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The experiences of Family Medicine teachers and Family Medicine residents in multimorbidity care and education

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A thesis submitted in partial fulfillment of the requirements for the Master of Clinical Science degree in Family Medicine

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Abstract

Aim: This thesis explored the experiences of family medicine preceptors and family medicine residents regarding multimorbidity care and education.

Methods: Two qualitative descriptive studies were conducted using semi structured interviews with family medicine preceptors and focus groups with family medicine residents. Interviews and focus groups were audio-taped and transcribed verbatim. Data analysis was iterative and interpretive in nature and done both independently and as a team.

Findings: Multimorbidity care is predominantly provided by family physicians yet there is little focus on multimorbidity education in the medical education curriculum. Multimorbidity education is informal and experiential in nature. There are both facilitators and challenges to multimorbidity care and it is important that family medicine residents receive education in this area. Suggestions to aid multimorbidity care and multimorbidity education are described.

Conclusions: Multimorbidity care is challenging for family physicians and residents and further education and research in this area are both worthwhile and required.

Keyword: multimorbidity, family medicine, family medicine residents, medical education

Summary for Lay Audience

This thesis includes two studies exploring experiences with multimorbidity in academic family medicine. Multimorbidity refers to patients who have multiple chronic conditions concurrently. In the first study, family medicine preceptors (family physicians who have an academic practice where they teach medical students and/or residents) were interviewed about their experiences caring for patients with multimorbidity. They were also asked about their experiences regarding multimorbidity management in the medical education curriculum. They described facilitators which help in providing care for patients with multimorbidity as well as challenges in providing care for patients with multimorbidity. They provided insights into their own experiences of multimorbidity education during their own medical training as well as their knowledge about multimorbidity education currently being taught in the medical curriculum. The second study explored the experiences of family medicine residents caring for patients with multimorbidity during their residency training as well the education they are taught regarding multimorbidity.

Both studies found multimorbidity care is predominantly provided by family physicians in our health care system, yet there is little focus on multimorbidity education in the medical education curriculum. Both studies highlighted important facilitators and challenges in caring for patients with multimorbidity. It is important that family medicine residents receive education in this area to prepare them for their future careers in family practice. Unfortunately, multimorbidity education currently is mostly informal and experiential in nature. Suggestions to aid multimorbidity care and education are described in both studies.

In summary, multimorbidity care is challenging for both family physicians and family medicine residents and further education and research are required given the increasing prevalence of multimorbidity in our society.

Co-Authorship Statement

The research idea for this thesis was developed and executed by the author. All data from both qualitative studies was collected by the author. The thesis was written solely by the author.

Contributions were made as follows:

Drs. Sonja Reichert and William (Ted) Osmun provided guidance and support with the research protocol and ethics submission. They participated in the analyses of the qualitative data from both the interviews and the focus groups. Editorial advice was given by both for the written thesis.

Dedication

I dedicate this thesis to my father and my brother, the late Patrick Copeland and the late Neil Copeland.

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Chapter 1

1. Introduction

1.1 Thesis Overview

This thesis explores the experiences of family medicine (FM) preceptors and FM residents with multimorbidity (MM) care in practice and in the medical education curriculum. Two qualitative studies were completed between December 2015 and June 2017.

This thesis consists of four chapters.

1. Chapter 1 introduces the literature on MM and MM education in the medical curriculum and highlights the relevance of this research topic. There is also a review of the qualitative methodology chosen and an overview of the trustworthiness and credibility of the methods used.
2. Chapter 2 is a qualitative study exploring the experiences of FM preceptors with respect to MM care in their practices and in medical education.
3. Chapter 3 is a qualitative study exploring the experiences of family medicine residents with multimorbidity patient care and multimorbidity education in their family medicine residency training.
4. Chapter 4 integrates the findings from both studies presented in the previous two chapters. It also discusses the common themes that emerged from both studies. Specific recommendations are provided for future medical education innovations, system and/or health policy changes, and future research.

1.2 Literature

Multimorbidity (MM) has become a growing international public health challenge (1). Given advances in healthcare delivery and population health, people are living much longer, than even 25 years ago, but often with multiple long-term conditions. MM is

widespread globally and will only become more prevalent as society ages and chronic diseases become more frequent (1).

The term multimorbidity (MM) was defined almost 25 years ago, yet most literature on MM has been published in the past decade. In 1998, van den Akker and colleagues defined multimorbidity as the presence of two or more chronic conditions (2). Since then, some authors have suggested that acute issues cannot be ignored and should be included when defining MM (3). Co-existing conditions that comprise MM may or may not be related in each patient. As such, MM is not a simple medical diagnosis with well-defined criteria but instead represents a multitude of possible co-existing conditions and poses a major challenge for patients, physicians, and the health care system (1). MM can be complex and difficult to manage with multiple physicians involved and requires significant health care resources (1).

In 2002, the World Health Organization (WHO) projected that the challenge for the 21st century in health care globally would be chronic conditions and encouraged their members to change their current health care approaches from reactive ones to a preventive approach (4). Since then, the rising prevalence of MM is already a significant challenge for the health care system. Multimorbidity's complexity requires significant integration of health care services, much more so than what is required for single chronic conditions. There is only limited evidence on the impact of integrated care programs addressing MM globally (4).

Despite the increasing prevalence of MM, health care systems are still built around single diseases in a "reductionistic" model (5). This presents a major challenge for health care provision, research, and medical education. In 2014, the US Department of Health and Human Services recognized these challenges and the need to better prepare physicians to manage MM, making specific reference to polypharmacy (5). Multimorbidity often leads to polypharmacy which is the prescription of multiple long-term medications.

Polypharmacy is a risk for poor health outcomes such as adverse drug reactions and drug interactions. There is a tension that exists between reducing polypharmacy while still prescribing drugs that evidence-based guidelines suggest are in the patient's best interest.

This is especially challenging for family physicians who must coordinate and oversee the medications prescribed by multiple providers involved in the care of a patient with MM (6).

In Canada we are not immune to this rising challenge of providing high-quality MM care. We are facing a rapid increase in the number of patients living with multiple chronic conditions (1). This poses a great challenge for our health care system. Patients living with MM are more likely to die prematurely, be hospitalized, have long inpatient stays, have poorer quality of life, have worse physical function and are more likely to have depression and be on multiple medications (5). MM is a challenge in many realms – for the patients, for the health care system, for the physician, and for the medical learner.

1.2.1 Multimorbidity and Family Medicine

No one specialty in medicine will be facing the challenge of MM care and its rising complexity more than Family Medicine (FM). MM care is often fragmented with multiple providers (both primary and secondary care) involved, with significant polypharmacy, and often poor communication (5,7). There is a clear need for the integration of MM care and to follow a generalist approach to manage MM (5,8).

Although a generalist perspective has always been important in health care, this broader view is crucial to face the rising challenge of providing high-quality MM care. Chronic conditions, not acute conditions, are now the dominant problems in health care (8). FM is the specialty that best exemplifies generalism (8). The generalist approach affirms the crucial role of the family physician as the “coordinator and integrator” of care, working with both the patient and their other health care providers to optimize the patient living with MM’s overall function and quality of life (8). For MM, the goals of care should be to enhance functioning, minimize difficult symptoms, develop coping strategies to handle the psychosocial stresses of MM, and maintain quality of life as long as possible. In MM care, care of the whole person is paramount (8)!

Studies have estimated the prevalence of MM to be between 16-95% of primary care patients depending on age group (2, 9,10,11,12). It is often quoted as 20-30% of the

whole population, and 55-98% of the older population (7). Several studies have shown an increase in MM in the 1st decade of this century suggesting likely further rise in prevalence in the coming years (1,9,10). The rising prevalence of MM equates to an increased number of primary care visits as well as increased specialist consults, increased allied health support needs, and increased overall health care system usage and cost.

Chronic disease management has become a large component of FM practice and FM training. Yet, most chronic disease education continues to be reductionistic in nature, focusing on the management of individual single chronic diseases as opposed to multiple simultaneous chronic diseases (5,8,13,14,15,16). Primary care reform has placed significant emphasis and funding on chronic disease management, yet it falls short for patients living with MM. Currently, the management of chronic diseases (such as coronary artery disease, asthma, and diabetes) is based on evidence-based clinical guidelines. Yet these guidelines often are derived from trials of interventions for single diseases or conditions in which patients living with MM were excluded (5,13,14,16). As such managing patients living with MM is a significant challenge for family physicians as their care is complex and many of the clinical guidelines do not apply. Despite the high prevalence of MM, there is limited evidence for the effectiveness of interventions in MM care, and a recent systematic review identified only 10 trials examining this area in the literature (5).

The uncomplicated patient with diabetes and no other medical problems is now the exception rather than the rule (8). Starfield and colleagues' study of ambulatory care visits in the US found that patients request care for all of their comorbidities at the same time, not just for a single condition at a time (17). They found visits for comorbidities outnumbered visits for any single condition (17). Bayliss and colleagues (18) found comorbidities "interact to produce a complex and challenging clinical dynamic" (8). These studies highlight the futility of a reductionistic model of care focused on each individual condition. Instead, a model of care that addresses the whole person and which integrates care that adequately addresses the patient's coexisting comorbidities is needed (8).

MM carries a substantial burden that FM must be prepared to handle. Patients living with MM have significant health care utilization and complex care needs. The task of both managing MM and preventing chronic conditions can be overwhelming (9). As the population ages and prevalence increases, this burden will only increase. Yet, family physicians often do not feel well equipped to care for patients living with MM (19).

Most studies published on MM over the past decade have dealt with the epidemiology and prevalence of MM in practice (2,9,10,11,12). Fewer studies have focused on the experiences of primary care physicians' experiences in managing patients living with MM (5,6,14,15,20). Those studies which have focused on management of patients living with MM have highlighted that physicians do not feel they have developed the skills and knowledge necessary to manage patients living with MM (14,15,19,20). Some authors have concluded that better training is required for primary care physicians to manage patients living with MM and as such changes to medical education curriculum are required to better train future physicians in the management of MM (13,21).

1.2.2 Multimorbidity and Medical Education

Providing primary care to patients living with MM is a challenge. Patients living with MM often have multiple physicians involved in their care, have a high medication burden, and consequently have higher mental health stress, increased emergency department visits and inpatient admissions, as well as higher mortality rates compared to patients without MM (22). Physicians providing MM care must balance competing demands, handle challenges in utilizing clinical guidelines, manage polypharmacy, and consequently face an increased potential for medical errors. There are also increased challenges managing diagnoses and treatments given multiple conditions can interact in unpredictable ways (22). Additionally, studies have shown that practicing family physicians do not always feel well equipped in managing care for patients living with MM (19). This begs the question, are we training FM residents comprehensive MM management during their postgraduate residency training?

Despite MM being a significant challenge for family physicians, there has been little formal focus on training FM residents in MM care. To the author's knowledge, there are

no structured educational programs in place in the 2-year FM postgraduate residency programs dealing specifically with MM in Canada. Graduates of FM postgraduate residency programs will need to acquire the knowledge and skills to manage patients living with MM in their future practice. Studies have shown that patients living with MM require unique management strategies (5,6,13,14,15,16,20). The current model of medical education with emphasis on a reductionist single disease model taught in most undergraduate and postgraduate training programs will not suffice (8,13,21).

Despite the significant challenge posed by MM care, there is a paucity of literature on MM education needs in postgraduate medical education. Multiple PubMed searches, and a review of the International Research Community on Multimorbidity's database of MM publications (23) over the past decade, found only six publications on postgraduate medical education and either chronic illness care or MM care. All were published between 2014 and 2016. Only three publications discussed FM or General Practitioner (GP) trainees. In 2014, Magin and colleagues completed a cross-sectional study of GP Registrars' clinical experiences of chronic disease during their training (24). They found trainees managed less chronic disease than established GPs, and that they found these encounters challenging. They suggested further work was required to increase GP trainees' exposure and experiences with chronic illness (24). In 2015, Cottrell and colleagues published a meta-synthesis of patients', GPs', and GP trainees' perceptions of lived experiences of MM in the United Kingdom (UK) (25). They concluded that more exploration of the experiences of these groups of individuals was needed to help improve MM care and education (25). Although not a study examining FM trainees' experiences specifically, there was a teaching article published in the Canadian Family Physician about a simple FM teaching strategy for learning to manage patients living with MM in 2015 (26). In this article, Osmun and colleagues described a low-tech teaching method using slips of paper, a couple of paper bags, and a whiteboard. Multiple conditions, each written on a single slip of paper, were placed in bags. Acute conditions were placed in one bag and chronic conditions in the other bag. Columns for investigations, treatments, consultations, monitoring etc. were written on the white board. A condition was pulled out of a bag, one at a time, and the columns on the whiteboard were completed for each condition before pulling another condition out of a bag and building a patient with MM

over time. They reported their teaching strategy was well received and allowed dynamic learning of MM cases (26).

Two other publications discussed experiences of Internal Medicine residents in the United States, and surgical trainees in the UK, respectively. In 2015, Schoenborn and colleagues explored opportunities in an internal medicine resident clinic caring for older patients living with MM in Baltimore (27). They found that although residents had regular opportunity to apply the American Geriatrics Society's guiding principles for the care of adults with MM, several opportunities were missed to apply the guiding principles. They suggested areas for future educational opportunities (27). Shipway and colleagues surveyed surgical trainees in the UK and found that they felt they received inadequate training in managing older surgical patients who were complex (28). They rated their knowledge regarding geriatric topics to be poor. They concluded that changes to surgical training programs were needed (28). Lastly, there was a systematic review published in 2016 by Lewis et al (29). This systematic review explored whether there were educational training programs used to train postgraduate medical trainees in MM management in primary or secondary care settings, and which were shown to improve knowledge, skills, attitudes and/or patient outcomes (29). They identified over 75,000 citations yet only two studies met the inclusion criteria for their review, although one of the studies did not include trainees but rather was a continuing medical education program for practicing physicians. Their conclusion was that research was lacking in this area despite the significant challenges in managing patients living with MM, and further research was necessary (29).

From an allied health perspective, Rushton and colleagues explored the challenge of MM in the nursing education literature and provided some educational tools that could be used to deliver MM education, including the use of problem and case-based learning in a more longitudinal fashion with increasing complexity of cases over time as well as the development of inter-professional learning programs (30). They surveyed nursing students and found their perceived knowledge, training, and confidence in care decreased as patients became more multimorbid and the vast majority reported needing more training in MM (30).

1.3 Summary

While the published literature on MM has increased exponentially in recent years, there are still large gaps in the literature with respect to MM management and MM education in the medical curriculum. There are very few publications on MM training in postgraduate education programs. All current publications in the literature suggest further research is needed. There have been no studies published on the perceptions and experiences of FM preceptors or FM trainees in Canada. Given the projected prevalence of MM in the future, it is important to ensure FM trainees are graduating with the knowledge and skills to care for their patients living with MM given the degree of uncertainty practicing physicians feel in managing patients living with MM (19). As such, this thesis explores the experiences of FM preceptors and FM residents with MM care in practice and in medical education.

1.4 Qualitative methodology

Qualitative descriptive thematic analysis was the qualitative method chosen for both studies in this thesis. The goal of these studies was to provide a comprehensive summary of the experiences of the study participants regarding the topics of interest including the meanings they gave to their experiences (31).

Different methodologies within qualitative research were reviewed and considered before embarking on the studies. The various qualitative methodologies differ with respect to both the level of interpretation and the method of interpretation used with the data sets (31-36). Grounded theory is a qualitative method which attempts to construct theoretical models of the topic of interest from the data set, without referencing a pre-existing theoretical framework known in the literature (32-35). In simple terms, in grounded theory methodology, the question is usually: how does this process come about? It is more about the fundamentals or social processes (32-35). Phenomenology seeks to understand why participants lived or described certain experiences. It rather explores the essence of why experiences happen or are described (32-35). Neither of these qualitative methods were appropriate for this research as the purpose of these studies was to describe

what was said about the topics of interest. The purpose of these studies was not to attempt to relate the data to a pre-existing or newly constructed theory about multimorbidity management or education, nor was it to interpret the underlying motivation of the participants. As such, qualitative description was chosen as the appropriate qualitative method as the purpose of the studies was to describe what was said about these topics (31). “Qualitative descriptive studies entails the presentation of the facts of the case in everyday language” whereas phenomenological or grounded theory “re-present events in other terms” (37).

Qualitative descriptive thematic analysis was felt to be the best method for both these studies for several reasons. First, the purpose was to explore in detail the complexity of the participants’ experiences as revealed in the data. Experiences with MM are certainly complex and qualitative description is “especially amenable to obtaining straight and largely unadorned answers to questions of special relevance” (38). Second, the descriptive thematic analysis involved repeated cycles of “immersion/crystallization” where the researchers reflected on the participants’ experiences as described in the data and developed thematic insights (39). Third, this simpler form of qualitative methodology provided a more feasible method of analysis for the researcher just beginning their qualitative research journey (32,36). Lastly, qualitative descriptive thematic analysis is the method of choice when studying a new area of research or when the experiences of the participants being studied are not previously known and as such pure descriptions of their experiences are sought (36).

1.5 Trustworthiness and credibility

The trustworthiness and credibility of this thesis’ findings arose from several aspects of methodological rigor. The first aspect being methodological congruence, meaning the qualitative descriptive method of analysis fit well with the topic of interest and the research questions (35). Attempts were also made to ensure maximum variation, during participant recruitment and sampling. Well defined qualitative data collection methods were employed, namely semi-structured in-depth individual interviews and focus groups. Saturation of themes across the data sets was ensured. The analysis was rigorous, and

repeated cycles of team review and discussion increased the trustworthiness of the coding. Lastly, flexibility was employed in developing and revising the themes which increased the credibility of the analysis (32,35).

Both studies were conducted in a parallel time frame, with both contributing equally to the overall findings. Team analysis of the focus group (residents) data was carried out first followed by the analysis of the in-depth individual interview (preceptors) data. Attempts were made to ensure that the findings from one study did not impact the analysis of the other.

1.6 Analytic preconceptions

Although interviewing was the main data collection method used in both studies, there were inevitably aspects of participant observation for the principal investigator, who is a preceptor and a Program Director in the same postgraduate FM training program where these studies were carried out.

Therefore, to decrease potential research bias within the data collection and analysis, the principal investigator made prior note of her preconceptions regarding the topics of MM care and MM education within medical education.

- The principal investigator had already come up with her own working definition of MM, based on the literature review and other readings
- The principal investigator had personal experiences with MM care and education
- The principal investigator perceived a lack of content with respect to MM management in medical education
- To the principal investigator, resident physicians appeared to have little prior experience in managing MM before residency

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Chapter 2

2. Experiences of family medicine preceptors with multimorbidity care in family practice and multimorbidity education in medical training: a qualitative study

2.1 Introduction

In the past decade, the topic of multimorbidity (MM) has witnessed an explosion of interest. Many publications have focused on prevalence, epidemiology, and defining multimorbidity (1-13). There have been a few studies looking at the experiences of physicians (as well as family practice nurses, and pharmacists) caring for patients living with MM (14-22). No studies have specifically explored the experiences of Family Medicine (FM) teachers or other academic physicians with MM despite them being responsible for educating the next generation of physicians providing MM care. As discussed in Chapter 1, there are only three publications exploring MM and FM (or GP) medical education and all three publications state more research is needed (23-25).

The principal researcher was unable to locate any studies examining FM preceptors' experiences with MM care and MM education in the medical curriculum. An understanding of their experiences and perceptions would aid in the development of curricula in this important area.

In summary, there has been a large increase in the volume of literature on MM, yet literature is lacking around the experiences of FM teachers with MM care and MM education in medical training. Eliciting FM preceptors' experiences of MM care and MM education would be a valuable contribution to the literature on MM and will aid in future curriculum development.

2.2 Purpose of the study

The purpose of this study was to explore the experiences of FM preceptors with respect to MM care in their practices and in medical education.

This qualitative study, using in-depth individual interviews, was intended to provide a deeper understanding of MM care in practice and in medical education.

2.3 Methods

2.3.1 Context of Study

This study was conducted as part of the master's requirements of the principal author, assisted by two co-investigators whom were both the author's thesis supervisors. The study was carried out through Western University. The FM preceptors involved were all faculty members of the same Department of Family Medicine. They were located throughout Southwestern Ontario at various distributed FM teaching sites.

2.3.2 Methods

Qualitative descriptive methodology was used in this study to explore the experiences of FM preceptors with respect to MM care in their practices and in medical education (26). For full details on why qualitative description was chosen, please refer to Chapter 1. Options for collecting the data were surveys, focus groups or in-depth individual interviews. Surveys were thought to be an inadequate method of capturing the experiences of each preceptor as they would be limited in describing their experiences. Focus groups were considered inadequate for this study as each physician's individual experience may not be captured and coordinating several physicians practicing in distributed sites for a lengthy focus group was impractical. In-depth individual interviews were felt to be the best method to obtain the most detailed recollections of each physician's unique experiences with MM. They were also felt to be most practical given the feasibility of scheduling because of the busy schedules of FM preceptors. Lastly, in-depth interviews have been used in previous research to examine physicians' experiences with multimorbidity (15, 17, 19, 20, 22).

2.3.3 Participant Recruitment

In accordance with the ethics approval from Western University Research Ethics Board, a recruitment email was sent to the FM preceptors who supervise residents regularly at core FM teaching sites through Western University's FM residency program. Participants were recruited to maximize variation according to the following preselected variables: age, gender, site location, years as a preceptor. Physicians who agreed to participate in the study were then scheduled for a mutually convenient interview date and time.

A list of 57 potential participants was collated by the principal investigator. Of those contacted via email recruitment, 11 agreed to be interviewed. A final sample of 10 participants completed the interviews as one participant was unable to participate after agreeing to be interviewed.

2.3.4 Data Collection

Prior to each interview, letters of information were reviewed, and consent forms were signed by participants. Participants also completed a demographic data form. Ten preceptors participated in semi-structured in-depth interviews. These interviews lasted between 30-90 minutes with the average being 60 minutes. Each interview was conducted in person with each participant at a location convenient for them during the period of January 2016 to April 2017. The in-depth interviews were conducted using a semi-structured interview guide consisting of open-ended questions (see appendix F). These questions were chosen to elicit the experiences of preceptors with MM care and education based on previous research and the topic of interest.

The interviews were audiotaped and transcribed verbatim. Transcription was done by a professional transcription service. Identifiers were removed to ensure confidentiality of the participants.

2.3.5 Data Analysis

Each transcription was read and reviewed independently by each of the three researchers to elicit major themes. An iterative process was then followed in which the researchers

met to compare identified themes and to connect ideas. The emergent themes were then organized into broad categories to develop a coding template. The coding template was updated with each subsequent interview in an iterative fashion and was stable upon saturation when no new themes were seen to emerge with further interviews. Saturation of themes was achieved at the ninth interview. Ensuing meetings of the researchers then served to refine analysis and interpret themes relating to the physician's experiences of MM care, and MM education.

2.3.6 Trustworthiness and Credibility

The trustworthiness and credibility of this study were assessed by several means. Accuracy and honesty of the data were ensured by verbatim transcription of the interviews, independent review of the data by each researcher, and analysis of the data together as a team. Researcher bias was addressed. Two of the investigators (JC and TO) are family physicians who were full time preceptors and cared for patients with multimorbidity in their family practices, thus their bias regarding MM care and education had to be considered in all phases of the study. The third investigator (SMR), a family physician clinician researcher, while also responsible for clinical resident supervision, did not supervise residents on a full-time basis in a core family medicine teaching site, thus helping counterbalance this bias.

Please refer to Chapter 1 for further discussion on the trustworthiness and credibility of the overall thesis.

2.3.7 Sample Demographics

The ten participants in the study were divided among urban, regional, and rural teaching sites (3 urban participants, 4 regional participants, and 3 rural participants). The age of teachers ranged from 33-69 years, with an average age of 42 years. Seven were male and three were female. This is representative of the faculty composition in this university academic department.

There were equal numbers of Adjunct faculty (5) and those with full-time faculty positions (5). Four participants had an education background (2 completed the Master of

Clinical Science in Family Medicine and 2 others completed a Teaching and Learning course). All supervised FM residents on a regular basis in their practice.

The ten participants had been in FM practice for between 4-43 years (average of 14 years) and had been supervising FM residents for between 2-25 years (average of 10 years).

2.3.8 Ethics Approval

This study was approved by the Research Ethics Board, Western University, file# 106497 (see Appendix A).

2.4 Findings

2.4.1 Overview

There were 5 major categories that emerged from the analysis of the in-depth individual interviews with FM preceptors: 1) Multimorbidity care in the current system; 2) Facilitators to multimorbidity care in Family Medicine; 3) Challenges in multimorbidity care in Family Medicine; 4) Multimorbidity education during medical training; and 5) Innovations for the future.

2.4.2 Multimorbidity care in the current system

It was apparent participants have known of and experienced the general concept of MM throughout their careers, but their knowledge of the term “multimorbidity” was quite new: *“Multimorbidity... is a term I’ve only really heard bandied about in the last one to two years.”* (Int 8) One participant said: *“when you approached me about this study”* (Int 7) was the first time they heard the word multimorbidity. Although the awareness of the term multimorbidity was quite recent, it was evident from the interviews that FM preceptors had a good grasp on the general concept of MM and were able to define it well: *“So when I think about multimorbidity, I think of chronic diseases, a multitude of chronic diseases within the same person.”* (Int 1)

Most participants viewed multimorbidity and comorbidity as two distinct entities while others felt the difference was just semantics.

“...I’m not sure that I’ve made that distinction to be quite honest with you.

Because the patients with multiple morbidities, those illnesses are co-existing all the time and one can affect the other depending on which diagnosis you are looking at.” (Int 4)

When discussing MM care, it was quite apparent that FM is providing most of the health care with respect to MM management in the current system. The sub-themes that arose and will be discussed in this section are: 1) Family physicians are carrying this load, 2) Helpers – role of the specialist, and 3) Helpers – Allied Health Professionals.

2.4.2.1 Family physicians are carrying this load

Family physicians were felt to be the coordinators of MM care: “*Absolutely, we’re the quarterback.*” (Int 4) Many believed there were multiple reasons for this, some positive and some negative. Several participants felt family physicians are required to be the providers of MM care by default because specialists are not going to do it. So, it falls to FM to take on that role.

“I think family medicine is probably... the hub for these patients and we need to be very good at managing these kinds of patients, because nobody else does.

When you see them going into the [tertiary care] system ... the cardiologist will be involved, the respirologist will be involved and ... no one will sort of look at the whole person.” (Int 5)

Others felt that FM is the quarterback of MM care because we are the specialists in patient-centred care and as such we are the best suited to provide MM care compared to other specialties.

“The best? Absolutely. I think we are the ones who have the tools. The best, it’s no question. It’s going to be the most cost effective but money aside, its one-stop shopping for the patient and it makes for better quality of care.” (Int 4)

Family physicians know their patients well and as such should be leading MM care:

“... the family doctor should be the one...taking the lead especially in multimorbidity cases because while the specialist is very good at focusing on one particular type of disease nowadays, they may... forget about the ... other diseases.” (Int 1)

All participants thought that FM as a discipline was best equipped to care for patients living with MM:

“... we have an appreciation for social circumstances, and I think we have the tools and the skill set to address these issues ... obviously we are not... all-encompassing when it comes to skill set. But like I teach my residents, family doctors are jack of all trades and masters of several...” (Int 2)

Having the family physician overseeing everything was felt to be important for patients.

“... you need one person who's overseeing everything because a specialist isn't necessarily copying another specialist on their note. And so, they may not know these other changes are being made and so I think the family physician is really important in trying to sort of coalesce all that information together to be able to provide the best care for the patient.” (Int 10)

Given FM was felt to be carrying the load of MM care in the current system, we then explored how often family physicians are seeing patients living with MM in practice.

2.4.2.1.1 Frequency/Prevalence over time

When asked how frequently family physicians are seeing patients living with MM, one participant exclaimed: “*Oh, my goodness! ... 75% of the time.*” (Int 3)

All participants felt caring for patients living with MM comprised most of their workday with answers ranging from 50% to 80% of patients per day having complex MM. Most participants felt it was 70-80% of patients each day. Overall prevalence of MM was felt to be around 20-30% of patients but patients living with MM accounted for most

appointments booked each day. *“They make up... I can say 20-30% of our patient population, if not more. And it’s possible that it is more. Just we see them so much ... 75-80% of the time.”* (Int 6)

Many participants felt the FM teaching sites see more MM than non-teaching community family practices.

“... for my practice I think it's very common. It would be interesting to know the percentage. I think my perception is that most of my people I see in a day have multimorbidity, but that wouldn't mean that most of my practice does because a lot of the healthy people obviously aren't coming to see me. It's the multimorbidity that comes to see me more often therefore I feel that presence more. But I still think it's a higher percentage than in general family practice.” (Int 10)

Several participants felt the prevalence of MM has been increasing over time:

“I think the reality is, just in my own career time I have seen the shift of the aging population and ... you feel the weight of the multimorbidity in one's practice more now with the same practice size, far more now than 10 years ago.” (Int 8)

Yet, many felt that caring for their patients living with MM, as a family physician, was incredibly rewarding:

“I really enjoy working with my patients, it’s overwhelming...when you first get involved but it is so rewarding when you get it right and when you can fix things for people because you know how to manage each one of them. And you can adapt the guidelines for all of their co-morbidities instead of that one specialist dealing with [one condition] ... doing that really enhances my relationship and trust with them....” (Int 4)

2.4.2.2 Helpers – role of the specialist

As previously mentioned, family physicians felt their specialist colleagues are not currently and will not be the main providers of MM care in the health care system in the

future. Specialist colleagues are felt to play a supportive role in the management of patients living with MM.

“I see them as consultants, very rarely do I see a specialist really look at the whole person. They'll deal with their one specialty or the one question that they've been asked about and sometimes will comment on other things but it's always oh, see your family doctor about that other issue or ...see the different specialist about that.” (Int10)

Participants elaborated that specialists certainly have a role in helping manage patients living with MM, but it is a supportive one. They are not the physicians who are going to be the backbone of MM care. As health care has become more subspecialized over the years, most participants felt specialists are limited to their particular area of specialty as highlighted by the following quote:

“They're very siloed in what they're doing and what they'll cover and so... you need a quarterback on the team who can look at everything and at what every person on the team is doing to be able to organize [everything]... “ (Int10)

Although most participants felt that specialists had become very siloed over the past couple of decades, others felt that some of their specialist colleagues were starting to understand MM better:

“I do find that most of the specialists that I deal with are pretty good at managing multimorbidity patients. They do factor in the other diseases that they're dealing with. But really their area of expertise is very isolated to that one disease and so I still think that it's on me as the general practitioner physician to take all the specialist opinions and advice and put them all together for the patient.” (Int 9)

Others mentioned family physicians could help their specialist colleagues help fellow family physicians better by writing more comprehensive consult requests:

“I think our colleagues are getting more versed in this and you see it in the return consult notes. They acknowledge it... one of the great opportunities we have as

family doctors is writing a comprehensive and extensive consult request letter... send everything in a nice concise narrative, all the information [they] need to understand [the] patient... no longer do patients have one single disease state. We have a really important role in helping to educate [our specialist colleagues] just by informing them.” (Int 2)

Overall, participants viewed their specialist colleagues roles as very important when they needed help managing a particular piece of the patient living with MM’s care and that consultations will continue to be an important piece in MM management: “*Well, Dr. X once said to me, ‘You need a consultation if you’re not comfortable managing the condition or the patient isn’t comfortable with you managing it’.*” (Int 4) Similarly, when family physicians feel overwhelmed with very complex patients living with MM, specialists become crucial members of the care team:

“the patient may sometimes have so much multimorbidity that the consultant will now be more of a most responsible physician...because the complexity has reached a level such that the family physician doesn’t feel that their skills or their resources are adequate ... [the role of the specialist is] consultant specific and patient specific.” (Int 7)

The helping role of specialists can be best summarized as follows:

“... helping to confirm the initial diagnoses can be helpful. Giving me some help to think about certain issues related to the patient and what I might do if those issues arise. I think having them there in an advisory role is probably where the specialist fits in the best.” (Int 5)

2.4.2.3 Helpers – Allied Health Professionals

Participants had mixed feelings when it came to the role allied health professionals play in caring for patients living with MM. Some felt they play a very large role in MM management: “... *it’s the multimorbidity patient where I feel I get the most help from them...*”. (Int 8) While others felt that while their services are helpful, they do not play a large role in MM management: “... *I just find these people are complex for anybody*

who touches them, and I can't see an allied health person in any role necessarily being able to fulfill that." (Int 5)

Of all the allied health professionals that family physicians work with; the family practice team nurse was felt to be the most crucial team member from an allied health perspective.

"Having a really strong RN, so the team nurse ... everything we value as family physicians, our family practice nursing colleagues value the same things. They have the same understanding of the family demographic, the family tree, the lived experiences, and having a strong family practice nurse I think is crucial even if you had none of the other elements [of a family health team]." (Int 2)

Several participants felt pharmacists and social workers and/or psychologists were the other pieces of the allied health puzzle that were quite helpful. Dietitians were felt to be important helpers with certain diseases as well.

"... the allied health professionals that we have in our clinic ... we use them all a lot ... the dietician has been instrumental in helping our patients, as have the pharmacists. Those two have made a big impact. I want to say social worker and psychology – they've also played a huge role ... we see a lot of depression in this patient population as well as anxiety... so actually they've all been very instrumental ... I can't imagine not having them in terms of helping these patients." (Int 6)

Overall, participants felt allied health professionals served an important helping role but would never be carrying the burden of MM now or in the future. It appears, that role will still fall to the family physician.

"I don't think the allied health professionals are going to be much help in managing the whole patient. They can certainly help with parts ... I get recommendations from them that are wonderful, like really helpful but they [the recommendations] come to me." (Int 4)

2.4.3 Facilitators to Multimorbidity Care in Family Medicine

Participants described numerous facilitators that help in providing care for patients living with MM in the FM setting. The sub-themes that arose and will be discussed in this section are: 1) Time – appointment time/frequency of appointments/charting time; 2) Patient-Centred Care; and 3) Continuity of care/longitudinal relationships.

2.4.3.1 Time – appointment length/ frequency/ charting time

All participants felt time was a crucial component in caring for patients living with MM. Time availability in regard to length of appointments, frequency of appointments over time, and time availability for chart review and/or documentation is key to have built into one's schedule when caring for patients living with MM.

Given all the academic family physicians (FPs) interviewed belong to a capitation funded PEM (patient enrollment model), this allows participants to book longer appointment times for patients living with MM than if they were in a fee-for-service model. Longer appointment times was seen as a strong facilitator for MM care: *"I usually book 30 minutes and that does not include the time it takes me to dictate their notes. The 30 minutes are usually the average encounter length for patients I have with multimorbidity..."*. (Int 7) When asked if they book longer appointments for patients living with MM, one participant exclaimed: *"Definitely. I need every minute to care for them!"* (Int 4)

Some participants shared that they flag patients living with MM in their charts, so their reception staff know to book them for longer appointments. Most felt MM is difficult to manage in a 10 to 15-minute appointment and many book their patients living with MM for 30-minute appointments. For those participants who book in 15-minute intervals, they elaborated that their appointments with patients living with MM tend to run longer, they are just not booked longer. As a result, they constantly run behind in the day: *"...I still tend to cover most things... so people unfortunately wait. That's why my day's done... an hour late many times."* (Int 5) When asked how long they estimated they

spend with a patient living with MM who is booked for 15 minutes, it was reported to be about 25 minutes.

For participants who do not book longer appointment times for patients living with MM, they mentioned seeing the patients more frequently was a facilitator to their care: *“I’d have them come in much more frequently... they’d probably be coming at least ... every month.”* (Int 10)

Having chart review and documentation time built into one’s schedule as well as time for paperwork were also felt to be quite beneficial.

“You know what really helps is if I pay particular attention to look at the chart before the patient comes in ... so I have an idea before I go into the room which of their current conditions really needs to be addressed today, that helps me because then I can be a little bit open-minded about listening to the patient’s agenda.” (Int 4)

On the contrary, if time was not built into the day and physicians were doing this from home after hours, they viewed this as detrimental to their own well-being.

“...It’s probably worse for my work life balance, the amount of paperwork and reviewing all the information that’s coming in takes a lot of time and I can’t do it while I’m seeing patients, so it means - I guess I have the choice of cutting back on patients and I just don’t. And so, I do it afterhours at night after my son goes to bed and that’s sacrificing time at home, not good for me but good for patients.” (Int 10)

The information provided by participants suggests longer appointment times, frequent appointments, and scheduled time for documentation and chart review are crucial components to facilitate caring for MM in FM.

2.4.3.2 Patient-centred care

All participants highlighted patient-centredness in FM as a huge facilitator in managing patients living with MM: *“... it goes back to the patient-centred clinical method, an*

understanding where the patient's coming from, what the impact... is having on them ... getting an understanding of what their thoughts are... and hopefully coming to some type of common ground.” (Int 6) Multimorbidity is different for each patient so being patient-centred was felt to be crucial, and unique, to family medicine. “... *what makes family medicine unique is that you can't use the cookie cutter approach, [the plan] has to be devised knowing the subtleties and the idiosyncrasies that makes that patient unique.”* (Int 7)

The following quote reflects the importance of patient-centred care for patients living with MM:

“I understand that my patients do have multimorbidity, but they also have very busy lives. They have families and they have jobs. If their statuses are stable, I'll renew their medications for a certain period of time instead of having them come in. It frees up their schedule and it frees up mine... to see somebody else. That's something that's convenient for them and they appreciate.” (Int 7)

Some participants felt they didn't need to approach patients living with MM any differently in practice, if they were being patient-centred in the first place:

“I guess I don't see much difference in what I do every day with patients who are complex... our approach is still the same. We hear them out, we try to help make sense of what their experience is like... at the end of the day, the common piece in all of this is the patient, right? If you focus on the patient, you can never go wrong...” (Int 2)

2.4.3.3 Continuity of care and longitudinal relationships

Continuity of care and the longitudinal relationships that develop between comprehensive family physicians and their patients over time are likely the strongest facilitators when providing care for patients living with MM. Participants reported it is the continuity of care in FM that separates FM from other specialties and allows FM the ability to be the ultimate providers of MM care. The following quote exemplifies the importance of continuity of care: “*Continuity. Oh, the continuity is absolutely critical... There have*

been times when I've listened to a patient ... and I've said, 'I think you've had this before' and they can't remember it, but I can." (Int 4)

Longitudinal relationships with patients are instrumental in managing MM:

“...when I see my patients... 14 years of experience of seeing them, I know them. I know when people bring certain things up, when some things are important and some things are less important because I have that relationship with them.” (Int 10)

Participants elaborated on other important longitudinal relationships in FM (beyond the longitudinal relationship with the patient) which are beneficial in caring for patients living with MM:

“Family medicine is all about relationships. It's about relationships with our patients and that unique relationship with trust. But it's also about our relationships with our other team players, with our community service organizations, with [community nursing providers], with our hospital specialists, and with our community pharmacists... Family medicine is unique in that... we have so many relationships to support our role.” (Int 4)

2.4.4 Challenges to multimorbidity care in Family Medicine

Participants reported several challenges in providing care for patients living with MM in the FM setting. The sub-themes that arose and will be discussed in this section are: 1) Multimorbidity itself – the Cognitive Burden; 2) The challenge of guidelines in multimorbidity care; 3) Prioritization of Problems; 4) Challenges for patients with multimorbidity; and 5) Challenges for resident physicians.

Providing care for patients living with MM is complex and as such there are multiple challenges to providing high-quality care. Some of the challenges arise due to the complexity of MM itself, and others are health care system challenges that impact MM care:

“I would divide [the challenges] into physiological problems and system problems... that constant discourse that goes on in your head about I don’t have the luxury of just seeing this person for their blood pressure today; or for their gout; or for their dementia...I have to, because I’m their family doctor, see them for everything. I think that’s the crux of multimorbidity, that whole awareness of the interplay of disease and the whole notion that we don’t have the luxury of just seeing them for one system. That’s the physiological side of the house. The system side of the house is that sometimes I can’t get help ... some of their other illnesses... preclude them from being seen by a specialist for a specific issue. And how do you distill down a patient’s lived illness experience to just their one disease state so that you can get a consultation with someone? That is complicated... so it really does continue to fall on the shoulders of family docs.” (Int 2)

2.4.4.1 Multimorbidity itself – the Cognitive Burden

The biggest challenge brought forward by participants was MM itself – dealing with many different diagnoses and treatments all at the same time, especially in complex MM when each diagnosis and its treatment affects most other diagnoses and their treatments.

This is felt to be overwhelming at times as reflected in the following quote:

“... when you have patients, who have four or five different conditions to think about and medication related to those conditions, it takes a fair bit of mental gymnastics for me just to think about all the different issues and all the different drugs and what might be interacting with another. It takes a lot of time for me to think about all those things...” (Int 4)

Many participants spoke to the cognitive burden of MM care: “... *it is heavy ... the number of things your mind is churning through in every session... you get mentally and physically tired from the process of thinking.*” (Int 8) Participants spoke to the mental fatigue brought on by MM care:

“...every patient it seems ... I have to think about their meds and the drug interactions and the QT intervals ... it seems like there’s never a break ... my brain needs to rest... you know how your iPhone heats up when it does a lot ... your head starts to feel like that after a while... you just get fatigued.” (Int 8)

2.4.4.2 The challenge with guidelines in multimorbidity care

Participants had mixed feelings regarding the role of guidelines for patients living with MM. Many participants felt they were unhelpful as patients living with MM were likely excluded from the studies that informed the development of the guidelines: *“Do they even apply with those with multimorbidity? I don't think so. Because I don't think the guidelines have been studied for those particular situations.”* (Int 5) Other participants felt they still had a role for use in patients living with MM but needed to be adapted to the individual patient:

“... I think they serve as a good baseline... But as the term implies, they are guidelines. They are not laws, they are not rules that you must abide by... there should be some variability that accounts for a patient's unique situation... They serve... as the reference point that you start out of. But then it's experience that kind of builds in the gaps for you.” (Int 7)

Many participants felt there are too many guidelines to follow for any one patient living with MM and they likely cause more harm than good if you followed them all:

“We have a patient with diabetes, congestive heart failure, COPD . . . who I'm thinking of right now. In order to follow every single guideline on that patient, I don't know how you'd do it. I mean it just would not happen. You can't possibly do it. So then which guideline do you follow? Do you follow the diabetes guideline, do you follow the congestive heart failure guideline, do you follow the COPD guideline ... should you be putting these people on Atrovent or Spiriva, which have been shown to increase cardiac problems... COPD [guideline] says absolutely you should. Congestive heart failure [guideline] maybe not so much. So... I think guidelines are there to help you to think about the issues, but ... if

you're following them all the time, you probably create more problems than you solve." (Int 5)

In the end, most participants felt there was value in using guidelines as a tool, but they should be used simply as a guide for each unique person with MM.

"I think we mustn't lose sight of the fact that those are guides for us and in the middle of all that is this patient. We have to be very sensitive to their needs and their goals and, and not make them worse by applying guidelines..." (Int 4)

2.4.4.3 Prioritization of problems

Many participants felt prioritization of problems to be a significant challenge during appointments with patients living with MM. The patient's priorities and the physician's priorities for the appointment can often be quite different. *"... I think sometimes it's challenging trying to find the common ground between what their agenda is and what my agenda is..."* (Int 10)

Finding common ground was felt to be a challenge in many cases: *"...you've got a patient in front of you who has a life... what is the patient's priorities... ...think not about all the disease processes that the person has but what does the person want."* (Int 5)

2.4.4.4 Challenges for patients with multimorbidity

Participants were clear that MM is not just challenging for physicians, it is also very challenging for the patient. Multimorbidity has a huge impact on patients. *"Patients have a hard time understanding one illness let alone trying to combine multiple illnesses all together."* (Int 9)

Patients were felt to suffer from 'Information overload': *"... there's a lot of information that they get thrown at them every day ...absorbing all the information that gets thrown at them ... it's probably difficult..."* (Int 3) A large component of this information overload was felt to stem from significant medication burden for patients: *"... I think they get burnt out, and I think they aren't able to take on that role of managing their own medications, and medical conditions."* (Int 6)

The ‘silence’ of disease was felt to be a significant challenge facing patients living with MM as well:

“...patients with chronic kidney disease, they don’t feel it. Patients with diabetes don’t feel it. The patient with hypertension, they don’t feel it... atrial fibrillation, they don’t feel it if their INR is less than two... the biggest challenge is understanding that those numbers that we focus on matter to them [even if they don’t feel them].” (Int 4)

Participants viewed MM as difficult and problematic for patients:

“It can be very difficult for them ... cost of medications, medication side effects can be really tough, they’re often on multiple meds. Multiple doctors’ appointments and tests that have to be done. They spend a lot of time in the medical queue... it’s a problem.” (Int 8)

2.4.4.5 Challenges for resident physicians

Most participants felt MM care was quite challenging for resident physicians as they lack the longitudinal relationship with the patient which is often crucial for caring with patients living with MM.

“I think residents get a little overwhelmed by it, that’s the biggest thing. They don’t know the patient well. They may not even know all the medications and all their interactions. They ... may not focus on the right thing... they may have read a study about... congestive heart failure needs to have spironolactone ... and ‘the patient’s not on spironolactone, why’s the patient not on spironolactone? I’m going to put the patient on spironolactone’ but not knowing that three residents ago spironolactone was added, and the potassium went sky high ... I think they sometimes focus on the wrong things, for the right reasons...” (Int 5)

FM teachers felt resident physicians find it difficult to set aside the classic textbook or guideline-based approaches they learn in medical school.

“sometimes they’re so focused on their flow sheets and focused on their guidelines and focused on their... best practice etc. and not really focused on the patient.... the thing that we have to teach them is ... what is the patient’s priorities... what does the patient want.” (Int 5)

It was felt resident physicians need to focus more on patient-centred care for patients living with MM:

“Residents come in with a very didactic, a very classical textbook approach, very guideline based. When they fine tune their craft and see patients for the first time, they have to relearn a lot of the subtleties that the guidelines may not be appropriate.” (Int 7)

Participants felt resident physicians graduate from medical school with strong book knowledge but have a steep learning curve when putting that together with the realities of life, especially when caring for patients living with MM. This reality is reflected in the following quote:

“... residency does a great job of teaching you the algorithm, but it doesn’t teach you the alternatives... that’s the learning curve the residents have to go through ...being exposed ...to why all of a sudden what they were taught in the classroom is no longer fitting for that particular patient sitting in front of them...” (Int 7)

Despite the challenges, participants felt that by the end of their FM residency training, residents were quite capable to manage patients living with MM.

“... it can be overwhelming ... sometimes they just don’t know where to start. So, it’s helping them develop an approach to those patients ... and then it’s interesting, because you see that evolve over time, and at the end of residency, they are quite competent in doing [multimorbidity care].” (Int 6)

2.4.5 Multimorbidity education during medical training

Participants explored their perceptions of MM education during medical training. The sub-themes that arose are: 1) the past; 2) the present; 3) the future.

2.4.5.1 The past – How did you learn about multimorbidity?

All participants reported they had no formal education about MM care during their medical education. The majority said any training they received in MM was informal in nature. Some learned about MM informally during their residency training, while others felt they did not learn about MM until they were out in practice. All participants viewed their learning about MM care as experiential, i.e. by exposure.

Some participants experienced this experiential MM education during their residency training:

“...I think experientially yes because I work in the practice in which I trained. I had already dealt with ...medically complex patients even in residency and so I ... had hands on training at the time but I wouldn't say that I had any didactic teaching on it.” (Int 10)

Other participants felt they acquired it once out in practice: *“Learned by doing”*. (Int 8) Some thought this was due to specialists teaching most of the undergraduate medical education curriculum: *“... we were taught by specialists mostly, right? ... we were really taught by people who looked at the respiratory system, looked at the cardiology system, looked at nephrology ... it's all system-based really in our training.”* (Int 5)

2.4.5.2 The present - How does multimorbidity education currently occur in the curriculum?

Many participants did not know what is being taught formally in either the undergraduate or FM postgraduate medical education curriculums currently.

All participants felt, much like their own training in the past, resident physicians today are learning about MM care through exposure. Many felt this occurs during clerkship and residency when learners are in the FM clinics:

“...when they're with us, they see it on a day to day basis because of our patient rosters ... more than 50% have multimorbidity... we focus a lot on the social and

on the mental health to let them know that the patient is just more than an isolated group of diagnoses.” (Int 7)

Some felt the learning acquired once out in practice builds on those past experiences in residency, and is when most of the experiential learning occurs:

“Trial and error and experience but experience builds on previous experiences. I think it's a case of you fine tuning your craft and learning from the mistakes that you had a resident. And as a young staff physician that helps you make better informed decisions.” (Int 7)

2.4.5.3 The future - How should we teach multimorbidity care in the medical curriculum?

Many participants weren't sure how best to teach MM, other than through experiential learning. All participants thought it was a difficult topic to teach: *“It's not a topic that's easy to teach... you can't whip up a good hour talk and then just give it and [expect] everyone knows everything they need to know about multimorbidity.”* (Int 10)

Some participants felt MM education should not be a separate teaching topic but should be incorporated into the current block-based learning currently taught at the undergraduate level: *“... I don't think that multimorbidity needs to stand on its own... [Have] a family medicine-oriented session within each system block [in years 1 and 2 of medical school]”.* (Int 2)

Others thought the early undergraduate years was too early to introduce the topic of MM care and its challenges. They felt that fourth year of medical school, or early in residency was the best time:

“I think in undergrad ... they don't have the ... fundamentals of each of the medical conditions to really know how they're going to ... interact and how their medications are going to interact. That's probably too early for the nitty gritty [of multimorbidity] ... that could come later in fourth year or post grad.” (Int 10)

The majority felt that small group, case-based learning would be the most useful format for teaching MM care. *“Case based PBL style learning where you build a multimorbid patient over time, adding new diagnoses over time through each different type of rotation in clerkship ...I think that would be very effective training.”* (Int 4)

Several participants had some teaching experience with a small group session on MM we will call ‘The Multimorbidity Game’ which was thought to be a very beneficial way to teach the concepts of MM:

“... it was actually quite interesting ... there was a bag of medical conditions and you would reach in and you would pull out one and you'd put it on the board and they would [review] what are the challenges and what are we sort of thinking about? And then you'd randomly pull out [a new condition] and then say okay, now how does that change the dynamic and then they would go [keep adding conditions making a multimorbid patient] ...” (Int 10)

When discussing who would be best to teach MM care, participants felt quite strongly that family doctors should be the ones teaching medical students and/or residents about MM. They also felt the FM centres were the appropriate place to teach it: *“... [Family Medicine] ... because we're the only ones who manage it all, the only ones who do it all.... if we don't teach it, I don't think they're going to learn it.”* (Int 4)

2.4.6 Future Directions and Innovations

When discussing future directions especially regarding health policy or governmental changes that could enhance MM care, participants suggested updating the funding model, improving coordination of electronic medical records (EMRs) or moving to a centralized electronic medical record (EMR), and reworking the interdisciplinary team model as important pieces of the puzzle.

2.4.6.1 Funding for physicians, patients, electronic medical records

Many participants felt there needed to be improvement to the funding models when caring for complex patients living with MM. Funding that considers the time and effort required in caring for patients living with MM.

“... [patients living with multimorbidity] take more work and take more time and I don’t have a practice as big as a regular community practice because I have such complex patients... I'm not a martyr, I don’t do it out of the kindness of my heart but there is something that I'm giving up to look after these patients that I'm not being reimbursed for, so [improved funding for this type of patient] would be beneficial.” (Int 10)

Participants described a few areas where funding changes could be considered, both from a physician perspective and a patient perspective. Having MM is costly for the patients as well as the health care system.

“I think financially there's some things - if they put in special codes for [managing patients living with multimorbidity] so I'm not penalized for looking after these types of patients. And ... help financially for [these] patients... for their medications... sometimes there's a lot of travel involved so I think financially there's a lot of issues for patients [as well]. Certainly, if the government was willing to step up and implement a province wide EMR, it would take a lot of money on their part, but that would be helpful as well.” (Int 10)

2.4.6.2 Electronic medical records (EMR) coordination/centralization

The disorganization of medical records was felt to be an area that requires significant change moving forward. It was mentioned that FM clinics are on different EMR systems than their specialist colleagues and both are on different systems than the hospitals. There is a significant lack of good coordination between these individual EMR systems and it was felt that this needs to improve significantly. *“I think the biggest thing that government can do is give us EMRs that function, that give us the information that we*

need when we need it and link us to our specialist colleagues when we need them.” (Int 5)

When all the members of a care team are on different medical record systems, which do not communicate with each other well, that is very problematic.

“Part of the problem is you don’t know what you don’t know. I don’t know who’s had a specialist appointment and I haven’t been copied on the report. There is probably information that I’m missing that I just don’t know that I’m missing.” (Int 10)

2.4.6.3 Interdisciplinary team

Some participants felt that improved use of interdisciplinary teams could be beneficial.

“In a perfect system we would have everybody at the table... You’d have easy access to specialists or ... quick emails or... more conversations going on between specialists and primary care physicians.” (Int 3)

2.5 Discussion

This study provides a comprehensive understanding of MM care in FM teaching sites and about MM education in the medical curriculum as reflected by FM teachers.

2.5.1 Definition and Prevalence

Most participants were well versed in the concept of MM and their definitions of MM were quite close to the definition used in the literature. Most researchers use the following definition for multimorbidity: “the presence of several [two or more] co-occurring long-term conditions, being related or not, in a given patient” (27). The definitions given by most participants would be consistent with this definition. At times they viewed comorbidity and multimorbidity to mean the same thing, which is incorrect, however this is also quite common in the literature (1). Comorbidity as defined in the literature refers to an additional condition that is present and/or affects a separate condition which is the condition of interest (e.g. if caring for a patient with a brain tumor,

their diabetes is a comorbidity) (1). The relevance of comorbidity is more important in the specialty medicine world where they are dealing with index conditions and comorbidities play a role in how they affect the index case. Family physicians are rarely concerned with an index condition and are more focused on caring for the patient as a whole, as such, multimorbidity is a more relevant term in family medicine (1).

All FM preceptors interviewed reported providing a substantial volume of MM care. They reported up to 75% of patients seen each day have MM. It was reported that 20-30% of their patients had multimorbidity, yet those patients accounted for about 75% of visits. These findings are consistent with studies on prevalence rates and frequency of visits in the literature (1-5). Participants also reported the prevalence was increasing in their practices over time, as the population ages and they develop multiple conditions over the years. For participants who had been in practice for many years, they reported the prevalence of MM in their practice was now much higher than it had been 10 years ago, with no change in the number of patients on their rosters. This is consistent with the literature on prevalence rates over time (1,3,4).

2.5.2 Challenges

It was reported that MM care is a major challenge in many ways: for the physician, for the patient, for the medical learner, and for the health care system. MM care was noted to be often complex and very challenging with multiple health care providers involved with high usage of health care resources. These views are supported by the literature (28-31). Participants viewed family physicians as the ‘specialists of multimorbidity’. Family Medicine is carrying the load of MM care in the current health system, and participants felt this would not change in the future. Although multiple health care providers are often involved in the care team, specialist physicians and allied health professionals were felt to provide a supportive role, as helpers to family physicians.

Having too many health care providers involved in a patient living with MM’s care was seen as a challenge, both for the family physician, and for the patient. They described issues arising when there are too many providers such as communication issues,

uncoordinated EMR systems, information overload for patients, and specialty focused guidelines not taking into account the patient's MM.

Regarding communication challenges, participants felt there was often a lack of or a delay in receiving information from specialty colleagues, or a lack of information within the consult note received. With multiple providers involved, conflicting opinions were felt to be challenging for the family physician who must try to coordinate all the different opinions to care for the patient living with MM as a whole. Specialists were not felt to be well versed in MM. Participants felt with health care becoming more subspecialized, specialists have become focused on their particular area of expertise and often do not take the patient's MM into consideration when formulating their management plans. As such, it falls to the family physician to manage the patients' MM.

All family physicians spoke to the "cognitive burden" of caring for patients living with MM. This cognitive burden was felt to be driven by the significant number of co-existing conditions, each condition potentially affecting the other conditions, with the resultant complex interplay between treatments for all conditions which often interact, or worse interfere, with each other. Many spoke to this being overwhelming at times. The medication burden, or polypharmacy, in MM was felt to be one of the most significant contributors to this cognitive burden. The burden of polypharmacy participants expressed is supported by the literature which has shown that MM is one of the strongest predictors of polypharmacy which is defined as five or more chronic medications (32-36). Polypharmacy brings with it many risks to patients living with MM which the family physician must manage including increased drug-drug interactions, increased risk of adverse medication effects, and consequent increased poor patient compliance with a high medication load (32-36). Specialist colleagues, unfortunately, were felt to add to this burden by following specialty-specific, or disease-specific guidelines, thereby increasing polypharmacy perhaps unnecessarily.

Furthermore, published guidelines were felt to be a challenge when caring for patients living with MM. Although, many felt they were helpful in providing a baseline level of evidence for individual conditions, participants felt there were too many guidelines for

individual conditions to follow for a patient with MM (whom are often excluded from the trials from which the guidelines are based), and if they were all followed they likely would cause more harm than good. This is supported by the literature (32, 37-45).

Participants were quick to acknowledge MM is just as challenging for patients as it is for physicians. MM was felt to have a huge impact on the patient, especially regarding “information overload” and medication burden. “Information overload” was coined as a term by participants referring to patients living with MM having multiple conditions and treatments they must coordinate, often seeing multiple providers who may differ in their approaches to issues depending on their area of specialization leading to possible miscommunication and conflicting messages to the patient. There are significant physical, mental, social, and financial challenges for patients living with MM. The literature supports this significant burden MM has on patients (46-48). Multimorbidity has been shown to lead to decreased functional status, decreased mental well-being, increased risk of disability, and overall decreased quality of life (46-48).

Despite the significant challenges family physicians face in caring for patients living with MM, all participants felt family physicians were the best suited to provide the comprehensive, holistic care which best serves patients living with MM, especially those patients with complex MM with complicating factors such as psychosocial factors, frailty, and/or disability. This viewpoint is supported by the literature (49-50). Starfield et al. reported people with multiple morbidities have been found to function best under the care of a single provider rather than under the care of multiple specialists. (50).

2.5.3 Facilitators

Although caring for patients living with MM was reported to be overwhelming at times there are many facilitators, specific to FM, which have been crucial in allowing family physicians to provide this overwhelming care. First, and foremost, is the discipline of FM itself. Family Medicine has four fundamental principles: being a skilled clinician, being community-based, being a resource to a defined population, and having the patient-physician relationship central to the role of the family physician (51). These four foundational principles of FM are represented by many of the facilitators, expressed by

participants, which aid family physicians be the best providers of MM care in the health system. Specifically: 1) longitudinal relationships, which are a key component of the patient-physician relationship; 2) patient-centred care, which is a key component of the skilled clinician; as is 3) critical use of guidelines while taking into account the individual patient context; 4) judicious use of referrals to specialist colleagues when they need help managing a particular piece of the MM puzzle, and working alongside allied health professionals in their clinics (not having to refer patients out for these services), which are key components to being community-based and lastly 5) having family physicians as the quarterbacks of MM care is most certainly a key component of being a resource to a defined population.

The other main facilitator was time. Having longer appointment times for patients living with MM was felt to be very important. Most participants felt MM could not be managed well in the usual 10-15-minute appointment slot that is common in FM. Several participants book patients living with MM for longer appointments and felt a 25-30-minute appointment was most appropriate. Others felt they could see their patients living with MM in the usual 15-minute appointment, but they relied heavily on continuity of care, bringing patients back in more frequently in those cases. Whether it was booking longer appointments or bringing patients back more often, all participants felt longer time spent with patients living with MM was crucial in providing high-quality care. Other elements of time were also brought up that helped ease the burden of providing MM care, such as building enough charting time and document review time into the day. The importance of the element of time in caring for patients living with MM is supported in the literature (52-55).

2.5.4 Multimorbidity and Medical Education

The study findings suggest most FM preceptors received little if no formal training in MM care. They reported learning experientially, by trial and error, and exposure over time. This is substantiated in the literature (18). When discussing MM training in the current medical education curriculum, most participants did not know what was being taught currently. A few had experience with MM teaching in residency which was a

small group session called the ‘Multimorbidity Game’ where a patient developed MM over the course of the session by adding multiple conditions to a white board, reviewing the management of each condition, and then considering how a new added condition affected the existing condition(s) and the interplay between their management. Those who had experience with this session felt it was beneficial. This ‘Multimorbidity Game’ teaching tool was reported in the literature as a simple teaching strategy that was easy to employ (56). Most participants felt a need for more formalized training but were unsure how best it should be taught. Several thought case-based small group sessions were likely the way forward. In terms of timing, most felt that late clerkship or early in residency were the most appropriate times. Teaching MM management by early residency was said to be important given the challenges faced by residents in providing MM care currently.

Regarding challenges for resident physicians, FM preceptors felt MM care was quite complicated for residents as they lack the longitudinal relationship with patients which is crucial when caring for patients living with MM. They felt residents had strong book knowledge but found it challenging to apply it to the realities of life, especially in the context of MM. Learning more about applying patient-centred care early in their residency would be helpful. Despite the challenges and steep learning curve, FM preceptors felt residents were quite capable of caring for patients living with MM by the end of their training.

2.5.5 Future Directions

With respect to future directions in MM care, participants felt family physicians would continue to be the leaders in MM care but could be aided in a few ways including new funding models that recognize the increased workload of MM, improved communication amongst providers, and revamping the interdisciplinary team model of care (57).

Improved communication was felt to be a key component for the future of MM care. Specifically improving communication avenues with specialist colleagues, and hospitals through improved coordination of EMR systems with seamless sharing of lab tests, imaging, active medication list, and notes. This would reduce the miscommunication that

can be felt by both providers and patients, decrease health care spending on duplicate labs and imaging, and improve overall care. Participants were mixed in their opinions on whether this would be best achieved with significant improvements to EMR coordination or by moving towards a centralized EMR system.

As time is a critical facilitator in providing high-quality care to patients living with MM, participants felt an adjustment to the current billing structure would be appropriate to acknowledge the amount of work and time required. The addition of a complexity code or a separate billing code for MM was suggested, much like those in place already for diabetes.

2.6 Strengths, limitations, and implications

The purpose of this study was to explore the experiences of FM preceptors with respect to MM care in their practices and in medical education. It was expected that a greater understanding of the facilitators and challenges of caring for patients living with MM, in a FM teaching practice, would be achieved. This research was meant to add to the literature regarding experiences with MM care and education and encourage continued research within this field.

Future research in this area may include the patients' perspectives on MM care, including their level of satisfaction with their care in our current system and their perceptions of what could be done differently. The specialists' perspective on MM care, as well as perspectives from medical students and allied health professionals could also be beneficial.

The participants had mixed feeling about their abilities to teach MM. They felt uncertain about how to teach this in the future. A needs assessment, for professional development programs for FM teachers, may be worthwhile to increase their level of comfort in small and larger group teaching for MM.

Strengths: The strengths of this study arise from the fact that few studies have been published exploring MM care and education from the perspective of FM preceptors, and

certainly none in Canada, that we know of. This is a new and valuable contribution to this area of the literature.

Another strength of this study was its methodological rigor. During participant recruitment, attempts were made to ensure a variety of age, gender, practice locations, and FM experience. Team analysis enabled the principal investigator to discuss the coding (themes and subthemes) iteratively with co-investigators, leading to the emergence of a coherent interpretative thematic map.

Limitations: One limitation is that all participants came from the same Department of Family Medicine. This limitation was offset some by recruiting participants from different teaching sites namely urban, regional, and rural. There was maximum variation in terms of practice location among participants. Another limitation is that all participants worked in a capitation model of care and not fee-for-service. The findings may not be transferable, however the detailed experiences expressed by the participants provided new and valuable contributions to the literature.

2.7 Conclusion

This study provided a general understanding of MM care, and of MM training in medical education, as experienced by FM teachers. FM preceptors reported family physicians to be the physicians currently carrying the load when it comes to MM care in the healthcare system, while agreeing FM was also best suited to do so. The roles of specialists and allied health professionals were reported to be supportive ones.

The study findings suggest FM preceptors received little to no formal training in MM care, and neither do learners in the current medical education curriculum. Multimorbidity training continues to be informal and experiential in most cases. FM preceptors felt a need for more formalized training for learners, likely in the form of case-based small group learning, best delivered in the final year of medical school or very early in residency training.

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Chapter 3

3. Experiences of family medicine residents with multimorbidity care in family medicine and multimorbidity education in medical training: a qualitative study

3.1 Introduction

In the past decade, the topic of multimorbidity has garnered significant interest in the literature. While there have been many publications focusing on prevalence, epidemiology and definitions (1-13), there have been few studies on the integration of multimorbidity care and education into family medicine residency curriculums. As discussed in detail in chapter 1, there are only three publications with respect to multimorbidity and FM (or GP) medical education and all state that more research is needed (14-16). No studies have explored the experiences of family medicine residents in training in Canada. Understanding family medicine residents' perspectives and educational experiences with multimorbidity would be beneficial in designing curriculum and would be a valuable contribution to the literature.

An understanding of residents' experiences and educational needs to manage the patient with multimorbidity, is essential to future educational curriculum development. Family medicine residents will become the family physicians of tomorrow. The influences and experiences they encounter during their training will not only shape their medical careers but will also paint the collective picture of family medicine in Canada for the future. This study is both important and required given the increasing burden of multimorbidity in family practice.

3.2 Purpose of the study

The purpose of this study was to explore the experiences of family medicine residents with multimorbidity patient care and multimorbidity education in their family medicine residency training.

3.3 Methods

3.3.1 Context of Study

This study was conducted as part of the master's in clinical science program of the principal author, assisted by two co-investigators who were the author's thesis supervisors. The study was carried out at Western University. The family medicine residents were all from the same family medicine program at Western University. They were spread out throughout southwestern Ontario at various distributed teaching sites.

3.3.2 Methods

Qualitative descriptive methodology was used in this study to explore the experiences of family medicine residents with multimorbidity care and education. For full details on why qualitative description was chosen, please refer to Chapter 1. Options for collecting this information were surveys, focus groups or in-depth individual interviews. Surveys were thought to be an inadequate method of capturing the experiences of each resident as they would be limited in describing their experiences. Focus groups were felt to have several advantages, over in-depth individual interviews, as the method of choice for data collection. Focus groups allow for more participants, and therefore more varied experiences, to be included than with in-depth interviews. Focus groups also allow for discussion and deep exploration of these experiences, some of which may not have been previously considered by some participants (17). They were also felt to be most practical for scheduling purposes.

3.3.3 Participant Recruitment

In accordance with the ethics approval from the Western University Research Ethics Board, a recruitment email was sent to all family medicine residents in Western University's family medicine program. Residents who replied that they were interested were then screened to ensure they met the inclusion criteria. The inclusion criteria were that they were either a first- or second-year resident and had completed their core PGY1 family medicine rotation. Those who agreed to participate in the study and met inclusion criteria were then scheduled for a mutually convenient focus group date and time. Participants were reminded of the focus group date and time the week of the focus group date.

The principal investigator generated a list of 133 potential participants. Of those contacted via email recruitment, 29 agreed to participate in a focus group.

3.3.4 Data Collection

Prior to each focus group, letters of information were reviewed, and consent forms were signed by each participant. Participants also completed a demographic data sheet. Focus groups were comprised of six to eight participants. Each focus group was carried out between December 2015 and June 2016. Focus groups were held at either the Southwest Middlesex Health Centre training site, or the Department of Family Medicine building on campus at Western University. The focus groups included a maximum variation sample of residents from urban, regional, and rural training sites. A total of 26 residents participated in four focus groups (8 in FG1, 6 in FG2, 6 in FG3, and 6 in FG4). Most residents who agreed to participate came to their scheduled focus group. Three residents who agreed to participate were unable to do so at the last minute (1 in FG2, 1 in FG3, and 1 in FG4). The goal was to recruit between 6-8 participants for each focus group and this was achieved. The sampling was purposeful with criteria being applied for maximum variation between training sites (urban, regional and rural).

The focus groups lasted between 70-90 minutes with an average of 77 minutes. The focus groups were conducted using a semi-structured interview guide consisting of open-

ended questions (see appendix G). These questions were chosen to elicit the experiences of residents with multimorbidity care and education. All focus groups were moderated by the principal researcher. The focus groups were audiotaped and transcribed verbatim. Transcription was done by a professional transcription service. Identifiers were removed to ensure confidentiality of the participants.

3.3.5 Data Analysis

Each focus group transcription was read and reviewed independently by each of the three researchers to become familiar with the data and elicit themes. An iterative process was then followed in which the researchers met to compare identified themes and to connect ideas. The emergent themes were then organized into broad categories resulting in a coding template. The coding template was updated with each subsequent focus group in an iterative fashion and was stable upon saturation when no new themes were seen to emerge with further focus groups. Saturation of themes was achieved at the fourth focus group. Ensuing meetings of the researchers then served to refine analysis and interpret themes relating to the participants experiences of multimorbidity care in their training and education.

3.3.6 Trustworthiness and credibility

The trustworthiness and credibility of this study were assessed by several means. Accuracy and honesty of the data were ensured by verbatim transcription of the focus groups, independent review of the data by the researchers, and analysis of the data together as a team. Researcher bias was addressed. Two of the researchers (JC and TO) were family physicians who were full time preceptors and cared for patients with multimorbidity in their family practices, thus their bias regarding multimorbidity care and education had to be considered in all phases of the study. The third researcher (SMR), who did not have full time family medicine residents, helped counterbalance this bias.

Please refer to Chapter 1 for further discussion on the trustworthiness and credibility of the overall thesis.

3.3.7 Sample Demographics

Of the four focus groups, two (50%) were carried out at Southwest Middlesex Health Centre, and two (50%) were held at the Department of Family Medicine building on campus. The final sample consisted of a total of 26 participants, 11 of whom were in their first year and 15 were in their second year of their training program. 17 male residents and 9 female residents participated.

The age of the participants ranged from 26 to 42 with an average age of 29. The 26 participants in the study were divided among urban, regional, and rural teaching sites (5 participants, 19 participants, and 2 participants). There was an underrepresentation of urban residents in the focus groups and an overrepresentation of regional residents. The number of rural residents was representative of the distribution of residents in this training program.

There was maximum variation of participants according to age, gender, and training year and less so for training site location (urban, regional, rural).

3.3.8 Ethics approval

This study was approved by the Research Ethics Board, Western University, file# 106497 (see Appendix A). Participants did not receive any funding for their participation, but snacks and light refreshments were provided.

3.4 Findings

3.4.1 Overview

There were 5 major categories that emerged from analysis of the focus group data: 1) Definition of Multimorbidity; 2) Multimorbidity care in the current system; 3) Perceptions of caring for patients with multimorbidity; 4) Multimorbidity education in medical training; and 5) Innovations for the future.

3.4.2 Definition of Multimorbidity

Not surprisingly all residents had difficulty defining multimorbidity in a formal sense. There was significant variability in their responses. All had a general idea of the overarching concept of multimorbidity but found it difficult to define specifically. Overall, residents had difficulty defining multimorbidity and at times differentiating between multimorbidity and comorbidity or even chronic disease. *“I find that distinction sometimes difficult ... I think if my staff told me that someone was coming with comorbidities or multimorbidity I don't think I'd end up treating it any differently in my head”*. (FG2)

Many viewed multimorbidity as complex issues, or multiple problems etc. as one participant explained: *“Multimorbidity, I think is more than one cause for illness, more than one illness at a time”*. (FG2)

Other participants described multimorbidity as involving social situations and disabilities: *“I think in multimorbidity you count things that aren't just diseases, you might count social situation ... it doesn't have to be a disease to contribute”*. (FG3)

Some thought it was only chronic issues while others thought it was only acute issues. Some participants thought comorbidity applied when there was a problem and multimorbidity applied when they were all okay or stable.

Many came up with similar definitions they felt would be a good for defining multimorbidity, such as *“It's a multi-system problem where one system is always affecting the other so you're having a difficult time managing things because one thing you adjust will affect something else and then it makes things a lot more difficult”*. (FG2)

The information provided by participants suggests that they define multimorbidity as a combination of interacting acute and chronic conditions that impact each other and often complicates management: *“Complicated management, difficult management, conflicting management”*. (FG3)

Overall, the following quote best represents how participants felt multimorbidity differed

from comorbidity:

“When they say multimorbid, the person is relaying this information to you whether it’s just written in the chart or they are verbally handing over a patient, it sounds like they’re having difficulty managing the patient. When you say they have a few co-morbid conditions it sounds like they have a plan for it.” (FG2)

In terms of the prevalence of multimorbidity in practice and the frequency with which participants see multimorbidity, it was felt to be very frequently seen in family medicine resident practices. Participants reported seeing patients with multimorbidity more often than patients without multimorbidity. Most participants reported that on an average day, 60-80% of the patients they see have multimorbidity: *“It’s the majority ... I’d say majority is a good descriptive word to describe how many patients we see on a daily basis like that ... probably three quarters, 75%”*.(FG2) They felt the prevalence of multimorbidity in their practice populations was likely much lower but that the frequency of seeing them was high: *“They comprise likely 20% of your patients but you probably see them 80% of the time”*.(FG4)

3.4.3 Multimorbidity care in the current system

During the focus groups, participants described their perceptions regarding who is providing multimorbidity care for patients in the current system. The sub-themes discussed in this section are: 1) Family Physicians are the quarterbacks; 2) Role of specialist physicians; 3) the role of allied health professionals and 4) rural versus urban location.

Most participants in all focus groups felt that family physicians are managing the bulk of multimorbidity care. Family medicine is carrying the load when it comes to multimorbidity care. They felt specialists are not providing multimorbidity care. Team care helps, but they do not take on the burden of the care.

3.4.3.1 Family Physicians are the Quarterbacks

Participants felt that family physicians are and should be the physicians responsible for managing multimorbidity care. As one participant said: *“having done physician quarterbacking, it is the ideal”*.(FG1) All focus group participants expressed the same thoughts:

“Your family doctor should be the person [you] go to for all your medications and to have your full history because they are the person to know... That is how family medicine is kind of ideally supposed to be”.(FG1)

Given that residents are encouraged to see the patient as a whole, not as individual diseases or systems during their educational training, participants reiterated that they were well suited to care for these patients:

“From a family medicine perspective... we’re better prepared for it because we’re taught to think along the lines of the patient as a whole, with all the systems... when you see a nephrologist, they’re really only thinking of the kidney. When you see cardiology, they’re really only thinking of the heart. They’re not taking the patient as a complete person, which is what we’re actually trained to do ... to try to consolidate all of those things. And to think about how it plays into their life and their lifestyle and ... what kind of income they have... in terms of the cost of their medications... I definitely think we’re probably more well suited to do that”.(FG1)

The longitudinal generalist approach of family medicine was felt to be a big reason that family physicians excel in managing multimorbidity. *“I think we have a really good sense of kind of what’s going on with our patients ... The role of the GP is to see the patient for the whole, not just one issue affecting them”*. (FG1)

3.4.3.2 Role of Specialists

The role of specialists in managing multimorbidity was felt to be a supportive one. *“We rely on their help and their expertise on answering a lot of questions”*. (FG1)

Participants felt family physicians were the central provider of care for patients with multimorbidity but found specialists helpful to aid them with some of the details in integrating the overall care of the patient with multimorbidity.

“It can be good to liaise with [them], for those who are more sub-specialty focused on particular organic disease, so if we as the primary care clinician have a specific question or issue we want assistance with, then we take that back and try to integrate it into the overall care of the patient”. (FG2)

Many participants felt that when specialists took over the care of patients with multimorbidity, for whatever reason, it was detrimental to the patient’s overall well-being if the family physician was not in the circle of care and they did not like that:

“Sometimes I don’t like it when the specialist tries to manage comorbidity conditions. I sent a patient to a sleep clinic and then he sent her to CBT and psych for her anxiety, and she is like who should I listen to, and I’m like probably us. When specialists try to interfere in things that aren’t their specialist domain, I don’t really appreciate that”. (FG3)

A specific example given was with cancer treatment programs:

“Patients that disappear from us into the cancer treatment program, I often find when they get spit out the other end you have a big lapse in managing many of their multimorbidities, and ...for a number of reasons they end up with way too many appointments. They’re pretty sick but a lot lose touch with their GP during their treatment and I think it’s a real shame because we can do a lot...” (FG2)

Participants felt a shared care model works best:

“I like the shared care model ... you handle majority of the patients’ medical problems and then for very specific things like advanced CHF that isn’t improving on your regular treatment, you’re going to the internist to get optimized and then coming back”. (FG4)

3.4.3.3 Role of Allied Health Professionals

During the focus groups, participants described allied health professionals as instrumental in caring for patients with multimorbidity. A team approach was felt to be very helpful.

“We’re lucky enough to have Family Health Teams. So, popping over to see the pharmacist and asking them for clarification or asking them for a second opinion is nice; social worker for resources that you might not know are available ... the dietitian... they can go into much more detail with the patient. You can send them to the pharmacist ... who’ll go over a lot of their medications; how to administer properly ... social work for mental health because of the long wait times for specialists... having a good [team] nurse to triage and help with following up on tests”. (FG4)

3.4.3.4 Rural versus Urban practice location

Some participants felt family physicians working in more rural areas were more adept in caring for patients with multimorbidity:

“It largely depends on location too ... the further away from the tertiary care centre you get, the more you’re comfortable with handling [multimorbidity] or these people have to handle more so [they] become comfortable with it... Whereas if you’re closer to a tertiary care centre, I find a lot more things are probably managed outside of the family clinic and you just quarterback their care”. (FG4)

3.4.4 Perceptions of Multimorbidity Care in Family Medicine

During the focus groups, participants described their perceptions of the various facilitators and challenges to providing multimorbidity care in family medicine. The sub-themes discussed in this section are: 1) perceived facilitators; 2) perceived challenges; 3) the role of the academic environment

3.4.4.1 Perceived Facilitators

Participants identified many positive factors which facilitate caring for patients with multimorbidity in family medicine which include 1) appointment time, 2) continuity of care in family medicine, 3) frequency of appointments, 4) patient centred care/knowing your patients well, and 5) the patient-physician longitudinal relationship.

3.4.4.1.1 Time

Most participants spend 30 minutes or more with patients who have multimorbidity. Even if patients were booked every 15 minutes, most participants said that the patients' need would dictate the time spent with them and that it was very difficult to manage these patients in less than 30-minutes. One participant remarked:

“You would only be scratching the surface and not doing the patient actual justice by seeing her in 15 minutes ... if any one component of their multi-system disease is off, then it definitely takes longer than 15 minutes to sort through it”. (FG1)

Participants found the longer appointment times afforded to residents as beneficial in being able to care for their patients with multimorbidity.

“It takes a long time to sort through things especially as residents when you're not knowing the patient quite as well and you're having to sort back through all of the consults they've had, investigations they've had. I find it's more of the legwork of understanding the patient and what's happened to them previously that takes the longest”. (FG1)

Longer appointment times give them more flexibility as one participant commented:

“...I think it gives us a little bit more flexibility to deal with more issues at times. Saying... I think this is really important to discuss and if we have the time, we'll deal with these... usually patients are pretty receptive to that”. (FG1)

Participants highlighted the importance of having non-clinical time for charting and paperwork as crucial, especially in a resident practice when they do not have the benefit of knowing the patients with multimorbidity well over time:

“One of the biggest things is just having dedicated time outside of actual direct patient care to consolidate all the incoming paperwork that you have on patients. Any given patient, you have a number of consults back, imaging requests back and it takes time to sort through all of that to keep your EMR up to date so...when you go in to your EMR on that patient, it’s all there. I find that the biggest thing is just having some paperwork time to consolidate all the information on your patient.” (FG1)

3.4.4.1.2 Continuity of care in family medicine

Participants felt the longitudinal nature of family medicine was a facilitator in that family physicians have great continuity with their patients and can see them over time: *“In family practice our advantage is that we know the patient very well... their multimorbidities... you know their exacerbations, and you are following them pretty closely when needed over time”*. (FG2)

3.4.4.1.3 Frequency of appointments

Patients with multimorbidity are seen much more often than patients without multimorbidity. Frequent appointments were felt to be a good way to monitor each condition and their interplay and the effects of their treatments.

“My approach to multimorbidity was to deal with the one or two really pressing issues and then bring them back in a week or two and deal with it sequentially that way ... you can do that in family medicine”. (FG4)

3.4.4.1.4 Patient centred care/knowing your patients well

Patient centred care was perceived as a strong facilitator when caring for patients with multimorbidity. *“We’re trained in the philosophy of patient centred care ...we are good*

at establishing a good therapeutic relationship they may not have with their specialist”. (FG1)

Participants felt they needed *“to look at it from the patient perspective too ... evidence based is not always what the patient wants”.* (FG3)

They were also aware that social determinants of health affected how their patients’ multimorbidity could be treated

“Knowing the patient’s social/financial situation is a big one as well because if you have a lot of different co-morbidities, you have a lot of different medications... if they are low SES, they’re going to prioritize...that comes into providing good care for them... knowing their overall situation”. (FG4)

3.4.4.1.5 Patient-physician longitudinal relationship

Participants felt the longitudinal relationships family physicians develop with their patients over time is very beneficial when it comes to caring for patients with multimorbidity. *“...because you’ve known them for years or you’ve had three or four appointments with them. You kind of know a little bit more about them and what else is going on so you can counsel a bit differently.”* (FG4)

3.4.4.2 Perceived challenges

Participants identified several challenges in caring for patients with multimorbidity in family medicine including: 1) Burden of issues/many diagnoses; 2) Prioritization of problems; 3) role of guidelines/lack of evidence; 4) Multiple providers involved; 5) challenges for patients with multimorbidity; and 6) Interacting Conditions and treatments

3.4.4.2.1 Burden of issues/Many diagnoses

Participants described often feeling overwhelmed with the number of active issues and different diagnoses to manage at the same time for patients with multimorbidity. *“Just getting frustrated and overwhelmed with all the issues you have to deal with yourself”.* (FG4)

They highlighted the importance of staying organized in these situations: *“staying organized during the assessment and then you come up with this great plan and then needing to remember what you were going to order... what the follow-up was... just keeping it all straight in your head”*. (FG4)

They felt patient expectations sometimes contributed to this feeling of overwhelmingness - *“patients test our patience too. Sometimes, they come in expecting you to fix all their problems or address all their problems in one appointment ... yeah and then they don't want to come back sometimes too”*. (FG4)

3.4.4.2.2 Prioritization of problems

Participants expressed significant difficulty with prioritization of agendas in encounters with patients with multimorbidity. They felt that very often their plan for the appointment and the patient's plan for the appointment were very different and they struggled at times trying to align and manage those differences: *“Difficult to set priorities. You need to find common ground with your patient because their priorities are not necessarily your priorities.”* (FG2)

Participants felt it was very much a balancing act:

“...trying to balance what medically you think needs to be prioritized versus what the patient thinks ... patients come with multiple complaints ... going through all of them and ... sifting through what they think is a priority for them in terms of affecting their quality of life... and then [discussing] what you think is medically important”. (FG1)

Participants expressed that preventive care often gets missed for patients with multimorbidity:

“I forget to tell them to do a mammogram, that kind of stuff... They come in so often, that you never actually have them come in for their annual physical because you see them every month, so we miss a lot of the comprehensive care and screening for these patients.” (FG3)

3.4.4.2.3 Guidelines and lack of evidence base in multimorbidity care

Participants felt that guidelines in general are helpful tools, but their use becomes complicated when trying to apply them to patients with multimorbidity: *“The challenge in managing multimorbid patients is just lack of evidence or at least the difficulty with interpreting the evidence because those major research studies are focused on a single condition, multimorbidity is usually an exclusion criterion...”*. (FG2)

One participant summarized the role of guidelines in multimorbidity care well: *“I think guidelines are useful but they’re just guidelines, you still have to see the patient in variation”*. (FG3)

3.4.4.2.4 Multiple providers

Participants brought up several challenges in caring for patients with multimorbidity when it came to patients having multiple providers. One of the challenges with multiple providers is lack of communication:

“I think lately we’ve had a hard time with referral communication. A lot of... referrals to [specialists], you never hear anything back and weeks and weeks go by and you never hear anything, not even like your appointment’s twelve months from now, you just don’t hear things back.” (FG3)

Participants felt this affects the relationship with patients as well: *“I think it’s tough for the family to get their head around the fact that it’s not just us twiddling our thumbs”*. (FG3)

At other times, there is communication, but the details are lacking. *“People see multiple specialists and have frequent changes in their medications and then as a family physician, you’re trying to keep everything straight. I find that’s really difficult”*. (FG4)

Another challenge with multiple providers is understanding your role as an FP within their management team:

“That can be difficult at times... it can be tricky from the family medicine perspective where you may want to pull back on some things based on what the patient’s telling you. But other specialists may have a different approach or may have something else in mind. And a lot of times, there’s not great communication... So that makes it challenging.” (FG4)

Overall, coordinated care was felt to be challenging with multiple different medical providers.

“... thinking in terms of multimorbidity, it’s just trying to coordinate care between, not just people within a team or within a site, but it’s different specialists, and care teams that are looking after these patients as well and the poor communication sometimes exists, another barrier to good integrated care.” (FG2)

3.4.4.2.5 Patient challenges with multimorbidity

Participants identified several challenges for patients who have multimorbidity. These include: 1) “information overload” from seeing multiple providers and then receiving multiple opinions/different care plans, 2) “Illness fatigue”.

3.4.4.2.5.1 “Information Overload”

Participants felt multimorbidity must be very challenging for patients. They felt “*information overload*” (FG4) was a good term to describe this burden for patients as reflected the following quote:

“I think it’s tough for the patients, we have a hard time getting our heads around enough issues, I can’t imagine what it’s like from their perspective to know where everything’s at. I find that communication hard. I write it out as much as possible, but I feel like I’m listing things off at the end of the appointment. Okay, you need to do this, this, and this and we’ll call you about this and this and this and hear from so and so’s office, that sort of thing. I think it’s an overwhelming thing for them to take away.” (FG3)

Participants felt it must be hard for patients to recount all the information they must remember specific to their diseases to each new resident: “... *another challenge is, basically, information overload*”. (FG4)

An additional challenge that participants brought forward for patients is being part of a teaching practice where residents change over often, and patients must find it hard to recount all the information they must remember about their specific conditions to each new resident:

“Especially with [resident] turnover...there should be handover to the next residents ... especially for chronic patients with what’s going on because if a new person comes on the patient should not feel like a stranger every time. It’s very hard for them to narrate [their story] totally again and again to everyone.” (FG2)

3.4.4.2.5.2 “Illness Fatigue”

Participants felt patients living with MM must have to balance managing a lot of different issues and that physicians needed to be aware of this. As one group described: “... *I feel like we hassle people a lot. You have to see it from the patient’s perspective*”. (FG3)
Another focus group defined this burden faced by patients living with MM as “*illness fatigue*”. (FG2)

Most participants expressed this “illness fatigue” burden as being quite challenging for patients:

“Sometimes when you’re actually talking to somebody about all the appointments they have in the month; that can be sometimes multiple appointments every week. To do that alongside work and family, like it doesn’t always work out necessarily to do everything at once. So obviously, most people do prioritize their health but if they have to deal with dozens of hours of appointments, it’s challenging. Trying to find that balance of appointments they need to have...but also not fatiguing them [with many appointments] since it’s not the only thing in their life that’s important to them”. (FG1)

3.4.4.2.6 Interacting conditions and treatments

During the focus groups, participants spent significant time discussing the interactions of multiple different conditions and their treatments in multimorbidity. They felt this was a significant challenge in caring for patients with multimorbidity. The medication burden and consequently the drug-drug interactions can be overwhelming for both physicians and patients:

“One of the biggest challenges with the complex multimorbid patients is medications because they tend to be on quite a few; and they don’t usually bring their medications or list with them. You can’t always look at the chart reliably to see exactly what they’re on. So, figuring out what are you taking for your high blood pressure and things like that can be a little bit confusing. And often, patients aren’t overly aware of what medications they are taking too.” (FG1)

These interactions were felt to be more complex when multiple providers were involved: *“Then if you add to that the difficulty that frequently these patients see multiple different specialists. Medication changes are made but not necessarily reflected on our EMRs.”* (FG1)

3.4.4.3 The role of the Academic Environment

The academic teaching unit was seen as both a facilitator and a barrier to providing care to patients with multimorbidity in family medicine. Themes that arose in this category include: 1) Facilitatory role of the academic environment; 2) challenges in an academic environment; 3) Resident handover

3.4.4.3.1 Facilitatory role

Participants highlighted many benefits of caring for patients with multimorbidity in a family practice teaching centre including: being afforded longer appointment times as residents, working in an interdisciplinary clinic with helpful allied health professionals, having access to preceptors to review cases with, having other residents available for case

review and help, and having the ability to bring the patients back frequently if needed. The benefits of an academic teaching practice are reflected in the following quotes:

“... Our roster size for the resident clinics aren't huge so you only have so many patients that you're responsible for and you get to know them fairly quickly... I think we all do know our patients fairly well and play a central role in their care.” (FG1)

The additional time residents can spend with patients in the academic setting is beneficial: “*With our 30-minute appointments, I think it gives us a little bit more flexibility to deal with a little more, more issues at times.*” (FG1)

Academic family medicine teaching centres usually involve interdisciplinary teams which was felt to be facilitatory:

“With the team based environment... having the ability to walk to pharmacy; having the ability to walk to a different resident or staff member; having the ability to talk to your social worker, your therapist or dietician that could be down the hall; the respiratory therapist makes it a lot easier. But I think that's an ideal world again. Many of us aren't going to go out and practice in that... I try to avoid using those avenues because I know when I get out, I'm not going to be in that situation. So, you can get used to that currently but what's your real practice going to be like?” (FG1)

Training in a family medicine teaching centre with multiple FM preceptors and fellow residents with whom to discuss cases was felt to be very helpful.

“In the beginning, asking different perspectives on it from different staff that you've worked with, just picking people's brains, asking other residents, that comes into it a lot as well just because... the lack of research around handling management of different diseases.” (FG4)

3.4.4.3.2 Challenges in an academic environment

Participants discussed the lack of the longitudinal relationship as one challenge faced by trainees. While beneficial in practice, it is lacking in residency despite many sites using “mini practices” where they see the same patients in their PGY1 and PGY2 years.

Although that model provides continuity over two years, it is not the same as prolonged continuity as experienced by practicing physicians: “*you don’t have the long relationship to know which battles you have a chance of winning*”. (FG2)

Participants felt it required significant time and knowledge investment taking over the care for a patient with multimorbidity.

“It takes a long time to sort through things especially as residents when you’re not knowing the patients quite as well and you’re having to sort back through all of the consults they’ve had, investigations they’ve had. I find it’s more of the legwork of understanding the patient and what’s happened to them previously that takes the longest.” (FG1)

Another challenge that participants brought forward was that some felt they were shielded from seeing complex patients with multimorbidity and were not learning how to manage them effectively as a result. As one participant explained:

“The preceptor pretty much said ‘I’m shielding you from multimorbid patients. You’re going to see one or two issue patients. Try and get that stuff down and then as you progress in your training, we will release them upon you.’ So, the really big charts, I didn’t see.” (FG1)

3.4.4.3.3 Resident Handover

Participants spent a lot of time discussing handover and how it is lacking in residency training when it comes to caring for patients with multimorbidity, especially in the family medicine setting. This was brought up as a significant challenge as expressed in the following quote:

“...turn over between residents is fairly frequent for people who are pretty sick so

there's a pretty big learning curve, just [to learn] the patient themselves initially... that's a pretty big barrier for caring for them." (FG2)

Another participant described multiple layers to the lack of resident handover being challenging:

"we're in a resident clinic where the residents change over every four months. In addition, we're out of clinic... x number of times a week so that patient might be seeing a different service provider on your team. Going through everybody's notes, everybody writes fairly good notes, but you don't know the patients as well as somebody that follows them along regularly like when you're a staff and you have your own roster of patients and they're seeing you consistently. The lack of consistency for some of these complex patients makes them harder to manage because you never have a consistent train of thought as to where something's going with somebody... I think that's another issue which makes these patients even more complex to manage". (FG1)

Participants felt the lack of resident handover could be challenging for patients as well.

"About the handover between residents, depending on the documentation, depending how often they come, managing multimorbid patients when there's a different set of eyes, sometimes it can help but sometimes things are changing just enough that the patient gets confused by what the plan is..." (FG2)

Although participants felt handover was significantly lacking in their training, they felt in the future it did not have to be complex and could simply be a good handover note in the patient's chart. As one participant said: "*we really need to emphasize that the handover is ideal but sometimes it doesn't have to be formalized, it can just be in the chart*". (FG2) They also mentioned it was not required for every patient, just for the more complex patients especially those with active ongoing issues.

"At our site, it's relatively non-existent. If I had somebody who acutely something's happening then I'll put a note to summarize before I leave... or if I'm seeing someone who has a psyche issue where I've seen them six times I'm

putting a more cohesive note about what the plan is so that they don't have to read through it all because they won't. That's what I do, but even still it's probably on maybe five or six patients that I feel really need it, and then outside of that we don't have any formal handover." (FG2)

3.4.5 Multimorbidity Education in Medical Training

During the focus groups, participants identified their experiences of multimorbidity education in their training to date. The sub-themes that arose are: 1) How is it being taught/learned; 2) When is it being taught/learned; and 3) Future Directions

3.4.5.1 How is it being taught/learned

Participants stated that they received no formal education on multimorbidity care in their undergraduate medical education. They highlighted that they learned to care for patients with multimorbidity over time and by exposure. The concept became quite apparent once they started seeing patients. Most mentioned they started to develop the appreciation of the concept of multimorbidity in clerkship but didn't think about it in a formal way until residency:

"The concept became pretty apparent once you started seeing patients actually. I remember when I started clerkship, my first rotation was internal medicine and seeing a patient's med list for the first time, it was mind boggling to me that this person was on [all these medications] and still alive". (FG1)

Most described their learning around multimorbidity care as informal and through exposure. Many thought there was a lack of family doctors teaching in the early years curriculum and felt that likely led to their lack of education in this area:

"The way our training program is designed ... majority of our lectures were given by specialists. We have very few family doctors [teaching], aside from the social history and things like that. So multimorbidity was never touched upon." (FG4)

They all agreed that it is a hard topic to teach: *"it's a hard thing to really teach and you just got to deal with it. And you got to get out there and see patients and see how it's*

affecting them". (FG4) One group noted: *"I don't think there is any other way to teach it, you can't just teach this disaster case in every lecture, right?"* (FG3)

Most participants felt that it was a difficult topic to learn too early in training. *"I felt at times that it was really overwhelming because we were just learning how to take histories and at the same time we were thrown into the deep end."* (FG2)

3.4.5.2 When in training is it being taught/learned

While participants reported that there was no formal education on multimorbidity care in their undergraduate medical education, several participants highlighted it wasn't really taught until residency: *"Probably the start of residency, you never feel that the management falls to you before that."* (FG3)

The majority said they learned the most about multimorbidity on their family medicine rotations during residency: *"I didn't learn how to until family medicine. It's when you're actually responsible for the patient when all the specialist referrals come back to you, that's kind of when I learned."* (FG3)

Many participants had attended a small group session led by one of the faculty called the "Multimorbidity Game". Participants felt this "Multimorbidity Game" was a very good learning tool for teaching multimorbidity. The session was described as follows:

"a small group session at our centre on how to deal with multimorbidity. There were multiple diagnoses written on pieces of paper in a paper bag and they pull out a condition and then you'd say how you manage it and they would write it out on the white board and then pull another condition out... that's added onto the first one and how do you manage the second issue in light of the first issue, and they just kept going with pulling conditions out of the bag and managing them and I was like 'What?!'. This is torture. There's no way this person exists, has these many diseases... then you meet them in practice and realize they do exist." (FG1)

One participant said they first learned about multimorbidity on an internal medicine rotation in clerkship:

“I remember calling it the terrible triad. The person with congestive heart failure, COPD, and renal failure... you mess with one, you mess with the other. You try to put him on a beta blocker, it affects the breathing. You want to limit their fluids; oh, they go into AKI... you don’t learn that in your paper-based learning but then you go out in the real world and you see that, and you learn.” (FG1)

3.4.5.3 Future Directions in Medication Education

Participants felt there was a role for teaching multimorbidity care in both the undergraduate and postgraduate medical curriculums. They mentioned that clerkship or later would be the most appropriate time because - *“That’s a difficult thing to teach in your first years.”* (FG1)

They highlighted the family medicine clerkship rotation or the transition to residency series at the beginning of residency as optimal times to develop an approach to multimorbidity care: *“It’s good to introduce it in clerkship, considering like 40-50% of classes go into family, introducing it there but really getting into the nitty gritty in residency.”* (FG3)

Small group sessions over formal didactic lectures were favored by participants:

“In my mind, doing formal didactic teaching on this would be almost next to impossible... every multimorbid patient is unique, it’s the combination of diseases that they have that makes them complex and how each of those diseases are being managed... it’s really something that can only be learned in the clinical context... going through case after case.” (FG1)

Small group case-based sessions using a team approach was a popular response:

“... a team approach where you have the option of bouncing ideas off somebody and going through them because for a lot of it, there’s no real hard and true fast

rules about it. A lot of it is trial and error, when you're kind of balancing one system off the next." (FG1)

All focus groups felt family physicians were best to teach multimorbidity care to trainees: *"I feel like a lot of the academic burden of how to manage multimorbidity should be shouldered by family doctors."* (FG2)

The family medicine training sites were felt to be the best place to teach this in the future.

"The family medicine sites would be a perfect size...people participate enough and also you know each other well enough that everybody is willing to speak up, you remove that awkwardness for the introvert who will talk and be able to participate in a meaningful way whereas in a group of 20, that person would just sit back and not verbalize." (FG3)

3.4.6 Innovations and Suggestions for the Future

During the focus groups, participants identified some ideas for innovations to improve multimorbidity care. The sub-themes were: 1) Funding; 2) Centralized Electronic Medical Records (EMRs); 3) Interdisciplinary Teams

3.4.6.1 Funding

Participants felt that long term funding models that accounted for the time it takes to care for patients with multimorbidity was warranted:

"Funding models that would not pressure the family doc to be forced to see somebody every 15 minutes who really doesn't get true benefit from the 15-minute appointment as they would from having a half an hour or an hour...when they're that complex." (FG1)

Incentivizing physicians to provide multimorbidity care was felt to be important while also demonstrating that quality care is being provided to these patients. Time-based codes, complex care premiums, or a dedicated code for multimorbidity (like the diabetes management code) were brought forward as possible solutions for the future.

3.4.6.2 Centralized Electronic Medical Record (EMR)

Participants felt strongly about the importance of centralized or well-integrated EMRs.

“In an ideal world that would have made more sense when we moved to electronic medical records to have one consolidated EMR... you would have access to everything but you can't change things that have already happened. It'll never happen again. But that, ultimately, would have made caring for these patients probably the easiest. Right? Because then you'd have immediate access to whatever any one of their given physicians was doing; what their medications are; what their lab reports are. It'd make it easier for them... when they have exacerbations of whatever it is, and they end up in the ER. It'd make it easier on all fronts... because one of the hardest things is not knowing what happens at the hospital... And I find that's really tough, especially ER visits, because you don't usually hear from the ER physician.” (FG1)

Participants who had worked in other provinces with centralized EMRs highlighted the benefits: *“you can literally see everything that's been done within the province on one system... it's a lot better than having to track down on three different types of networks...what's been done.”* (FG4)

They felt although the upfront cost would be significant the long-term savings with a centralized EMR would be beneficial:

“I think centralized EMR is the biggest thing [for the future care for multimorbidity] because that improves a lot of different factors. Communication being the most important... it also helps with patients too because you're going to reduce redundant lab work and imaging, which patients eventually get frustrated with... patient buy-in would be improved, communication would be improved, and time management would be improved because you're not searching all these different networks for the information. You're not searching and entering medications again and wasting a lot of time.” (FG4)

Participants felt centralized EMR systems could mitigate most of the challenges in caring for patients with multimorbidity: *“I think every factor that we’ve talked about today would be benefitted by having that centralized EMR.”* (FG4)

3.4.6.3 Interdisciplinary teams

Reliable interdisciplinary teams were felt to be helpful. Easy access to FHTs (family health teams) and having more specialists coming out to family medicine clinics and working with the family physicians and allied health team was suggested. *“Having more interactions and more specialists coming into family health clinics...maybe that would facilitate and encourage people to communicate more... it would be nice to have these people on hand.”* (FG4)

3.5 Discussion

This study provided a general yet comprehensive understanding of multimorbidity care in family medicine teaching sites and of multimorbidity education in the medical curriculum as reflected by family medicine residents.

3.5.1 Definition and Prevalence

Interestingly, residents felt mostly comfortable managing patients with multimorbidity, yet most were unable to define it! Nevertheless, they had a good sense of the *concept* of multimorbidity. This is supported by the literature (1,18). Although van den Akker and colleagues proposed the current definition of multimorbidity, “the presence of several [two or more] co-occurring long-term conditions, being related or not, in a given patient” (19) back in 1998, not all researchers have agreed, and so at times multimorbidity has been defined differently throughout the literature (1). Some residents felt multimorbidity referred to only chronic diseases while others felt it included acute conditions as well. This is supported by the literature as several researchers, invested in multimorbidity research, feel acute conditions should be included when defining multimorbidity. Valderas and colleagues wrote that “acute conditions also contribute to comorbidity, and there is no reason for their exclusion” (20).

The above quote from Valderas and colleagues also highlights the often-incorrect interchangeable use of comorbidity and multimorbidity, as they referred to comorbidity when speaking to aspects of multimorbidity. Residents had difficulty differentiating multimorbidity and comorbidity. Some participants felt comorbidity applied when there was an acute problem and multimorbidity applied when their conditions were stable. Comorbidity, as defined in the literature, refers to an additional condition that is present and/or affects a separate condition which is the condition of interest (e.g. if caring for a patient with a brain tumor, their diabetes is a comorbidity) (1). The relevance of comorbidity is more important in the specialty medicine realm where they are dealing with index conditions and co-morbidities play a role in how they affect a particular index condition. Family physicians are rarely concerned with an index condition and are more focused on caring for the patient as a whole. As such, multimorbidity is a more appropriate term for family medicine. (1).

Many residents defined multimorbidity as multiple complex conditions with complicated management. Although multimorbidity can often be complex and difficult to manage, complexity and management challenges are outside the true definition of multimorbidity. The definition given by many residents would be more consistent with complex multimorbidity, with added challenges such as disability, or frailty, or social factors affecting their management. Complex multimorbidity is defined as multimorbidity which includes “at least five long-term conditions and the associated social and behavioral factors” (21). These factors are often present in patients with multimorbidity but are not a part of multimorbidity as defined in the literature (1). They add a level of difficulty to management plans, but they are distinct from multimorbidity operationally. It is concerning that many participants felt these pieces were an essential element included in the definition of multimorbidity as it highlights that family medicine residents were likely referring to these more complex patients with multimorbidity when they went on to reflect on the prevalence of multimorbidity in their family medicine teaching practices and the frequency with which they see multimorbidity. Consequently, they are likely underestimating the actual prevalence of and frequency of multimorbidity (by definition) in their family practice teaching units.

Despite potentially underestimating MM prevalence in their teaching practices, most family medicine residents spend most of their time caring for patients living with MM. Participants reported that on average 60-80% of patients seen each day on their family medicine rotations have multimorbidity. These findings are consistent with studies on prevalence rates and frequency of visits in North America in the literature where prevalence rates are estimated at 20-30% of the general population but increase to 55-98% in those over the age of 65 (3). Residents reported at least 20% of their patients had multimorbidity but felt they saw these patients up to 80% of the time.

All participants felt that family physicians are managing the bulk of multimorbidity in the current health care system. Family physicians are the quarterbacks, carrying the load of multimorbidity, and participants felt this would continue to be the case in the future. Although multiple health care providers are often involved in the care team, specialist physicians and allied health professionals were felt to provide a supportive role. Residents thought team care certainly helped, but the specialists and allied health professionals are not going to take on the burden of multimorbidity care.

3.5.2 Challenges

Although family physicians were felt to be the best providers for multimorbidity care, it is not without its challenges. Residents felt multimorbidity care is a major challenge for the physician, for the patient, and for the medical learner. Multimorbidity care is often complex and very challenging with multiple health care providers involved and high utilization of health care resources. These views are supported by the literature (22-25). Having multiple health care providers involved in a patient living with MM's care was seen as challenging, both for physicians (including resident physicians), and for the patient. They described concerns such as communication issues, uncoordinated EMR systems, information overload for patients, and specialty focused guidelines that are used without considering the patient's multimorbidity. Regarding communication challenges, residents felt the communication with specialists is often problematic and patchy at best. There was often a delay in receiving information from specialty colleagues, or a lack of information within the consult note received. When multiple providers were involved,

conflicting opinions were felt to be challenging for family medicine residents trying to coordinate the different opinions to care for the patient living with MM as a whole. Participants felt unclear what level of responsibility they should take with patients whose care they share with specialists. They felt a shared care model worked the best, where specialists were teammates providing additional supports and seeing the patients when the family physicians felt optimization was needed, yet the family physician remained the most responsible physician. Residents felt when specialists took over care for patients with multimorbidity, for whatever reason, it was detrimental to the patient's overall well-being if the family physician was no longer in the circle of care. This is supported by the literature (26).

FM residents relayed that caring for patients living with MM was often overwhelming. They felt overwhelmed by the significant number of co-existing conditions, each condition potentially affecting other conditions, and with the added complexity of pharmacologically treating all these conditions. Ultimately, these treatments often interact, or worse interfere, with each other. The resultant medication burden, or polypharmacy, in MM was felt to be one of the most significant challenges for residents. This concern about medication burden is supported by the literature which has shown MM to be one of the strongest predictors of polypharmacy (defined as five or more chronic medications) (27-31). Polypharmacy brings with it many risks to patients living with MM, which the family physician must be aware of, including increased drug-drug interactions, increased risk of adverse medication effects, and consequently poor patient compliance with a high medication load (27-31). Specialists were felt to add to this burden by following their specialty specific guidelines, thereby increasing polypharmacy perhaps unnecessarily. Regarding guidelines, family medicine residents felt published guidelines were helpful tools, but their application was a challenge with MM. Many felt they were truly 'just guidelines' and that one has to consider their application, or lack thereof, for each patient with MM. They were aware patients living with MM are often excluded from the trials that inform the guidelines and therefore following them to a tee might not be best for MM. This is supported by the literature (32-40).

Residents were quick to acknowledge MM as just as challenging for patients as it is for physicians. They recognize the cognitive, physical, and emotional burdens placed on patients by MM. MM was felt to have a huge impact on the patient, especially the “information overload” and the “illness fatigue” of MM. Residents coined the term “Information overload” for patients living with MM having to coordinate multiple conditions and treatments while seeing multiple providers who often differ in their approaches depending on their area of specialization leading to possible miscommunication and conflicting messages to the patient. Residents felt their role in the teaching clinics also contributed to this “information overload” as they were yet another ‘provider’ thrown into the mix for patients living with MM. Given they rotate two to three times per year through the teaching clinics that is potentially three different family medicine residents each year providing opinions to these patients in addition to their usual health care providers. Patients often must tell their stories repeatedly as residents change rotations, let alone when they see other providers such as specialists and allied health providers. There are significant physical, mental, social, and financial challenges for patients living with MM. One resident empathetically coined the term “illness fatigue” for the significant burden faced by patients living with MM given the numerous physical, mental, social, and financial challenges. They felt this burden must be exhausting thereby causing “illness fatigue”. The literature supports this profound burden MM has on patients (41-43). MM has been shown to lead to decreased functional status, decreased mental well-being, increased risk of disability, and overall decreased quality of life compared to patients without MM (41-43).

Despite the significant challenges faced by family physicians caring for patients living with MM, all FM residents felt family physicians were the best suited to provide the comprehensive, holistic care required for MM. This was especially true for those patients with complex MM or complicating factors such as psychosocial factors, frailty, and/or disability. This viewpoint is supported by the literature (44). Starfield et al. reported people with multiple morbidities have been found to function best under the care of a single provider rather than by multiple specialists (44).

3.5.3 Facilitators

Although caring for patients living with MM was reported to be overwhelming at times, many facilitators, specific to FM, are crucial in supporting family physicians (including residents) to provide care for this sometimes overwhelming population. First, and foremost, is the discipline of FM itself. FM has four fundamental principles: being a skilled clinician, being community-based, being a resource to a defined population, and having the patient-physician relationship central to the role of the family physician (45). These four FM foundational principles are represented by many of the facilitators that aid family physicians to be the best providers of MM care in the health care system. Specifically: 1) longitudinal relationships, which are a key component of the patient-physician relationship; 2) patient-centred care, which is a key component of the skilled clinician as is 3) critical use of guidelines while taking into account the individual patient context; 4) judicious use of referrals to specialist colleagues when help is needed to manage a particular piece of the MM puzzle, and working with allied health professionals, which are key components to being community-based and lastly 5) having family physicians as the quarterbacks of MM care is certainly a key component of being a resource to a defined population.

The longitudinal relationship in FM was reported as the most beneficial facilitator in caring for patients living with MM. Knowing patients well over long periods of time was felt to be crucial. Residents felt this would be extremely important once they were out in practice. But as residents, they felt it was a huge piece of the puzzle that was missing for them as will be discussed later in this chapter.

Patient-centred care was also seen as a huge facilitator in caring for patients living with MM, and this is supported in the literature (46). Residents felt they were well trained in the patient-centred clinical method.

Another main facilitator brought forward was time. Having enough time allocated to care for patients living with MM was felt to be very important. Most residents felt that MM could not be managed well in a 15-minute appointment common in FM. Most resident practices have appointments booked every 30 minutes. Several residents said patients

living with MM were booked for longer appointments ranging from 30 to 60 minutes. They felt at least 30-minute appointments were most appropriate. They relied heavily on continuity of care and would bring patients living with MM back more frequently given their complexity. Whether booking longer appointments or bringing patients back more often, all participants felt longer time spent with patients living with MM was crucial in providing high-quality care. The important element of time is supported in the literature (47-50).

The support of allied health professionals was also felt to be crucial from the resident perspective. Residents felt allied health professionals were instrumental in caring for patients living with MM. A team approach was felt to be very helpful, especially for residents caring for patients living with MM.

3.5.4 The Academic Environment

As FM residents caring for patients living with MM, participants felt the academic environment was both a facilitator and a barrier to providing care. The benefits of an academic teaching centre included longer appointment times as residents, working in an interdisciplinary clinic with allied health professionals, having FM preceptors and FM resident colleagues on hand to review cases, and having the ability to easily bring patients back frequently if needed. However, residents also brought forward several challenges when practicing in an academic environment. First and foremost, the lack of longitudinal relationship (as trainees) was felt to be a detriment to providing quality MM care. Although reasonable continuity of care was achieved, albeit divided over a two-year training period, residents felt it could not compare to the longitudinal relationship developed in practice. They found significant difficulty with prioritization of agendas in patient encounters. They felt it was difficult to set priorities and find common ground with patients, when the resident and the patient had different agendas, without the longitudinal relationship to know which “battles have a chance of winning”. Although they thought prioritizing agendas was likely still going to be an issue in practice, they felt it was more difficult as a resident without the long patient-physician relationship.

Given the lack of longitudinal relationship and consequent lack of knowing patients well, resident handover (from rotation to rotation) was felt to be important. Yet, resident handover on FM rotations was almost non-existent in their training. There is no formal handover of patients living with MM from rotation to rotation. This was felt to be a significant challenge for residents in providing high-quality care especially for those with complex MM. For the future, they felt incorporating formal handover for complex patients living with MM was important for FM rotations.

3.5.5 Multimorbidity and Medical Education

This study suggests most residents received little if no formal education in MM during their training to date. This is supported by the paucity of literature regarding MM education in training (14, 15, 16, 51, 52). Learning about MM care is experiential and mostly does not happen until residency, usually on FM rotations.

Exposure of FM residents to patients living with MM varies greatly depending on the FM clinic setting they train in. Some residents reported being shielded from seeing patients living with MM. Some residents were exposed to organized formal interdisciplinary rounds for patients living with MM, but most were not. Those that were, found them valuable.

A few residents experienced some formal small group MM teaching at their FM centres. The sessions were called the ‘Multimorbidity Game’ where a patient developed MM over the course of the session by adding multiple conditions to a white board, reviewing the management of each condition, and then considering how a new added condition affected the existing condition(s) and the interplay between their managements. Those who had experience with this session felt it was beneficial. This ‘Multimorbidity Game’ teaching tool was reported in the literature as a simple teaching strategy that was easy to employ (53).

Most residents felt a need for more formalized training but were unsure how best that should be taught. Several thought case-based small group sessions were likely the way forward. In terms of timing, most felt that late clerkship or early on in residency were the

most appropriate times. Teaching MM management by early residency was felt to be important given the challenges faced by residents in providing MM care during their rotations currently.

FM preceptors were felt to be the most appropriate academic clinicians to teach MM care. The FM training sites were felt to be the ideal place to teach MM care going forward. Residents felt the FM centres would be excellent locations to run small group case-based sessions where residents (and medical students) can participate and engage in a meaningful way as there are not too many learners on site at any given time.

3.5.6 Future Directions

With respect to future directions in MM care, residents felt family physicians would continue to be the leaders in MM care but could be aided with new funding models that recognize the increased workload of MM, improved communication amongst health care providers, and revamping the interdisciplinary team model of care.

Residents felt long term funding changes that account for the time required to care for patients living with MM was warranted. As time is a critical facilitator in providing good MM care, participants felt an adjustment to the current provincial billing structure would be appropriate to acknowledge the amount of work and time required. Incentivizing physicians to provide MM care was felt to be important while demonstrating quality care is being provided. The addition of a complexity code or a separate billing code for MM was suggested, much like those in place already for diabetes.

A fully integrated EMR (hospitals, clinics, pharmacies) would greatly enhance MM care. Residents who had been exposed to centralized EMR systems, in other geographic locations, felt this was very beneficial for patient care. It would improve communication amongst providers and hospitals with seamless sharing of lab tests, imaging, active medication list, and notes. This would reduce the miscommunication that can be felt by both providers and patients, decrease health care spending on duplicate labs and imaging, and improve overall care.

Lastly, interdisciplinary teams are felt to be helpful, and their creation as a care model was felt to be a priority. Easy access to Family Health Teams (FHT) and having more specialists coming out to FM clinics, working with the family physicians and allied health teams was suggested.

3.6 Strengths, limitations, and implications

The purpose of this qualitative study was to explore the experiences of family medicine residents with multimorbidity patient care and multimorbidity education in their family medicine residency training . It was expected that a greater understanding of the facilitators and challenges of caring for patients living with MM in a teaching practice would be achieved. This research was meant to add to the literature regarding FM trainees' experiences with MM care and education and to encourage continued research within this field.

Future research in this area may include the patients' perspectives on MM care, including their level of satisfaction with their care in our current educational training system and their perceptions of what could be done differently. The specialist trainee's perspective on MM care, as well as perspectives from medical students and allied health professionals could also be beneficial.

Strengths: The strengths of this study arise from the fact that no studies have been published exploring MM care and education from the perspective of FM medicine residents in Canada, as far as we know. This is a new and valuable contribution to this area of the literature.

Another strength of this study was its methodological rigor. During participant recruitment, attempts were made to ensure a variety of age, gender, training locations, and training level. Team analysis enabled the principal investigator to discuss the coding (themes and subthemes) iteratively with co-investigators, leading to the emergence of a coherent interpretative thematic map.

Limitations: One limitation is that all participants came from the same FM residency program. This limitation was offset somewhat by recruiting participants from different teaching sites namely urban, regional, and rural. The findings may not be transferable as they may reflect only the experiences of FM residents who chose to participate in the focus groups and may not be representative of the entire FM resident cohort. Nevertheless, the detailed experiences provided by the participants provided new and valuable contributions to the literature.

3.7 Conclusions

This study provided a general understanding of MM care, and of MM training in medical education, as experienced by FM residents. FM carries the load when it comes to MM care in the healthcare system. Family physicians are best suited to do so. The roles of specialists and allied health professionals were reported to be supportive ones. Although they were unable to properly define MM, FM residents are mostly comfortable providing MM care during their residency training, although they do experience some challenges in doing so. Handover between resident rotations is felt to be instrumental for good MM care, especially for complex patients. Yet it is lacking in FM rotations in residency.

FM residents receive little to no formal training in MM care in the current medical education curriculum. MM training continues to be informal and experiential in most cases. There is a need for more formalized training for learners, likely in the form of case-based small group learning, best delivered in the final year of medical school or very early in residency training.

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Chapter 4

4 General Discussion and Conclusions

4.1 Introduction

Multimorbidity is a challenge for the health care system, especially for family physicians. Over the past decade research has shown multimorbidity to be very prevalent in primary care (1-5). Studies have estimated the prevalence of multimorbidity to be between 16-95% of primary care patients in different age groups (1-5). As the population ages, this prevalence will only increase, and the burden of care will fall mostly on primary care. Despite this, there is little formal focus on the training of family medicine residents in the care of patients with multimorbidity. This thesis attempted to explore the experiences of FM teachers and FM residents in caring for patients with multimorbidity and multimorbidity training in the FM postgraduate setting. This was achieved by designing two complementary qualitative studies.

4.2 Methodology

Qualitative descriptive methodology was employed for this thesis. In-depth individual interviews of FM teachers and focus groups of FM residents were the chosen data collection techniques. These two studies were run concurrently.

4.3 Integrated summary of findings

The findings of both studies were compared, and the following integrated themes emerged: 1) Family Medicine as the Leaders in MM care; 2) The challenge of the Academic Environment in providing MM care; and 3) Family Medicine should be the leaders in MM education

4.3.1 Family Medicine as the Leaders in MM care

In both studies, participants agreed that FM is the discipline providing MM care for patients. Family physicians were felt to be the physicians in the health care system who

were carrying the workload of MM care more so than any other specialty. Family physicians were also felt to be best suited to carry the load of MM care going forward given the wide array of facilitators to MM care in family medicine. Family Medicine as a discipline was felt to be a strong facilitator to MM care. As a discipline, family medicine encompasses continuity with longitudinal relationships, is based on a generalist approach, embodies patient-centred care, and can include team-based care approaches with the involvement of allied health professionals working alongside family physicians in models such as Family Health Teams (FHTs). An increasing number of family physicians work in a capitation funding model which can allow them to book longer appointments for patients living with MM, to bring patients back in more frequently if required, and to incorporate charting or paperwork time into one's workday.

Both FM preceptors and FM residents felt that collaborative care is needed in managing MM, with FM as the backbone of the coordinated care team. Both groups of participants felt specialist colleagues were not providing the bulk of MM care in the current health care system but did feel they play a crucial supportive role aiding family physicians' care for patients with multimorbidity. Similarly, allied health professionals play a supportive role but were not felt to be appropriate to carry the workload of MM care. Resident physicians valued the roles of both specialists and allied health professionals more so than their FM preceptors.

Family medicine preceptors and residents embraced the "gate keeper" role of caring for their patients and protecting them from unnecessary interventions or duplication of care, but this is not without its challenges. Several challenges were highlighted by both studies' participants which can add difficulty when caring for patients living with MM. Electronic medical records (EMR) were felt to be both helpful and a hinderance depending on the situation. Both studies highlighted the need for a centralized or at least a coordination of current EMR systems to improve communication between providers and thereby decrease unnecessary testing and decrease medication errors and polypharmacy. Evidence-based guidelines were felt to be very challenging to incorporate when caring for patients living with MM and led to increased polypharmacy. Both preceptors and residents found the burden of polypharmacy to be a significant challenge

in caring for patients living with MM. As such, participants felt guidelines needed to be treated as such, as a “guide” that needs to be customized to individual patients depending on their other morbidities and their care priorities.

Although all participants in both studies felt FM was the medical discipline providing the bulk of MM care in the current health care system, they also felt that FM as a discipline was not explaining this well to either medical educational institutions, or government organizations. All participants felt it was crucial that both medical educational institutions and health care government decision makers be educated on the breadth of care provided by family medicine, especially regarding multimorbidity care. It is important that policy and decision makers realize family medicine is so much more than caring for coughs or colds and doing well-baby visits.

In both studies, participants felt improved funding for MM care was warranted to aid FM to be the leaders in MM care in the future. Updating the funding models to include complexity codes, or specific billing codes for patients living with MM that are time-based and account for the added workload required to care for patients living with MM were felt to be crucial. Re-development of electronic medical records (EMR) was felt to be crucial as well. Participants from both studies felt that either a centralized EMR system or significant improvement to the communication capabilities between EMR systems would be one of the most valuable areas of improvement moving forward. This would help improve the communication between physicians and allied health professionals, decrease duplication of investigations and make medication reviews and patient follow-up appointments more efficient and effective. Additional changes to funding models for specialist physicians in terms of being able to be compensated for secure email communication and/or telephone advice for patients when family physicians need some support but do not require the patient to be seen in person by the specialist physician.

Overall, FM is well suited to be the leaders in MM care. Family physicians know their patients well and care for them over long periods of time. Primary care is cost effective and close to home for patients. Collaborative care with specialist and allied health

support is valued for difficult cases provided that access to their advice is accessible in a timely fashion. Coordination of medical records and improved funding models would be beneficial to ensuring success in the future.

4.3.2 The challenge of the academic environment in MM care

Both groups of participants felt that the FM teaching clinics were the best educational sites in which to learn MM care. The benefits of an academic teaching centre included longer appointment times as residents, working in an interdisciplinary clinic, having FM preceptors and FM resident colleagues on hand to review cases, and having the ability to bring patients back frequently if warranted. However, there are some inherent challenges for FM residents in caring for patients living with MM in the academic teaching centres that are unique as trainees. The lack of a longitudinal relationship and the lack of continuity of care (as a trainee) were felt to be detrimental to providing good MM care as FM residents. There is also a significant lack of resident handover (from rotation to rotation) which was felt to be a significant challenge especially given the lack of longitudinal relationship that is so important in caring for patients living with MM. Despite these challenges, both groups felt quite positively that FM residents are very capable of managing patients living with MM by the end of their FM residency training.

For the future, development and implementation of resident handover systems for complex patients living with MM in the FM teaching clinics is crucial. The addition of a “Multimorbidity Patient” flag to the EMR charts was suggested for the future so resident physicians are aware to review the chart in more detail prior to the patient’s appointment. Ensuring that all FM residents are exposed to patients living with MM during their FM rotations so they can gain the skills in managing MM during their training. Although most residents felt they were given extra time to see some patients living with MM, allowing longer appointment times for patients flagged as “Multimorbidity” would be beneficial to their learning and development of management skills.

4.3.3 Family Medicine should be the leaders in MM education

Combined analysis of the studies revealed that MM education in both the past and the present is informal in nature. All participants identified MM education as experiential learning. MM is not being taught in the early years of the medical curriculum and participants from both studies felt this was likely because the early undergraduate medical curriculum is largely controlled by specialist physicians. It was felt FM needed a stronger voice at the planning table regarding the undergraduate medical curriculum.

The optimal learning environment for MM training was identified as the FM teaching clinic by participants in both studies. Family physicians were identified as the optimal educators for MM care. Participants in both studies felt that family physicians should be the drivers of innovation for MM education in the future. Family physicians were felt to be the specialists of MM care and therefore should be providing the education and curriculum development in this area. Family physicians were felt to be well positioned and best suited to develop this curriculum.

Many of the facilitators to MM care discussed in both studies are teachable such as patient-centred care. The practical facilitators could be taught with modeling in practice such as increased length of appointment for complex MM, building paperwork time into the schedule, and using templates for efficiency. Participants from both studies identified the need for a solid education to support MM care in the future such as education about the health care system, billing systems and funding models, setting up appointment schedules, and team-based care in addition to the clinical management skills required for MM care.

Both FM teachers and FM residents identified small group teaching sessions using case-based learning as optimal teaching techniques for MM care. Specific examples included multimorbidity rounds and the “Multimorbidity Game”. All participants felt that late clerkship and early residency were the most appropriate times in training to introduce MM education into the curriculum. The “Multimorbidity Game” was mentioned as a low fidelity teaching model that could be easily instituted in all FM teaching centres easily.

4.4 Study Limitations and Future research

The findings of this thesis may not be transferable to all family physicians or to all FM residents. All participants in both studies came from the same FM residency training program at one university. This limitation was offset by recruiting preceptors and residents from different teaching sites namely urban, regional, and rural. The findings may not be transferable as they may reflect only the experiences of FM teachers and FM residents who chose to participate in the studies and may not be representative of all FM physicians and residents. Nevertheless, the detailed experiences provided by the participants provided new and valuable contributions to the literature.

Future research in this area may include the patients' perspectives on MM care, including their level of satisfaction with their care in our current system and their perceptions of what could be done differently (especially for patients enrolled in academic practices). The specialist and specialty residents' perspectives on MM care, as well as perspectives from medical students and allied health professionals could also be beneficial.

4.5 Conclusions

Together both studies provided a general understanding of MM care and of MM education in medical training from the perspectives of FM teachers and resident trainees. Family Medicine carries the load when it comes to MM care in the healthcare system. Family physicians are best suited to do so. The roles of specialists and allied health professionals were reported to be supportive ones. Both facilitators and challenges in caring for patients living with MM were presented along with suggestions for governmental changes to funding models and EMR system coordination to alleviate some of these challenges in the future. Both FM teachers and residents experience similar challenges in managing patients living with MM although FM residents experience some additional challenges such as lack of longitudinal relationships and continuity of care which are instrumental in managing patients living with MM. Handover between resident physicians in the FM clinic is lacking and is felt to be a valuable additional tool for the future.

Overall, FM teachers and residents received little to no formal training in MM care in the past or current medical education curriculum. Education regarding MM care continues to be informal and experiential in most cases. There is a need for more formalized training for learners, likely in the form of case-based small group learning, best delivered in the final year of medical school or very early in residency training.

There continues to be a paucity of research in the areas of multimorbidity care and medical education and further research in this area is worthwhile.

4.6 References

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Appendix A: REB Study Approval



Research Ethics

Western University Health Sciences Research Ethics Board HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Julie Cepeland
Department & Institution: Schulich School of Medicine and Dentistry/Family Medicine, Western University

Review Type: Expedited
HSREB File Number: 106497
Study Title: The experiences of family medicine preceptors and residents with multimorbidity management and education - a qualitative study
Sponsor:

HSREB Initial Approval Date: May 25, 2015
HSREB Expiry Date: May 29, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Letter of Information & Consent	Revised letter of information for preceptors - clean	2015/05/20
Letter of Information & Consent	Revised letter of information for preceptors - clean	2015/05/20
Recruitment Items	Revised preceptor email recruitment with version date	2015/05/20
Recruitment Items	Revised resident email recruitment with version date	2015/05/20
Instruments	Appendix F - Demographic information for focus group participants (Received March 9/15)	
Instruments	Appendix E - Demographic information for one-on-one interview participants (received March 9/15)	
Instruments	Appendix D - Focus Group discussion guide for Family Medicine Resident focus groups (received March 9/15)	
Instruments	Appendix C - Interview guide for One-on-One Family Medicine Preceptors' interviews (Received March 9/15)	
Recruitment Items	Recruitment email for preceptor participants	2015/05/20
Recruitment Items	Recruitment email for resident participants	2015/05/20
Western University Protocol		2015/05/04

The Western University Health Sciences Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guidelines for Good Clinical Practice (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000960.


Ethics Officer, on behalf of Dr. Mareta Schmeschitzky, HSREB Vice Chair

Ethics Officer to Contact for Further Information

			
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Western University, Research, 
London, ON, Canada 

Appendix B: Recruitment Email – Study 1 Interviews

Hello,

We would like to invite you to participate in an interview about your experiences with multimorbidity management in your practice and educating family medicine residents about multimorbidity. The interview is part of a research study entitled “The experiences of family medicine preceptors and residents with multimorbidity management and education – a qualitative study”. You are being invited to participate as a current Family Medicine Postgraduate Preceptor in the Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University. We are inviting you to share your experiences with managing multimorbidity in your practice as well as your perceptions on multimorbidity education during family medicine training.

As you are likely aware, multimorbidity is prevalent and causes a significant workload in family medicine yet there is limited research on medical education and multimorbidity or its management. As the population ages, its prevalence will only increase, and the burden of care will fall mostly on family physicians. Graduates of family medicine postgraduate training programs will need to acquire the knowledge and skills to manage multimorbidity in their future practice.

This research study is being conducted by Dr. Julie Copeland as her thesis for the Masters of Clinical Science in Family Medicine (MClSc FM) Program at Western University. Drs. William (Ted) Osmun and Sonja Reichert are co-investigators on the study. Dr. Copeland is an Associate Professor in the Department of Family Medicine, Schulich School of Medicine & Dentistry, Western University and is currently enrolled in the MClSc FM program. Dr. Osmun is an Associate Professor and Dr. Reichert is an Assistant Professor, both in the Department of Family Medicine, Schulich School of Medicine & Dentistry, Western University.

If you agree, you will participate in an individual interview conducted by Dr. Julie Copeland. The interview will last for one hour and will be conducted at your location of choice. The interview will be audio-taped and transcribed anonymously. Your information relating to the study will be kept confidential.

If you are interested in participating in this study, or for more information, please contact us by email [REDACTED]

Thank you for your time.

Appendix C: Recruitment Email – Study 2 Focus Groups

Hello,

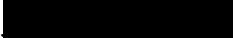
We would like to invite you to participate in a focus group discussion about your experiences with multimorbidity management and multimorbidity education during your training. The focus group discussions are part of a research study entitled “The experiences of family medicine preceptors and residents with multimorbidity management and education – a qualitative study”. You are being invited to participate as a current Family Medicine Resident training in the Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University. We are inviting you to share your experiences with managing multimorbidity during your training as well as your education about multimorbidity during your medical training to date.

As you have likely encountered during your training, multimorbidity is prevalent and causes a significant workload in family medicine yet there is limited research on medical education and multimorbidity or its management. As the population ages, its prevalence will only increase, and the burden of care will fall mostly on family physicians. Graduates of family medicine postgraduate training programs will need to acquire the knowledge and skills to manage multimorbidity in their future practice.

This research study is being conducted by Dr. Julie Copeland as her thesis for the Masters of Clinical Science in Family Medicine (MClSc FM) Program at Western University. Drs. William (Ted) Osmun and Sonja Reichert are co-investigators on the study. Dr. Copeland is an Associate Professor in the Department of Family Medicine, Schulich School of Medicine & Dentistry, Western University and is currently enrolled in the MClSc FM program. Dr. Osmun is an Associate Professor and Dr. Reichert is an Assistant Professor, both in the Department of Family Medicine, Schulich School of Medicine & Dentistry, Western University.

If you agree, you will participate in a focused discussion with other family medicine residents from your program. The focus group will last for one hour. Snacks and

refreshments will be served. The discussion will be audio-taped and transcribed anonymously. Your information relating to the study will be kept confidential.

If you are interested in participating in this study, or for more information, please contact us by email – 

Thank you for your time.

Appendix D: Letter of Information – Study 1 Interviews

Letter of Information for Qualitative Study on Family Medicine Preceptors' experiences and perceptions of multimorbidity management and multimorbidity education

Title of Research Study

The Experiences of Family Medicine Preceptors and Residents with Multimorbidity Management and Education

Principal Investigator: *Dr. Julie Copeland (Masters' student)*

Co-Investigators: *Dr. William Osmun and Dr. Sonja Reichert*

Invitation

We invite you to participate in this study. You are being invited to participate as you are a current Family Medicine preceptor involved in resident training at the Schulich School of Medicine and Dentistry at Western University.

Purpose

The purpose of this study is to explore your experiences and perceptions of multimorbidity management in your practice and educating family medicine residents about multimorbidity.

Background

Multimorbidity is prevalent and causes a significant workload in family medicine. There is limited research on medical education in multimorbidity. As the population ages, its prevalence will only increase, and the burden of care will fall mostly on family physicians. But studies show family physicians feel unprepared to care for patients with multimorbidity. Graduates of family medicine postgraduate training programs will need to acquire the knowledge and skills to manage multimorbidity in their future practice. This study explores the experiences and perceptions of family preceptors at Western

University with respect to managing multimorbidity in practice and the education provided about multimorbidity to family medicine residents in your training program.

Procedures

Participation in this study will require one hour of your time during which you will be asked to describe your experiences. This will involve being interviewed (by the principal investigator) about your experiences with multimorbidity care in your practice as well as educating family medicine residents about multimorbidity care. The semi-structured interview will be audiotaped, transcribed verbatim and analyzed. They will take place at your family medicine centre or another location that is convenient for you.

Possible Benefits and Risks

The possible benefits to you for participating in this study are that you may find new ways in which to improve your current management of patients with multimorbidity and/or the education of family medicine residents about multimorbidity. Society in general and your medical colleagues would also benefit from the study because the results will describe multimorbidity education and management ideas, thus reporting options for further improvement in care and/or training that would not have been known otherwise. There may be the potential to recall certain adverse events that you have experienced with managing patients with multimorbidity. If, because of these or any other reason, you feel you cannot continue with the focus group, you may leave the focus group without question.

Confidentiality

Participants' information relating to the study will be kept confidential and all study data will be kept for 5 years. Any research data collected about you during the study will not identify you by name. All study data will be stored in password protected files on an encrypted USB memory stick. Audio file will be destroyed once they have been transcribed and verified. Any publication resulting from this study will not identify you.

Voluntary Participation

You are free to withdraw from this research study at any time and for any reason without consequence. You also have the right to refuse to answer any of the questions. The information you provide will not be released and your identity will be kept protected to the best of our ability.

Contact name, address, and telephone numbers

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics at [REDACTED], email: [REDACTED]. If you have questions about the study itself, you may contact Dr. Julie Copeland at [REDACTED] or [REDACTED].

Thank you for your interest in this study.

CONSENT FORM

I have read and understood the letter of information about the research study “The experiences of family medicine preceptors and residents with multimorbidity management and education – a qualitative study”. I understand the conditions, risks and benefits of my participation. I have had all my questions answered about this study. I understand that I do not waive any legal rights by signing this consent form.

I agree to participate in an individual interview for this study

I agree to respect the confidentiality of the information shared during the interview

Participant signature : _____

Participant name : _____ Date : _____

Researcher signature: _____

Researcher name: _____ Date: _____

Appendix E: Letter of Information – Study 2 Focus Groups

Letter of Information for Qualitative Study on Family Medicine Residents’ experiences and perceptions of multimorbidity management and multimorbidity education

Title of Research Study

The Experiences of Family Medicine Preceptors and Residents with Multimorbidity Management and Education

Principal Investigator: *Dr. Julie Copeland (Masters’ student)*

Co-Investigators: *Dr. William Osmun and Dr. Sonja Reichert*

Invitation

We invite you to participate in this study. You are being invited to participate as you are a current Family Medicine resident training at the Schulich School of Medicine and Dentistry at Western University.

Purpose

The purpose of this study is to explore your experiences and perceptions of multimorbidity management and education during your family medicine residency training.

Background

Multimorbidity is prevalent and causes a significant workload in family medicine yet there is limited research on medical education surrounding its management. As the population ages, its prevalence will only increase, and the burden of care will fall mostly on family physicians. But studies show family physicians are unprepared to care for patients with multimorbidity. Graduates of family medicine postgraduate training programs will need to acquire the knowledge and skills to manage multimorbidity in their future practice. This study explores the experiences and perceptions of family medicine

residents at Western University in managing multimorbidity and the education provided about multimorbidity.

Procedures

Participation in this study will require one hour of your time during which you will be asked to describe your experiences. This will involve a focus group format and the principal investigator will be present to guide the discussion. The focus groups will be audiotaped, transcribed verbatim and analyzed. They will take place at your family medicine training site or at the Western Centre for Public Health and Family Medicine. Your participation and responses will have no impact on your residency training.

Possible Benefits and Risks

You will have the opportunity to reflect on your training in multimorbidity management with your peers in the focus group. Society in general and your medical colleagues would also benefit from the study because the results will describe multimorbidity education and management ideas, thus reporting options for further improvement in training that would not have been known otherwise. There may be the potential to recall certain adverse events that you have experienced with managing patients with multimorbidity. If, because of these or any other reason, you feel you cannot continue with the focus group, you may leave the focus group without question.

Confidentiality

All focus group participants will be asked to keep the discussion within the focus group itself, however complete confidentiality cannot be guaranteed. Participants' information relating to the study will be kept confidential and all study data will be kept for 5 years. Any research data collected about you during the study will not identify you by name. All study data will be stored in password protected files on an encrypted USB memory stick. Audio file will be destroyed once they have been transcribed and verified. Any publication resulting from this study will not identify you.

Voluntary Participation

You are free to withdraw from this research study at any time and for any reason without consequence. You also have the right to refuse to answer any of the questions. The information you provide will not be released and your identity will be kept protected to the best of our ability.

Contact name, address, and telephone numbers

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Office of Research Ethics at [REDACTED], email: [REDACTED]. If you have questions about the study itself, you may contact Dr. Julie Copeland at [REDACTED] or [REDACTED].

Thank you for your interest in this study.

CONSENT FORM

I have read and understood the letter of information about the research study “The experiences of family medicine preceptors and residents with multimorbidity management and education – a qualitative study”. I understand the conditions, risks and benefits of my participation. I have had all my questions answered about this study. I understand that I do not waive any legal rights by signing this consent form.

I agree to participate in a focus group discussion for this study

I agree to respect the confidentiality of the information shared during the focus group

Participant signature : _____

Participant name : _____ Date : _____

Researcher signature: _____

Researcher name: _____ Date: _____

Appendix F: Interview Guide for Study 1 Interviews

Preceptors' One-on-One Semi-Structured Interview Guide Questions

1. What is MM (multimorbidity)?
 - a. What is it? What comes to mind when you hear the term “multimorbidity” (define it if they do not know)
 - i. What is the definition of co-morbidity? How is that different than MM?
 - b. Is MM the same as Chronic Disease? Why or why not?
 - c. How common is it? How often do you see MM in FM?

2. Experiences with MM
 - a. You mentioned that your appts are booked for “X” minutes - Are they longer for patients w/ MM? Should they be?
 - b. What percentage of patients that you see do you think have MM?
 - c. Think of a case of MM you saw recently ... briefly describe some difficulties or challenges
 - i. What are challenges with MM for physicians/residents?
 - ii. What are challenges for patients? (give an example if they do not know)
 - d. What have you gained from caring for patients with MM?
 - i. What have you found most effective in helping you manage patients with MM? Are there factors that facilitate caring for pts w/ MM?
 1. Prompts if needed (based on what is known to work) – e.g. see pt in continuity/increased time per appt/ multidisciplinary team care/ patient-centered care model
 - ii. What are your experiences in providing good comprehensive care to patients with MM?
 - e. How do you weigh interests against each other and decide how to prioritize care?
 - i. Prompts - weighing different co-morbidities and prioritizing which co-morbidity's treatment comes first etc.
 - f. How do you prioritize “goals of care”? (e.g. MD goals versus patient goals).
 - g. Are there challenges you encounter in treating patients w/ MM that are different compared to those patients with single diseases (even if it is a chronic disease)
 - i. Do you think standardized guidelines help or hinder you in caring for pts with MM? (do guidelines even apply to those w/ MM)

- h. What is the role of other health care professionals in managing MM?
 - i. Allied health professionals in the FHT?
 - ii. Other MDs such as specialists?
 - iii. Role of communication between professionals caring for a patient with MM (e.g. EMR)?
3. MM Education
- a. Do you recall ever learning about MM during your training?
 - i. If not, when did you first hear the term MM or learn about MM? How?
 - b. How have you learned to care for patients with MM in your practice?
 - c. How do FM residents currently learn about MM and MM management in their training?
 - i. Are they taught specifically about treating MM? (e.g. Didactic or small group)
 - ii. Clinical exposure?
 - d. What recommendations would you make for including MM education into medical education? Early? (e.g. undergrad) or later (postgrad)
 - i. What types of educational activities would help with teaching MM?
 - ii. Would interprofessional education help (e.g. DEC or pharmacist)?
 - iii. What skills might be helpful to gain or skills that you feel are lacking?
 - iv. Is the FM centre the appropriate place to teach MM? If yes - why? If no – why not?
 - e. What are barriers to teaching MM?
 - f. How comfortable are you teaching about MM care?
4. In an ideal world, how do you think multimorbidity should be managed?
- a. which health care providers should be involved.
 - b. infrastructure – EMR, clinics, home care
 - c. education – role of the student/resident plays in the care of patients with multimorbidity
 - d. patient’s role in their own care
5. What are policy implications of this kind of care/how can health care policies support this kind of care?

Appendix G: Interview Guide for Study 2 Focus Groups

Focus Group Interview Guide Questions

1. What is MM (multimorbidity)?
 - a. What is it? What comes to mind when you hear the term “multimorbidity” (define it if they do not know)
 - i. What is the definition of co-morbidity? How is that different than MM?
 - b. Is MM the same as Chronic Disease? Why or why not?
 - c. How common is it? How often do you see MM in FM?

2. Experiences with MM
 - a. How long are appts booked for? Are they longer for patients w/ MM? Should they be?
 - b. What percentage of patients that you see do you think have MM?
 - c. Think of a case of MM you saw recently ... briefly describe some difficulties or challenges
 - i. What are challenges with MM for physicians/residents?
 - ii. What are challenges for patients? (give an example if they do not know)
 - d. What have you gained from caring for patients with MM?
 - i. What have you found most effective in helping you manage patients with MM? Are there factors that facilitate caring for pts w/ MM?
 1. Prompts if needed (based on what is known to work) – e.g. see pt in continuity/increased time per appt/ multidisciplinary team care/ patient-centered care model
 - ii. What are your experiences in providing good comprehensive care to patients with MM?
 - e. How do you weigh interests against each other and decide how to prioritize care?
 - i. Prompts - weighing different co-morbidities and prioritizing which co-morbidity’s treatment comes first etc.
 - f. How do you prioritize “goals of care”? (e.g. MD goals versus patient goals).
 - g. Are there challenges you encounter in treating patients w/ MM that are different compared to those patients with single diseases (even if it is a chronic disease)
 - i. Do you think standardized guidelines help or hinder you in caring for pts with MM? (do guidelines even apply to those w/ MM)

- h. What is the role of other health care professionals in managing MM?
 - i. Allied health professionals in the FHT?
 - ii. Other MDs such as specialists?
 - iii. Role of communication between professionals caring for a patient with MM (e.g. EMR)?
3. MM Education
- a. During your medical education, when did you first hear the term MM or learn about MM? How? (e.g. was it a teaching session, a clinical encounter, self exposure etc)
 - b. How have you learned about MM and its management in your training to date?
 - i. Have you been taught specifically about treating MM? Clinically? Didactically?
 - c. What recommendations would you make for including MM education into your training? Early? (e.g. undergrad) or later (postgrad)
 - i. What types of educational activities would help with teaching MM?
 - ii. Would interprofessional education help (e.g. DEC or pharmacist)
 - iii. What skills might be helpful to gain or skills that you feel are lacking?
 - iv. Is the FM centre the appropriate place to teach MM? If yes - why? If no – why not?
 - d. What are barriers to teaching MM?
4. In an ideal world, how do you think multimorbidity should be managed?
- a. which health care providers should be involved.
 - b. infrastructure – EMR, clinics, home care
 - c. education – role of the student/resident plays in the care of patients with multimorbidity
 - d. patient’s role in their own care
5. What are policy implications of this kind of care/how can health care policies support this kind of care?

Appendix H: Data Extraction Guide – Study 1 Interviews

Multimorbidity Coding Guide; 1:1 interviews (Preceptors)

1.0 Definition of multimorbidity

- 1.1 Definition of co-morbidity
- 1.2 Differences between multimorbidity and comorbidity
- 1.3 Definition of Chronic Disease
- 1.4 Frequency/prevalence of MM in general practice

2.0 Facilitators for MM management

- 2.1 Appt time/amount of time spent with pt during appt
- 2.2 Continuity of care/Longitudinal nature of FM (frequent visits back, increased number of appts over time)
- 2.3 Patient centered approach
- 2.4 Generalist approach
- 2.5 Knowing the family structure/unit
- 2.6 Role of academic environment
- 2.7 Chart review/paperwork time
- 2.8 Team based approach
- 2.9 Long term relationships

3.0 Challenges of MM in Practice

- 3.1 For Family Physicians
 - 3.1.1 Many differential diagnoses
 - 3.1.2 Prioritization of diagnoses
- 3.2 For patients
 - 3.2.1 Lack of community for these individuals
 - 3.2.2 Information Overload (multiple MDs/opinions/plans)
 - 3.2.3 “Silentness” of Disease
- 3.3 Medication burden
- 3.4 Mental health component
- 3.5 System challenges
 - 3.5.1 Wait times for specialists
 - 3.5.2 Specialists do not grasp concept of MM
- 3.6 Preventive care (missing prev care, having enough time for it + MM)
- 3.7 For Residents

4.0 Who is caring for MM patients

- 4.1 GP
- 4.2 Role of specialist

- 4.2.1 Role in the care of our patients
- 4.2.2 Sensitive to MM principles
- 4.2.3 Referring to specialists we know
- 4.2.4 Not a helpful role
- 4.3 Role of allied health professionals
- 4.4 Role of academic environment

5.0 **Prioritization, Goals of Care**

- 5.1 Establishing care priorities

6.0 **Role of Communication**

- 6.1 Role of EMR
- 6.2 Communication with specialists (role of consult requests/notes/information)

7.0 **Role of guidelines**

8.0 **Education/Training**

- 8.1 What stage did you learn about MM management
 - 8.1.1 Med student year 1 or 2
 - 8.1.2 Clinical clerkship
 - 8.1.3 Residency training
 - 8.1.4 In practice
 - 8.1.5 Never
- 8.2 How does MM learning occur in training currently
 - 8.2.1 Experiential
 - 8.2.2 Other
- 8.3 Challenges in MM education
 - 8.3.1 When to teach
 - 8.3.2 Lack of comfort teaching it
- 8.4 Facilitators to teaching MM
- 8.5 Innovations in MM teaching
 - 8.5.1 When
 - 8.5.2 How
 - 8.5.3 Multimorbidity Game
 - 8.5.4 Skill Acquisition
- 8.6 Role of FM in teaching MM
- 8.7 Role of allied health in teaching MM
- 8.8 Ways we should teach it

9.0 Health Systems/Health Policy

9.1 Compensation/Funding

9.2 Multidisciplinary team

9.3 EMR

9.3.1 Centralized EMR

9.3.2 Patient portal/Patient EMR/Pt accountability

9.4 Innovations

10.0 Comfort with care for MM patients**11.0 Stories Node**

Appendix I: Data Extraction Guide – Study 2 Focus Groups

Multimorbidity Coding Guide; Focus Groups (Residents)

1.0 Definition of multimorbidity

- 1.1 Definition of co-morbidity
- 1.2 Differences between multimorbidity and comorbidity
- 1.3 Definition of Chronic Disease
- 1.4 Frequency/prevalence of MM in general practice
 - 1.4.1 Change in prevalence if working multiple env't (e.g. inpatient/ER/clinic) or different practice setups (FHN/FHO vrs FFS)
 - 1.4.2 Rural versus Urban difference in freq/prevalence

2.0 Facilitators for MM management

- 2.1 Appt time/amount of time spent with pt during appt
- 2.2 Continuity of care/Longitudinal nature of FM (frequent visits back, increased number of appts over time)
- 2.3 Patient centered approach
- 2.4 Generalist approach
- 2.5 Knowing the family structure/unit
- 2.6 Role of academic environment
- 2.7 Chart review/paperwork time built into the day
- 2.8 Team based care (multidisciplinary team)
- 2.9 Long term relationships with patients

3.0 Challenges of MM in Practice

- 3.1 For Family Physicians
 - 3.1.1 Many differential diagnoses
 - 3.1.2 More problems than expected in a visit + prioritization of these diagnoses in a visit
 - 3.1.3 Guideline conflict
 - 3.1.4 Challenge of working with multiple providers
- 3.2 For patients
 - 3.2.1 Lack of community for these individuals
 - 3.2.2 Multiple providers/opinions/care plans – “information overload”
 - 3.2.3 “silent mass” of disease, Number of appointments
 - 3.2.4 Illness fatigue
 - 3.2.5 Drug coverage/drives/transportation/social/financial impact

- 3.2.6 Language barrier
- 3.3 Medication burden
 - 3.3.1 Drug-drug interactions
- 3.4 Mental health component
- 3.5 System challenges
 - 3.5.1 Wait times for specialists
 - 3.5.2 Specialists do not grasp concept of MM
 - 3.5.3 GP wait times/accessibility to appts
- 3.6 Preventive care (missing prev care, having enough time for it + MM)
- 3.7 For resident trainees – challenges of an academic unit
 - 3.7.1 Lack of continuity
 - 3.7.2 Exposure differences in difference practices/clinics
- 3.8 Patient accountability
- 3.9 EMR

4.0 Who is caring for MM patients

- 4.1 GP/Quarterback
- 4.2 Role of specialist
 - 4.2.1 Role in the care of our patients
 - 4.2.2 Sensitive to MM principles
 - 4.2.3 Referring to specialists we know
 - 4.2.4 Not a helpful role
- 4.3 Role of allied health professionals
- 4.4 Role of academic environment (also noted as 2.7) – probably should be here, not in 2.
- 4.5 Rural versus Urban

5.0 Prioritization, Goals of Care

- 5.1 Establishing care priorities

6.0 Role of Communication

- 6.1 Role of EMR
 - 6.1.1 Challenge of different EMR systems/ease of use
 - 6.1.2 Challenge of uncoordinated systems
- 6.2 Communication with specialists (role of consult requests/notes/information)
 - 6.2.1 Email
 - 6.2.2 E-consult
- 6.3 Communication with previous or current providers (e.g. new pt – no old notes)
 - 6.3.1 Resident handover from block to block

6.3.2 New GP taking on patient from a different GP

7.0 Role of guidelines

8.0 Education/Training

- 8.1 What stage did you learn about MM management
 - 8.1.1 Med student year 1 or 2
 - 8.1.2 Clinical clerkship
 - 8.1.3 Residency training
 - 8.1.4 In practice
 - 8.1.5 Never
- 8.2 How does MM learning occur (for learners and preceptors)
 - 8.2.1 Experiential
 - 8.2.2 Other
- 8.3 Challenges in MM education
 - 8.3.1 Not seeing MM patients – only staff MD sees them – so no exposure
 - 8.3.2 Challenge in Family Medicine teaching – preceptor lack of comfort teaching it
- 8.4 Facilitators to teaching MM
- 8.5 Innovations in MM teaching
 - 8.5.1 When should it be taught
 - 8.5.2 How to teach it
 - 8.5.3 “Multimorbidity Game”
 - 8.5.4 Skill acquisition
- 8.6 Role of FM in teaching MM
- 8.7 Role of allied health in teaching MM
- 8.8 When was the term “multimorbidity” learned or heard

9.0 Health Systems/Health Policy

- 9.1 Compensation/Funding
- 9.2 Multidisciplinary team
- 9.3 EMR
 - 9.3.1 Centralized EMR system
 - 9.3.2 Patient portals/patient EMR access/pt accountability
- 9.4 Innovations

10.0 Comfort with care for MM patients

11.0 MM Stories

Appendix J: Demographic Data Sheet – Study 1 Interviews

Preceptors' One-on-One Interview

Demographic information – please complete the following questions:

1. Age: _____
2. Gender: Male or Female
3. Number of years in practice: _____
4. How long have you been a preceptor for FM residents? _____
5. What are your teaching roles (Yes/No):
 - a. Clinical: YES or NO
 - b. Didactic Lecturer: YES or NO
 - c. FM in-centre teaching: YES or NO
 - d. Undergraduate medical teaching (e.g. clerkship/elective students): YES or NO
 - e. Postgraduate medical teaching (e.g. residents): YES or NO
6. Do you have any formal teaching background: YES or NO
 - a. If YES, what teaching background?

7. FM Training site: Urban or Regional or Rural
 - a. Which site specifically: _____
8. How long are patient appointments booked for (in minutes): _____
9. How many patients do you see per day: _____

Appendix K: Demographic Data Sheet – Study 2 Focus Groups

Resident Focus Group

Demographic information – please complete the following questions:

1. Age: _____
2. Gender: Male or Female
3. Medical school training: CMG or IMG
4. Level of Training: PGY1 or PGY2
5. Home FM Training site: Urban or Regional or Rural
 - a. Which site specifically: _____
6. FM training type: Block based program or Longitudinal program

Curriculum Vitae

Julie Anne Copeland, MD, CCFP, FCFP

DEPARTMENT OF FAMILY MEDICINE
SCHULICH SCHOOL OF MEDICINE AND DENTISTRY
WESTERN UNIVERSITY

CURRENT PROFESSIONAL STATUS

ACADEMIC:

2014-present: Associate Professor, Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON

CLINICAL:

2005-present: Family Practice, Southwest Middlesex Health Centre, Mount Brydges, ON

2005-present: Department of Medicine, Strathroy Middlesex General Hospital, Strathroy, ON

2018-present: Lead Physician, Indigenous Palliative Care Team, SWLHIN, London, ON

2020-present: Lead Physician, London Middlesex Palliative Care Team 3, SWLHIN, London, ON

PROFESSIONAL APPOINTMENTS/MEMBERSHIPS

Current:

- Medical staff, Strathroy Middlesex General Hospital
- College of Family Physicians of Canada
- Society of Rural Physicians of Canada
- Ontario Medical Association
- Canadian Medical Association

ACADEMIC APPOINTMENTS

2005-2007 Adjunct Professor, Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON

2007-2014 Assistant Professor, Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON

2014-present Associate Professor, Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON

ADMINISTRATIVE APPOINTMENTS

2012-present Rural-Regional Residency Program Director, Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON

2010-present Centre Director, Southwest Middlesex Health Centre, Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, London, ON

2011-2012 President of Medical Staff, Strathroy Middlesex General Hospital

2008-2011 Head of Emergency Services, Strathroy Middlesex General Hospital

EDUCATION

MCISc FM Masters in Clinical Sciences (Family Medicine), Schulich School of Medicine and Dentistry, Western University, London ON Canada, IN PROGRESS

FCFP Fellow, College of Family Physicians of Canada

CCFP Certificant, College of Family Physicians of Canada, 2005

LMCC Licentiate, Medical Council of Canada, 2004

MD Doctor of Medicine, University of Toronto, Toronto ON Canada, 2003

BSc Bachelor of Science, University of New Brunswick, Saint John NB Canada, 1999

HONOURS & AWARDS

2018 Rural Service Award, In recognition of Long-Term Commitment to the care of Rural Canadians, Society of Rural Physicians of Canada

2015 Unnur Brown Award, Western University, London, Ontario, Canada

2012 Martin Bass Award, awarded to family physician from Ontario pursuing a Masters in Clinical Sciences in Family Medicine, Western University, London, Ontario, Canada

2011 Outstanding Quality Initiative Award, Strathroy Middlesex General Hospital, Strathroy, Ontario, Canada

2009 CEO Award of Distinction, Middlesex Health Alliance, Strathroy, Ontario, Canada

2006 Western Ontario Family Medicine Scholarship, Department of Family Medicine, Western University, London, Ontario, Canada

2005 Outstanding Resident Award, Department of Family Medicine, Western University, London, Ontario, Canada

RESEARCH AND SCHOLARSHIP

Publications

1. Gray A, **Copeland J**. A Daytime Fast Track Improves Throughput in a Single Physician Coverage Emergency Department. *Canadian Journal of Emergency Medicine*, 2015 Apr; 1:8: 1-8.
2. McNeil C, **Copeland J**. Accidental digital epinephrine injection: To treat or not to treat? *Canadian Family Physician*, 2014 Aug; 60 (August 201): 726-728.
3. Osmun WE, **Copeland J**, Boisvert L. Mammography Screening. How far is too far? *Rural and Remote Health* 13:2149 (Online).
4. Bourdeau S, **Copeland J**, Milne WK. Accuracy of the Broselow tape in estimating the weight of First Nations Children. *Can J Rural Med* 2011; 16(4): 121-125.
5. Osmun WE, **Copeland J**, Parr J, Boisvert L. Characteristics of Chronic Pain Patients in a Rural Teaching Practice. *Can Fam Physician*. 2011; 57:e436-40.
6. Osmun WE, **Copeland J**. The occasional teacher. Part 2: the good teacher. *Can J Rural Med* 2011; 16(1): 23-24.
7. Osmun WE, **Copeland J**. The occasional teacher. Part 1: teaching in a rural setting. *Can J Rural Med* 2010:15(4); 162-163.
8. Osmun WE, **Copeland J**. Gastric dilatation as a cause of acute respiratory distress. *Canadian Family Physician* 2010; 56:151-2.

Poster Presentations

1. Longitudinal Methods for Studying Symptoms: A Pilot Study of Back Pain and Cough Symptoms using Electronic Medical Record (EMR) Data from the Deliver Primary Healthcare Information (DELPHI) Database. Authors: Maddock H, Freeman T, Stewart M, Leger D, Hons I, Jordan J, **Copeland J**, 2018 Nov 9, NAPCRG, Chicago, Illinois
2. Longitudinal Methods for Studying Symptoms: A Pilot Study of Back Pain and Cough Symptoms using Electronic Medical Record (EMR) Data from the Deliver Primary Healthcare Information (DELPHI) Database. Authors: Maddock H, Freeman T, Stewart M, Leger D, Hons I, Jordan J, **Copeland J**, 2018 Jun 6, Toronto, Ontario
3. Abdominal Pain Symptoms in Family Practice and their Clinical Implications: A study using Electronic Medical Record data from the Deliver Primary Healthcare Information Database. 2016 Nov 12, Poster Presentation. (Nov 2016), Collaborators: Freeman T, Stewart M, Maddocks H, Hons I, Leger D, **Copeland J**, Jordan J.
4. General and Unspecified Pain Symptoms in Family Practice and their Clinical Implications: A study using Electronic Medical Record data from the Deliver Primary Healthcare

Information Database. 2016 Nov 12, Poster Presentation. (Nov 2016), Collaborators: Maddocks H, Stewart M, Freeman T, Hons I, Leger D, **Copeland J**, Jordan J.

3. Lemmex A, Foster T, Osmun WE, **Copeland J**. Increasing the Frequency of Smoking Cessation Encounters in Day to Day Primary Care: A quality improvement protocol, 2014 Nov 12, The College of Family Physicians, Quebec City, Quebec, Canada.
4. Gray A, **Copeland J**, ED Fastrack, 2014 Mar, SRPC Rural and Remote Conference, Banff, Alberta, Canada.
5. Margeson K, Ryan S, **Copeland J**, Carpenter G, Camargo C, Milne WK, Health Literacy and Numeracy in Rural Southwestern Ontario Family Practice, 2013, SRPC Rural and Remote Conference, Victoria, British Columbia, Canada.
6. Bourdeau S, **Copeland J**, Milne WK, Native Canadian Children and the Broselow Tape, 2009 Jun, Canadian Association of Emergency Physicians (CAEP) Annual Conference, Calgary, Alberta, Canada

Invited Lectures

1. **Co-Author**, General and Unspecified Pain Symptoms in Family Practice and their Clinical Implications. A study using Electronic Medical Record data from the Deliver Primary Healthcare Information Database, McWhinney Lecture Series Day, 2016 Sep 21, London, Ontario, Canada, Continuing Medical Education
2. **Presenter**, “Sometimes it sucks to be the healthy one: A sibling perspective on growing up with congenital heart disease”. Dalhousie University, IWK-Grace Hospital, Heart Talk, 2006 Sep, Halifax, Nova Scotia, Canada, Continuing Medical Education

Conference Presentations – Research and Education

1. **Co-Author**, Freeman T, Stewart M, Maddocks H, Hons I, Leger D, **Copeland J**, Jordan J. Abdominal Pain Symptoms in Family Practice and their Clinical Implications: A study using Electronic Medical Record data from the Deliver Primary Healthcare Information (DELPHI) Database. [Oral Presentation]. Trillium Primary Care Research Forum. 2017 May 31, Ontario, Canada, Continuing Medical Education
2. **Presenter**, Want to Teach - Teaching Tips for New Faculty and Residents, Family Medicine Forum, 2016 Nov 12, Vancouver, British Columbia, Canada, Continuing Medical Education
3. **Co-Author**, Freeman T, Stewart M, Maddocks H, Hons I, Leger D, **Copeland J**, Jordan J. Abdominal Pain Symptoms in Family Practice and their Clinical Implications: A study using Electronic Medical Record data from the Deliver Primary Healthcare Information (DELPHI) Database. [Oral Presentation]. 44th Annual Meeting, North American Primary Care Research Group (NAPCRG) Nov 12 to 16, 2016, 2016 Nov 12, Colorado, United States, Continuing Medical Education
4. **Co-Author**, Maddocks H, Stewart M, Freeman T, Hons I, Leger D, **Copeland J**, Jordan J. General and Unspecified Pain Symptoms in Family Practice and their Clinical Implications. A

study using Electronic Medical Record data from the Deliver Primary Healthcare Information [DELPHI] Database. [Oral Presentation]. 44th Annual Meeting, North American Primary Care Research Group (NAPCRG). (Ranked one of the 21 highest rated submissions from almost 400 abstracts submitted as an oral presentation and nominated for a Distinguished Paper Award). 2016 Nov 12, Colorado, United States, Continuing Medical Education

5. **Presenter**, Blocks for Docs - Useful hematoma and nerve blocks for ED, Family Medicine Forum, 2016 Nov 9, Vancouver, British Columbia, Canada, Continuing Medical Education
6. **Presenter**, Grand Rounds, Dealing with the Lerner in Difficulty, Stratford General Hospital, Presenters: **Julie Copeland**, 2016 May 27, Stratford, Ontario, Canada, Continuing Medical Education
7. **Presenter**, New Teachers, Family Medicine Forum, Presenters: **Julie Copeland**, 2015 Nov 11, Toronto, Ontario, Canada, Continuing Medical Education
8. **Presenter**, Patient Centred Clinical Method, Family Medicine Forum, Presenters: **Julie Copeland**, Judy Belle Brown, Tom Freeman, 2014 Nov 14, Quebec City, Quebec, Canada, Continuing Medical Education
9. **Presenter**, Learner Centred Clinical Method, Family Medicine Forum, Presenters: **Julie Copeland**, Judy Belle Brown, Tom Freeman, 2014 Nov 14, Quebec City, Quebec, Canada, Continuing Medical Education
10. **Presenter**, Residents as Teachers, Family Medicine Forum, Presenters: **Julie Copeland**, Jamie Wickett, 2014 Nov 13, Quebec City, Quebec, Canada, Continuing Medical Education
11. **Presenter**, Errors in Clinical Decision Making - a diagnostic approach. SRPC Rural and Remote Conference, Presenters: **Copeland J**, Osmun WE, 2014 Apr, Banff, Alberta, Canada, Continuing Medical Education
12. **Presenter**, The Learner in difficulty, SRPC Rural and Remote Conference, Presenters: **Copeland J**, Osmun WE, 2014 Apr, Banff, Alberta, Canada, Continuing Medical Education
13. **Presenter**, Getting Published, SRPC Rural and Remote Conference, Presenters: **Copeland J**, Osmun WE, 2014 Apr, Banff, Alberta, Canada, Continuing Medical Education
14. **Presenter**, Getting Published, SRPC Rural and Remote Conference, Presenters: **Julie Copeland**, Ted Osmun, 2013, Victoria, British Columbia, Canada, Continuing Medical Education