiness to change?	5 (25%)
Proposing the referral while explaining its importance	4 (20%)
Explaining what a Registered Dietitian (RD) does	4 (20%)
Providing general information on how their weight is affecting their health	3 (15%)
Not giving an option	1 (5%)
Asking for a food diary	1 (5%)
“Not doing much”	1 (5%)
Giving a handout	1 (5%)
Asking if the patient is interested in a session with a RD	1 (5%)

* 7 Family physicians (FPs) and 13 nurse practitioners (NPs)
RD: Registered Dietitian

Table 7 – Instances in which a dietetic referral is made by multidisciplinary primary care providers
(n=20*)

Instances in which a primary care provider decides to refer to the dietitian	Number of participants reporting this instance in their practice (%)
Patient asking for the dietetic referral	10 (50%)
Patient was diagnosed with a chronic disease	10 (50%)
Patient showing motivation or readiness	5 (25%)
Patient was at-risk of developing a chronic disease	5 (25%)
Patient with an elevated Body Mass Index (BMI)	4 (20%)
Patient experiencing pain related to obesity	1 (5%)

* 7 Family physicians (FPs) and 13 nurse practitioners (NPs)
BMI: Body Mass Index

Table 8 - Enablers and barriers of making a dietetic referral for weight management by multidisciplinary primary care providers
(n=20*)

<p>Enablers:</p> <p>Registered Dietitian (RD) on site (14)</p> <p>Increasing access (9) “Access. How quickly they can be seen – not just location access, but also even how quickly they can get on the bandwagon. I find that sometimes if there are long delays – it wears off by the time they get in. Whereas if we have one on site and access is quick, I find it’s received well because of that.” NPLC, NP – participant 5</p> <p>Increasing patient comfort (5) “‘Well it’s on site and it’s not a new environment where they have to meet strangers.’” NPLC, NP – participant 6</p> <p>Free of charge (6)</p> <p>Flexible schedule (4) “‘Being on site, free of charge, offered in the evenings so more availability for people working’” FHT, FP – participant 14</p> <p>Having a relationship with the RD (2) “‘Having a relationship with the dietitian. The more you know their abilities. I know the dietitian here is brilliant and I know that she is located in the clinic so that helps me sell it to the patient rather than saying ‘you might get an appointment in three months across the city’.’” FHT, NP – participant 11</p> <p>Other minor enablers (mentioned once) included: RD being able to do home visits and the easy referral process.</p>
<p>Barriers:</p> <p>None (5) “‘None here but in general it would be cost and transportation but they are already in to see us, we are ground floor, parking is free, easy access, senior access, wheelchair access. We worked hard to bring down the barriers.’” FHT, FP – participant 15</p> <p>Wait times (3) “‘The wait-time is two weeks so that is sometimes not soon enough because it gives patients time to change their mind but I think it is still good.’” CHC, NP – participant 19</p> <p>Not thinking about making a dietetic referral (2)</p>

“Not thinking of it or making assumptions that the patient would not be interested. But it would still be good to offer it.” NPLC, FP – participant 9

Patient not buying in (2)

“Barriers include patient factors such as patients not buying in.” CHC, FP – participant 21

Patient perception of the RD session (2)

“The lecture that people think they’re going to get and the shame element about overweight.”

NPLC, NP – participant 6

Requires the patient to come in again (2)

“It would require another appointment. There are times where she can see them the same day.”

NPLC, NP – participant 4

Other minor barriers (mentioned once) included: patient not showing interest, lack of patient readiness, patient having low comfort level in being referred, and patients’ lack of time.

* 7 Family physicians (FPs) and 13 nurse practitioners (NPs)

RD: Registered Dietitian

CHC: Community Health Centre; FHT: Family Health Team; NPLC: Nurse Practitioner-Led Clinic

CHAPTER 7: DISCUSSION

The ideal place to address obesity is in the primary care as is it the first point of contact with the health care system (Bryant, 2009; Campbell-Scherer & Sharma, 2016). Nevertheless, obesity prevention and treatment have been suboptimal in primary care due to many factors such as lack of accessibility to allied health professionals, lack of time, cost of RD services and lack of knowledge (Wynn et al., 2010; Nicholas et al., 2003; Padwal et al., 2011; Coombs et al., 2004). These factors contributed to suboptimal dietetic referrals and hence an underutilization of dietitians and their scope of practice (Wynn et al., 2010; Padwal et al., 2011).

Primary health care reform aimed to address these barriers by moving towards multidisciplinary primary care settings. These team-based settings were designed to emphasize chronic disease management and prevention as well as health promotion practices. This research aimed to examine how nutrition care practices for weight management might differ in various types of multidisciplinary clinics – where most of the barriers highlighted in the literature should be mitigated. It first examined how elements at the macro, meso, and micro levels affect nutrition care of FPs and NPs working in three different models of multidisciplinary primary care settings. It then looked at nutrition care practices in more detail in order to compare these practices with current guidelines and evidence-based frameworks.

7.1 Health Systems approach – Comparative Study

As outlined in chapter 5, a health systems approach was used to examine elements at the macro, meso, and micro levels in terms of their effect on PCPs' nutrition care practices for client weight management. This project's results highlight that there are more

similarities than differences between the multidisciplinary primary health care clinic types (FHT, CHC and NPLC), based on the interviews with FPs and NPs from various sites. In terms of differences, it seems that physician payment models and duration of medical visits were the two elements that had divergent effects between sites.

For instance, physician payment models including bonuses were seen as a way of increasing the likelihood of FPs working in FHTs to approach the topic of nutrition in terms of weight management. However, physicians working through a salaried model did not believe that this had an effect on their nutrition care practices. As for NPs working in different sites, there were no differences in their perceptions of their nutrition care practices for obesity management as they are paid the same salary regardless of work setting.

Differences were also documented in regards to the duration of medical visits between multidisciplinary primary health care clinic setting types, causing some practitioners not to have time to address nutrition with their clients with overweight or obesity. NPs working in NPLCs felt that the duration of their medical visits was an important enabler for approaching the topic of nutrition with clients for weight management, as it is longer than usual medical visits (10-15 minutes). PCPs working in CHCs felt the same but participants in both sites (NPLCs and CHCs) agreed that, although they have more time for health promotion, it seems that patients are now coming in with multiple co-morbidities and competing demands – together pushing aside addressing with clients the topic of nutrition in terms of prevention and management of obesity.

Payment models and duration of medical visit differences aside, most FPs and NPs interviewed perceived their knowledge in nutrition to be suboptimal. Therefore, it is unclear if healthcare professionals communicate frequently regarding nutrition for weight management. Nevertheless, all participants believed that nutrition was important in weight management. This, however, did not result in an increased likelihood of talking about nutrition in terms of preventing chronic diseases.

Furthermore, our findings in regards to the effects of having RD services free of charge (Wynn et al., 2010; Nicholas et al., 2003; Padwal et al, 2011) and a RD on site (Harvey et al, 2002; Crustolo et al., 2005) confirm previous studies. All participants believed that cost-free dietitian services enabled them to refer patients more easily. Interestingly, some PCPs were sparing the on-site RD for patients who cannot afford it and referring patients with a private insurance plan to a RD in the community.

Overall, participants perceived that the RD's presence in the team-based setting improved quality and comprehensiveness of care. This was true for all clinical site types included in this study. PCPs felt that they can turn to the RD for evidence-based information either by directly asking the RD or during clinical meetings when discussing patient cases. In turn, this increased their skills and comfort in handling nutrition issues (Crustolo et al., 2005). Having a RD on site also seemed to improve uptake of services as it is in a familiar place for the patient and facilitates the initiation of nutrition discussion as PCPs felt that they had an accessible dietetic referral option if needed. This finding is

important, as it is a clear demonstration of how certain elements at the meso level can affect PCP practices.

In addition to the care offered to clients by the various health care professionals, the EMRs itself as a tool supporting communication between multidisciplinary care providers, seemed to have important positive effects in all settings. All participating PCPs used EMRs and believed that this technology facilitated communication between health professionals, as well as referrals. This is because there are standardized templates that can be easily completed. Our findings confirm what some suggested regarding the potential of EMRs in providing disease management reminders (O'Connor et al., 2005; Nelson et al., 2014). Although it did increase the likelihood of talking about nutrition in terms of weight management, some PCPs ignored the reminder and did not bring up the topic if they felt that they did not have enough time to approach the subject. As such, the reminders and decision aids can only be helpful if the PCP has time, which emerged as an important constraint.

7.2 Nutrition care practices of family physicians and nurse practitioners in team-based settings

Highlighted in chapter 6 is the importance of preventing and managing obesity, which is clearly documented in the literature (Lau et al., 2007; CMA, 2015). Guidelines on the management and prevention of obesity underscore the importance of initiating nutrition discussion and referring patients who would benefit from further nutrition counseling to a dietitian (Lau et al., 2007). Our findings suggest that although the team-based nature has positive effects on nutrition care practices of FPs and NPs, it seemed that there are

important barriers for providing this care in terms of prevention of obesity with most PCPs providing the care when the patient is already diagnosed with a chronic disease.

In order to identify who would benefit from a discussion on weight management and nutrition, PCPs should use a screening process. However, participants interviewed did not use a standard screening process. Most participants used BMI, general questions on food intake and laboratory parameters to screen for patients who would benefit from nutrition counseling in weight management. Using BMI and laboratory parameters for screening is in line with the Canadian Clinical Practice Guidelines on the management and prevention of obesity. It seemed that blood test markers needed to be considerably out of normal range to initiate discussion or referral – undermining the importance of obesity and chronic disease prevention. Some PCPs asked general questions on food intake but did not rely on an evidence-based questionnaire. These questions differed between health professionals. Also, some PCPs used chronic disease as a way of screening. The implication for this is that clients with obesity do not get the same services in various types of primary health care settings and the screening approaches may not be an optimal use of the PCPs' time as more effective screening tools are available.

Although the team-based nature of these settings seemed to mitigate the barriers to addressing the topic of nutrition with clients with obesity highlighted in other types of primary care settings (Lau et al., 2007; Wynn et al., 2010; Nicholas et al., 2003; Coombs et al., 2004; Dolor et al., 2010; Forman-Hoffman et al., 2006; Jay et al., 2010; Huang et al., 2004), some barriers are still present such as lack of time, patients not open to discussing

it, lack of rapport between the PCP and patient, and competing demands. Patients are now presenting with various co-morbidities, and its prevalence is increasing (Tsasis & Bains, 2008). This has implications on PCPs' practice as they will dedicate the time to medically manage patients' co-morbidities and in turn, may not have sufficient time to discuss nutrition, thereby pointing out the need for a nutrition expert, such as dietitian as part of multidisciplinary primary health care clinics.

Even though there are competing demands and little time, once the PCPs have screened clients to approach to discuss weight management and nutrition, it is then when a dietetic referral may occur. Two important elements were examined as part of this study for dietetic referrals. Firstly, if and how PCPs raised awareness regarding the importance of lifestyle modification before referring, and secondly, when they decided to refer to the dietitian. We observed that most PCPs did not raise awareness before referring. There seemed to be a variety of ways in which the referral is suggested with most PCPs assessing patients' level of readiness. It is unclear how this is done but most said that they directly ask the patient if they are ready to make lifestyle changes. Although some PCPs believed that explaining what the excess weight can do their health is important, most of them explain this very briefly due to lack of time.

As for referrals to a dietitian, they seemed to be made more often and more prophylactically than in non-team based settings. This does not mean, however, that there are no barriers in team-based settings. Although a quarter of PCPs felt that there were no barriers for providing a referral, wait times was a hindrance mentioned by most

participants. Not thinking about it, patients not buying in, patient perception of the RD session, and patient having to come in to the clinic again were all barriers reported by PCPs to providing a referral. The factors aforementioned were not affected by the team-based nature but seemed to be factors that were PCP and patient dependent.

After the clients' sessions with the dietitian, it is ideal for PCPs to follow up on the dietitian's message during next visits to reinforce positive lifestyle changes (Lau et al., 2007; Dietz et al., 2015; Post et al., 2011; Pomeroy & Worsley, 2009). Having the RD on site, using EMRs and the RD contributing in clinical meetings were all ways that participating PCPs used to discuss patients' cases and to exchange information and objectives for plan of care. However, message reinforcement about the RD care seemed to be made only when the PCP had the time to bring up the subject with the client.

7.3 Contributions of this study to the field

This research provides an understanding on whether or not these team-based clinics are mitigating the barriers elucidated by PCPs working in non-team-based primary care settings. As outlined in table 9, multidisciplinary settings facilitate nutrition care for weight management due to an accessible cost-free referral option to a dietitian. This seemed to be the most important enabler in these settings. All PCPs perceived the integration of RDs in the primary care setting as positive as it allows for more comprehensive care. In addition, EMRs were deemed very important in all of these settings and had an influence on the initiation of weight management and follow up. However, lack of time and increase in complexity of care for patients were factors that hindered the discussion of weight management. Most PCPs reported that they have to prioritize and treat side effects of

obesity medically before being able to address underlying factors such as lifestyle behaviours. Therefore, although there were some improvements associated with multidisciplinary settings in terms of increasing access to dietitians, there is more that needs to be done at the health systems level in order to achieve the primary health care reform's aim.

At the clinical practice level, it was found that the topic of nutrition was brought up during annual physical exams. These exams will not be occurring annually anymore, which may decrease opportunity for health promotion. In addition, discussing nutrition and weight management seems to be done more in terms of management of chronic disease rather than prevention. Lack of knowledge in regards to current clinical guidelines on the management and prevention of obesity and the 5As of obesity framework as well as lack of time were reasons for this. Most PCPs reported using medical judgment rather than a tool to assess which patients would benefit from nutrition counseling for obesity management. In some settings, however, PCPs reported that clinical meetings can contribute to information exchange regarding updated guidelines and may increase the likelihood of these guidelines to be implemented in everyday practice.

Table 9 – Critical Knowledge Gaps and Results from this Study

Critical knowledge gaps	Results from this study
How are dietetic referrals utilized in team-based clinics where RD services are covered?	<ul style="list-style-type: none"> - Coverage of RD services seemed to be the biggest enabler for providing a referral. - Some PCPs who worked in both settings (team-based and non-team-based) highly believed that they refer people more in a team-based setting because they have a free referral option.
How do payment models affect nutrition care practices of FPs and NPs?	<ul style="list-style-type: none"> - Weight management is mostly done in terms of diabetes management in FHTs due to the bonuses PCPs receive for the diabetes program. Putting in place incentives for weight management with the absence of chronic disease might increase the likelihood of talking about nutrition in terms of prevention. - FPs working in CHCs did not receive bonuses and did not feel that payment had an effect on their nutrition care practice for weight management. - No differences were highlight between NPs as they are paid a salary regardless of the place in which they work.
How do FPs and NPs perceive the integration of RDs in the primary health care setting and what effect does it have on their practice?	<ul style="list-style-type: none"> - FPs and NPs in all settings perceived the integration of RDs in the primary care setting as positive. - In addition to communication and information exchange, having a RD on site facilitates PCPs' initiation of nutrition discussion as they have an accessible referral option if needed.
Are FPs and NPs EMRs and how does it affect their nutrition care practice for weight management?	<ul style="list-style-type: none"> - All PCPs were using the technology to its fullest, not only for scheduling purposes. - All participants believed that it facilitated communication between professionals. - Some PCPs reported having a reminder that prompts the PCP to talk about weight when the patient's BMI is over 30 kg/m², which increases the likelihood of addressing weight management and nutrition.
How long are medical visits in every type of primary care setting and does it have an effect on their nutrition care practices?	<ul style="list-style-type: none"> - As reported by participants, duration of medical visits vary but in general, they are around 15 minutes in FHTs, 20 minutes in CHCs and 30 minutes in NPLCs. - Time seemed to be most constraining in the FHT setting while PCPs working in CHCs and NPLCs felt that time was less of a barrier for discussing nutrition and excess body weight. There were, however, other barriers such as the increasing prevalence of complex patients, pushing aside the topic of nutrition.
Does working in a multidisciplinary setting improve FPs' and NPs' perception regarding their knowledge in nutrition?	<ul style="list-style-type: none"> - Regardless of the health care setting, PCPs have reported turning to the RD for specific questions and handouts. They still felt that their knowledge was suboptimal but reported that once they have reached the extent of their knowledge they referred to the RD.
Do FPs and NPs agree that nutrition assessment is important in weight management and how does it affect their nutrition care	<ul style="list-style-type: none"> - All participants, with the exception of one strongly agreed or agreed that nutrition assessment for weight management is important. Despite their overall positive attitude towards nutrition, there seems to be other

practices?	barriers to discussing nutrition such as not having time, competing demands due to the increasing prevalence of complex patients and patients not buying in to lifestyle modifications.
How do FPs and NPs screen for patients who would benefit from nutrition counselling with a RD? How do current practices compare with the Canadian Clinical Practice Guidelines on the Management and Prevention of Obesity?	- Using BMI, asking general questions regarding food intake, and laboratory parameters were the most used for screening. BMI and laboratory parameters are in line with current guidelines. Waist circumference is another recommended screening marker that was rarely used.
How and when do FPs and FPs approach the topic of nutrition with their patients with excess weight?	- PCPs mostly approached the topic during annual physical exams (which are now occurring less frequently), when a patient is diagnosed with a chronic disease such as type 2 diabetes, and when blood work indicated out of normal range lipid profile or blood sugar levels.
How do FPs and NPs approach the dietetic referral? Are they raising awareness before referring? When do PCPs decide to refer a patient to a dietitian?	- Some PCPs seem to be raising awareness before referring patients to the dietitian. Most PCPs are assessing patients' level of readiness, proposing the referral while explaining its importance or explaining what a RD does. - A dietetic referral is made when a patient asks for it, is diagnosed with a chronic disease, is ready to make changes, or is at risk of developing a chronic disease.
How does the team-based nature of the clinic affect PCPs' practice in terms of reinforcing the dietitian's message?	- Although the team-based nature allows for communication between health professionals and information exchange regarding patients, EMRs seem to allow for PCPs to reinforce the message during follow up visits if they have the time.

7.4 Recommendations

As outlined above, team-based settings can mitigate many barriers outlined in non-team based settings in terms of dietetic referrals and nutrition care practices for the management of obesity. It is important to note, however, that much of this is depending on whether a team-based setting has a dietitian on site. Some participants working in two types of team-based settings compared their practices between one setting in which a dietitian was present and the other with no dietitian on site. In those settings without a dietitian, there remain barriers to effectively address obesity in terms of management and also prevention. This is especially important to consider when attempting to deal with the rising population with multiple morbidities, as they are high health care users. The recommendations below are based on barriers mentioned by participants.

Macro level recommendations:

- 1- Ensure that applications for renewal for FHTs and NPLCs include mandatory inclusion of funding for dietitians.
- 2- Create a professional development education campaign or program to inform all PCPs of how obesity is best managed as a chronic disease as well as raise awareness of the normalization of obesity. Developing a quick fact sheet on the effects of obesity that can be quickly discussed with patients might be an effective way of doing so. This might encourage earlier intervention in the plan of care, which will in turn attenuate the increasing trend of patients with multiple chronic diseases and health care costs.

Meso level recommendations:

- 3- Ensure that there are enough health human resources such as dietitians on site to prevent PCPs from sparing the RD only for patients who have multiple chronic diseases.

- 4- Ensure that there are proper information systems in place to identify patients who would benefit from annual physical exams. This is important given the shift towards episodic care.
- 5- Ensure that all EMRs are equipped with PCP aids and reminders to bring up the topic of nutrition in terms of weight management.
- 6- Increase awareness of self-administered evidence-based dietary assessment tools.
- 7- Create work structures that help to ensure that all tasks that can be performed by other allied health professionals (i.e., dietitians) are completed so that PCPs can focus more time on preventive services and management of obesity.
- 8- Increase awareness regarding dietetic services offered at the health care setting by using posters and informative pamphlets that are readily available to all patients in the waiting room. Informative pamphlets can also empower patients.
- 9- Increase collaboration between the primary care setting and local public health interventions in order to alleviate certain barriers that patients might encounter when trying to manage their weight. For instance, increasing initiatives in addressing mental health outside of the primary care setting is important. This can increase motivation and readiness – two aspects that seem to be important for PCPs to initiate the discussion of nutrition and weight management.
- 10- Micro level recommendations: Ensure that PCPs are aware of the importance of raising awareness regarding the effects of obesity on the development of chronic diseases before referring to a dietitian.

7.5 Limitations of Study

Case studies typically involve various methods of data collection to allow for triangulation. This was not possible in this study, and so, investigator triangulation was used to address this limitation. As such, various researchers looked at the data from various angles. Member checking was also a way to address this limitation and ensure credibility of the study. The small sample size of family physicians is another limitation. Stronger comparison could have been possible with more participants.

7.6 Areas for Future Research

Areas for future research should include conducting a similar study targeting various types of multidisciplinary primary care settings while collecting various sources of data. For instance, focus groups with various health professions could spark a really interesting discussion regarding nutrition care and obesity management. Increasing the study sample, in particular the number of family physician participants is another avenue that could be undertaken in future research. This would allow for stronger comparisons between sites as well as between primary care providers. The sample in this study was not large enough to allow for a comparison between professions but future studies could look at this important dimension. Further exploration on the effects of physician payment models on nutrition care for obesity management and prevention is warranted. Moreover, research on increasing patient engagement and empowerment would warrant an understanding of the patient's perspective regarding multidisciplinary clinics and how they believe it affects their health. This would help tailor programs and clinical settings based on patients' needs – an important aspect of patient-centered care.

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APPENDIX A – Ethics Approval Notice

File Number: 06-16-07

Date (mm/dd/yyyy): 08/24/2016



Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Ivy	Bourgeault	School of Management / School of	Supervisor
Isabelle	Giroux	Health Sciences / Others	Co-investigator
Stéphanie	Aboueid	School of Management / School of	Student Researcher

File Number: 06-16-07

Type of Project: Master's Thesis

Title: Nutrition care practices of family physicians and nurse practitioners in primary health care settings

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
08/24/2016	08/23/2017	Approved

Special Conditions / Comments:

N/A

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APPENDIX B – Consent Form

Title: Nutrition care practices of family physicians and nurse practitioners in primary health care settings in Ontario

Name of student researcher: Stephanie Aboueid

Affiliation: Telfer School of Management, University of Ottawa

Name of supervisor: Ivy Bourgeault (PhD)

Coordinates: Telephone: 613-562-5800 ext. 8614; email: ivy.bourgeault@uottawa.ca

Affiliation: Telfer School of Management, University of Ottawa

Name of co-supervisor: Isabelle Giroux (PhD)

Coordinates: Telephone: 613-562-5600 ext. 2398; email: igiroux@uottawa.ca

Affiliation: Faculty of Health Sciences, University of Ottawa

Invitation to participate: I am invited to participate in the research study entitled ‘Nutrition care practices of family physicians and nurse practitioners in primary health care settings in Ontario’ conducted by Stephanie Aboueid for the Master’s thesis in Health Systems at the Telfer School of Management.

Purpose of the study: I understand that the purpose of the study is to evaluate current nutrition care practices of primary health care providers in various primary health care settings in Ontario. The study will elucidate how the team-based nature of this multidisciplinary clinic affects nutrition care practices of family physicians and nurse practitioners.

Participation: My participation will consist essentially of completing a short form on background questions and taking part in one individual interview lasting about 30 minutes during which I will be asked standardized questions on weight management practices and interprofessional collaboration.

Benefits: My participation in this study will enhance the understanding of the nutrition care process in team-based health care settings. It will give me an opportunity to talk about any possible barriers and facilitators to nutrition care. I will have the option to check the data analysis once complete. For this member check, I will specify how I would prefer to be contacted below (if interested). My participation will also help the student gain experience in how to conduct research. I will also receive a 50\$ coffee shop gift card.

Confidentiality and anonymity: I have received assurance from the researcher that the information I will share will remain strictly confidential. The contents will be used only for the purpose of the thesis project. Anonymity will be protected in the following manner. I have been assured that in written reports, my name (and organization) will be disguised.

Conservation of data: I am aware that the data collected (digital recording of interview (if applicable) and interview transcript) will be kept in a secure manner. They will be stored

on a computer with secure password and codes will be used to encrypt the information. Only the student researcher, the professors, and a research assistant will have access to the interview data. These individuals will have signed a confidentiality form before consulting or analyzing the data. The data will be conserved for ten years after the thesis defense. Subsequently, the data will be destroyed and shredded.

Voluntary participation: I am under no obligation to participate and if I choose to participate, I may withdraw from the study at any time and/or refuse to answer any questions. If I choose to withdraw, I have the right to choose if I want the data gathered until the time of withdrawal to be deleted or not.

Acceptance: I, _____, agree to participate in the above research study conducted by Stephanie Aboueid of the Telfer School of Management, whose research is under the supervision of Dr Ivy Bourgeault and Dr Isabelle Giroux. I understand that by accepting to participate I am in no way waiving my right to withdraw from the study.

I consent to the audio recording of the interview: Yes No

I would you like to be contacted for a member check: Yes No

* A member check allows me to review the way in which the information that I have divulged during the interview has been analyzed and interpreted. The member check will consist of reading the analysis of the information I provided. I can then provide feedback, agree, or disagree with the way in which the data was analyzed and will then be given the chance to clarify what I was meant to convey during the interview.

I would you like to be contacted at: _____

If I have any questions about the study, I may contact the student and/or the supervisors at the numbers mentioned above.

If I have any ethical concerns regarding my participation in this study, I may contact the Protocol Officer for Ethics in Research, University of Ottawa, 550 Cumberland Street, Room 154, K1N 6N8, Ottawa, ON (613) 562-5387 or ethics@uottawa.ca.

There are two copies of the consent form, one of which is mine to keep.

Participant's signature: _____ **Date:** _____

Researcher's signature: _____ **Date:** _____

APPENDIX C – Background Questionnaire

1) Please specify your gender.

- Male
- Female
- Identify as: _____

2) In which country did you complete your most recent professional education?

3) How long have you been working in your profession?

- ≤ 5 years
- Between 6 and 15 years
- Between 15 and 25 years
- ≥ 25 years

4) How long have you been working for this organization?

- ≤ 1 year
- Between 2 and 5 years
- Between 6 and 10 years
- ≥ 11 years

5) During a typical week at work, what proportion of your patients is overweight (BMI between 25.0 – 29.9 kg/m²)?

- Less than 25%
- Between 25% and 50%
- Between 50% and 75%
- Higher than 75%

6) During a typical week at work, what proportion of your patients is obese (BMI ≥ 30.0 kg/m²)?

- Less than 25%
- Between 25% and 50%
- Between 50% and 75%
- Higher than 75%

7) Nutrition assessment is very important when thinking of weight management. Please circle your answer.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

APPENDIX D - Interview Protocol

Approaching the topic of nutrition and screening

First, I am interested in knowing how the topic of nutrition is brought up during medical visits.

- 1) How and when do you approach the topic of nutrition with patients with excess weight?

Probes:

What are the enablers of approaching the topic of nutrition?

What are the disablers of approaching the topic of nutrition?

- 2) How do you screen for patients who would benefit from changes in eating habits?

Probes:

What are the enablers for screening patients who would benefit from lifestyle modifications?

What are the disablers for screening patients who would benefit from lifestyle modifications?

- 3) Talking about weight can be a sensitive topic, how do you deal with this situation?
- 4) How do patients typically respond to the topic of nutrition?

Reflection by interviewer:

Approaches used in weight management

There are many approaches used in managing excess weight. For example, some health professionals tend to give pamphlets on healthy eating, refer to self-help groups such as weight watchers, and others tend to prescribe medications.

- 5) Which weight management approaches do you use?
- 6) How do you assess which weight management approach is most suitable for a patient?
- 7) Now, based on your experience, which weight management approach seems to be most accepted by patients?

Reflection by interviewer:

Dietetic referrals

Now that we have talked about how the topic of nutrition is brought up, what approaches are used in weight management, and your perceived competencies, I am interested in knowing in which contexts a dietetic referral is made.

8) When do you decide to refer a patient to a dietitian for weight management?

Probes:

What are the enablers of providing a dietetic referral to a patient?

What are the disablers of providing a dietetic referral to a patient?

9) What are the effects of having a dietitian on site?

10) Based on your experiences, how do patients typically respond to a dietetic referral?

11) Imagine that you are about to refer a patient to a dietitian for weight management. What do you do before referring the patient?

12) Do you use electronic health records in the workplace and does this technology facilitate the referral process?

Probes:

How would you describe your knowledge in nutrition?

Reflection by interviewer:

Perceived influence on the patient's lifestyle behaviours

This interview is going well for me. What do you think? We will be finishing the interview with this final small section. Lastly, I am interested in knowing how you feel about the possible influences you have on the patient's lifestyle behaviours. Some primary health care providers feel that patients are willing to change substantially when being advised to do so, while others believe that patients will only change if they are faced with a significant health problem such as having a myocardial infarction.

13) What do you think of your influence on patients' lifestyle behaviours?

a. Can you give me an example of a patient that significantly changed their lifestyle behaviours after being educated about the importance of such lifestyle modifications?

14) Have you worked in another type of clinic before working in a team-based clinic?

Closure

Thank you very much for taking time out of your day to answer these questions. I would also like to reassure you that your participation is confidential and anonymity will be assured. If you are interested, I will come back to give you a copy of my findings once the analysis of the data is complete.

Is there any question that comes to mind that I should have asked during this interview?

If I have missed anything or I need clarification, would it be possible for me to come back to ask another question or two?