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Focused Practice and Enhanced Skills PGY3 Training in Family Medicine: A Mixed Methods Study.

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Abstract

There is a growing trend among family physicians (FPs) to focus their practice in specialized areas. The reasons underlying this trend are incompletely understood. A mixed methods study was conducted to understand this issue. A secondary analysis of data from a survey of Western University family medicine program graduates highlighted the associations of postgraduate third-year (PGY3) training and physician's remuneration strategy with focused practice. The overall service provision of focused practice FPs was centered on specialized areas, especially among those who practiced in non-office settings. A descriptive qualitative study explored the perspectives of residents accepted into the PGY3 programs at Western University on undertaking enhanced training and their career prospects. Participants' perspectives were shaped by their experiences within the family medicine discipline and training contexts, and by individual resident's aspirations. Findings from this thesis provide insights for family medicine education, workforce planning, and policy making in the Canadian health system.

Keywords

Family medicine, Focused practice, Specialization, PGY3, Enhanced Skills, mixed methods, descriptive qualitative.

Summary for Lay Audience

Family doctors in Canada see patients of all ages throughout their lives in clinics, emergency rooms, nursing homes, hospitals, and patients' homes, depending on the needs of their patients. Since the 1980s, some family doctors have been choosing to focus their work in specialized areas of medicine – such as sports medicine, emergency medicine, or palliative care. These doctors are often referred to as family physicians with focused practices. The National Physician Survey in Canada in 2014 showed that over one-third of family physicians reported having a focused practice. In addition, while family medicine residency is 2 years in length in Canada, approximately 20 % of residents choose to take an additional year of training, called postgraduate third-year (PGY3) training, in specialized areas every year.

This thesis consists of two studies that aimed to: 1) discover the factors related to focused practice family doctors and the range of focused practice doctors' work, and 2) understand family medicine residents' motivations for doing PGY3 training and their future work plans.

Findings from both studies show that multiple factors can influence family doctors' choices to work in a focused practice, and encourage residents to take additional training. The first study showed that completing PGY3 training could encourage family doctors to focus their work in specialized areas. The type of payment method impacted this choice as well. In the second study, the participants reflected the importance of PGY3 training and specialization to meet the needs of some patients. Participants noted the challenges and changes in family medicine, and shared their experiences during residency, as well as personal factors that made them decide to do PGY3 training and plan their future work. This thesis illustrates that the range of the clinical work of focused practice family doctors is different, but usually concentrated on specialized services, like emergency or sports medicine. Findings from this thesis are important for education in family medicine, and for family medicine workforce planning and policy making in the Canadian health system.

Co-Authorship Statement

The thesis was conceived, developed, conducted, and reported by the author.

The following contributions were made: Dr. Thomas R. Freeman and Dr. Amanda Terry supervised the thesis project. They provided guidance throughout the planning, execution, analysis, in addition to editorial advice and reporting of both studies.

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Dedication

To the memory of Dr. Ian McWhinney, whose powerful insights about family medicine and into the role of family physician as a person, generalist, and a healer provide inspiration and joy to my daily work.

To the memory of my beloved father, Ideen Marbeen.

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Chapter 1

1 The Provision of Focused Practice and Specialization within Family Medicine in Canada

1.1 Introduction

In its position statement, entitled the "Family Medicine Professional Profile", the College of Family Physicians of Canada (CFPC) outlines the primary care, coordination, comprehensive, continuing, patient-centered, and community-adaptive responsibilities of family physicians (FPs) and their commitment to the people of Canada (1). However, FPs practices and participation in clinical activities are not uniform. Nearly one-third of FPs in Canada have a focused practice in fields of special interest (e.g. Emergency Medicine)(2). Furthermore, disproportionate population growth to the number of physicians providing comprehensive primary care in Ontario has been identified(3). While emphasizing its commitment to comprehensive family medicine, the CFPC supports and acknowledges the contributions that FPs in focused practice bring to patients and the medical community(4)(5)(6). As of June 2019, CFPC approved 19 program areas under the Member Interest Groups Section in support of the current and future physicians who share special interest in particular areas of care(7). Attention to specialized fields in medicine can develop at different stages of physician's professional journey, including undergraduate or postgraduate training, or before entry into the workforce(8)(9). More than a quarter of family medicine residents responding to the 2012 National Physician Survey reported that they intended to provide care in a focused practice upon graduation(10). In addition, it is estimated that no fewer than 1 in 5 residents pursue third-year postgraduate (PGY3) Enhanced Skills training in areas of special interest every year(11).

Previous studies have examined changes in the clinical activities and scope of practice of FPs(3)(12)(13)(14)(15)(16); however, the factors associated with having a focused practice and the range of the clinical services provided by focused practice FPs have rarely been addressed. Furthermore, past research illustrates a demand for the expansion of PGY3 programs across the country(17)(18)(19), and the growing interest in these

programs among family medicine residents(11)(20). Nevertheless, little is known about what PGY3 residents consider important when they decided to pursue extended training, and what could motivate their career decision-making plan. This thesis advances the literature by shedding light on the factors that relate to both FPs with focused practice and PGY3 residents, to gain an insight on what influences both physicians and residents to focus on specialized areas of care in family medicine. Such information has implications for education in family medicine, family medicine workforce planning, and policy making.

1.2 Purpose of the thesis

Family physicians with a focused practice constitute a growing and an important component of family medicine workforce in Canada. This thesis aimed to explore: 1) the factors associated with having a focused practice, and the clinical activities of focused practice FPs; and 2) the perspectives of PGY3 residents on undertaking extended training, and their career prospects.

1.3 Terms and definitions

Throughout the thesis, the term ‘family physician’ will refer both to family physicians and general practitioners.

The description of FPs with focused practice in this thesis is consistent with CFPC’s definition for this group of physicians as family doctors with a commitment to one or more specific clinical areas as major part-time or full-time components of their practices(7).

The terms postgraduate third-year (PGY3), (R3), Enhanced Skills, and fellowship programs in family medicine are often used interchangeably. In this thesis, the terms ‘PGY3 residents’, and ‘PGY3 training’ are used in reference to the residents and training in the Enhanced Skills programs.

1.4 Thesis Design

This thesis is consisted of five chapters. This chapter introduces the relevance of the research project by providing a brief background on the trend toward focused practice and PGY3 training in family medicine. Furthermore, an overview of thesis objectives, design, and structure are outlined.

Chapter two reviews the literature regarding the trend toward focused practices in family medicine, and the changes in FPs' scope of practice in Canada. Furthermore, it provides an overview of the evolution in family medicine training and the development of PGY3 programs.

Chapter three is a quantitative secondary analysis of family medicine graduates survey data. It identifies the factors associated with focused practice, and describes self-reported clinical activities of focused practice FPs.

Chapter four presents a descriptive qualitative study that is based on interviews with family medicine residents accepted in the Enhanced Skills PGY3 programs at the Department of Family Medicine, Schulich School of Medicine and Dentistry, Western University, describing their perspectives on pursuing extended training, and their intended future practices.

Lastly, chapter five integrates the findings from chapters three and four, discusses the implications of the results in relation to family medicine training, and healthcare workforce planning and policy making in Canada, as well as providing recommendations for future research.

Chapter 2

2 Literature Review

Family physicians (FPs) are the main generalists and primary health care providers within the Canadian health system(21)(22)(23). Their traditional role has been characterized as serving as the main entry point for patients to the health care system, providing comprehensive continuing care to patients from “cradle to grave", and the employment of a breadth of knowledge and skills in multiple settings(24). Dr. Ian McWhinney envisioned FPs as those who “are committed to the person rather than to a particular body of knowledge, group of diseases, or special technique”, and who accept all complaints for care and consideration, who never say: “I am sorry, but your illness in not in my field”(24). He also highlighted the role in which FPs act across the very difficult boundaries between medical and social problems in patient care(24). There have been changes in the traditional activities and the scope of practice engaged in by family physicians, along with the development of focused practices in specialized areas of care(3)(14)(25)(26). Concurrently, changes have occurred in the education process and training in family medicine, with the development of the postgraduate third-year (PGY3) programs in specialized areas that have attracted a large number of residents(11)(20)(27). This literature review provides an overview of the evolution in the scope of practice and training in family medicine, highlighting the trends toward focused practice and PGY3 training and what shaped these trends.

2.1 Focused Practice in Family Medicine

2.1.1 Trends to Focused Practice and CFPC’s Position

There has been a growing trend of Canadian FPs favoring specialized focused practices, that started two to three decades ago (as reported by the former Executive Director and Chief Executive Officer of CFPC, Dr. Cal Gutkin)(5). A study of Ontario physicians (12) found that nearly (11%) of a cohort of 266 FPs, 8 to 10 years following their certification in family medicine, had narrowed their practice to focused areas within family medicine between 1993 and 1999. Among those who were practicing general family medicine,

(10%) had seriously considered restricting their practice to focused areas in the future(12). An examination of billing data for Ontario physicians revealed that the proportion of FPs who were considered to be in focused practice increased from 7% in 1992/93 to 13% in 2014/15(3). In the study, focused practice physicians were identified as the "physicians with 50% or less of their services for core primary care but with more than 50% in a single location or type of service"(3) .

The latest National Physician Survey in Canada in 2014 revealed that over one-third of FPs reported having a specialty focus(2). This reflects a steady upward trend in the proportion of FPs with focused practice at the national level: 29.5% in 2007(28), 30.5% in 2010(29), and 32.4% in 2014(2) respectively. The most frequently indicated areas of special focus among FPs respondents to the 2010 National Physician Survey were: Emergency medicine (25.8%), Geriatric medicine (9.1%), Obstetrics (8.9%), Palliative Medicine (5.9%), and Anesthesiology (5.0%)(30).

The CFPC recognizes the contributions that focused practice FPs can bring to the medical community by increasing the range of services provided to patients(6). In 2008, the CFPC board approved the establishment of the Section of Family Physicians with Special Interests or Focused Practices (SIFP) to support members who share similar interests and promote continuing professional development among them(31). The objectives for forming SIFP were:" i) To strengthen personal, comprehensive, continuing care for patients in family practices across Canada; ii) To provide a home within the College that offers advocacy and support for the practice-related and lifelong learning needs of family physicians with SIFP" (32). The Section name was changed to Communities of Practice in Family Medicine, then as of June 2019 reconstituted to Member Interest Groups Section(7). The Member Interest Groups Section supports its 10,000 members (out of CFPC's 38,000 members(33)), and consists of the following programs: addiction medicine, family practice anesthesia, cancer care, child and adolescent health, chronic pain, dermatology, developmental disabilities, emergency medicine, enhanced skills surgery, global health, care of the elderly, hospital medicine, maternity and newborn care, mental health, occupational medicine, palliative care, prison health, respiratory medicine, and sport and exercise medicine(7).

In seven of these domains: addiction medicine, care of the elderly, emergency medicine, enhanced surgical skills, family practice anesthesia, palliative care, and sport and exercise medicine, CFPC awards a Certificate of Added Competency to the physicians who demonstrate special competency according to national standards (34).

While the Member Interest Groups Section and Certificate of Added Competency initiatives have recognized and supported the trend to focused practice, CFPC has highlighted its commitment to comprehensive continuing care as the central role of FPs(1).

2.1.2 International Trends to Focused Practice in Family Medicine

Trends toward special interest and focused practice have also been noted internationally. In the United Kingdom, the National Health System introduced the General Practitioner with a Specialist Interest (GPwSI) program in 2000(35). The purpose was to facilitate care transference of certain medical conditions from secondary to primary care, to minimize waiting times and costs associated with specialists referrals(35). The program was refined to become General Practitioners with Extended Role (GPwERs) in 2015(36). GPwER defined by the Royal College of General Practitioners Council as “a GP who undertakes, in addition to their core general practice, a role that is beyond the scope of GP training and the MRCGP (Membership of the Royal College of General Practitioners), and requires further training. The extended role is typically undertaken within a contract or setting that distinguishes it from standard general practice and/or it is an activity offered for a fee outside of care to the registered practice population (teaching, training, research, occupational medicals, medico-legal reports, cosmetic procedures, etc.)”(36). A similar trend has been noted in the United States, with growing interest for specialization and restricting practice to special areas among family doctors(37). The movement has been supported by the expansion of fellowship training programs offered by the American Academy of Family Physicians to family medicine graduates in a number of areas like Adolescent Medicine, Geriatric Medicine, Hospice and Palliative Medicine, Pain Medicine, Sleep Medicine, Sports Medicine)(37)(38)(39)(40). The concept of general practitioners with special interests has developed among Australian

physicians as well(41). The trend was recognized by The Royal Australian College of General Practitioners (RACGP) council in 2008 as a faculty, called RACGP Specific Interests(42). The faculty currently includes 29 areas of specific interest, each provides opportunities for general practitioners with specific interest and expertise in particular fields to network and promote the areas of their specific interest(41)(43)(44).

While it is beyond the scope of the present study to examine the cause and explanations for the observed trend towards specialization, possible reasons for these trends have been discussed in the literature (38)(40)(41). Advancements in medical knowledge and technology together with societal changes and economic forces have increased the complexity of patient care and health care delivery. As such, some FPs choose to practice within a more limited scope of medicine so that they can remain competent in specific areas of practice (38)(39)(41).

2.1.3 Changes in Family Physicians' Practice Patterns

The traditional practice pattern of FPs includes providing care to patients from all age groups with acute and chronic conditions, and undifferentiated problems, as well as preventive medicine across different sites including the office and outside of the office settings such as emergency department, the hospital, patients' homes, long-term care and other health-care facilities where their patients can present with illnesses (1)(24)(45)(46). The primary care office is considered the principal setting in which FPs provide care for the different needs of the population served, develop a continuous longitudinal patient-physician relationship, and coordinate access to other health services when necessary(13). Office-based care also relates to the concept of a Patient's Medical Home which is CFPC's vision for the future of family practice in Canada. This entails the delivery of team-based comprehensive, continuing, patient-centered care with a focus on meeting patient and community needs(47).

Previous studies have evaluated Canadian FPs' scope of practice and participation in patient care activities, focusing on the types of services provided in multiple settings(3)(13)(14)(15)(16). A decline in FPs' participation in roles outside the primary care office in the last 2–3 decades has been identified in the literature(14)(15). Bass et al.

reported through surveys of a group of FPs in Ontario between 1974 and 1994, a decline in urban physicians' participation in hospital and intra-partum care, and house calls(16). Another study conducted by Woodward et al. of FPs between 1993 and 1999 showed that the contribution of physicians to obstetrical and inpatient care had decreased(12). Through secondary analysis of the 2001 National Physician Workforce Survey, Wong and Stewart reported that the scope of practice of office-based FPs was more comprehensive than non-office based FPs(13). Other studies evaluated FPs practices by analyzing their billing records. In 2002, Chan found a steady drop in participation of FPs in out of office services (emergency, inpatient, nursing home, house call, anesthesia, and obstetrical services), while the proportion of physicians who worked only in office setting has markedly increased between 1990 to 2000(15). An examination of practice patterns of Canadian FPs between 1992 to 2001 using billing records, revealed a decline in the care delivered by physicians in hospital based services including inpatient, surgical, surgical assistance, anesthesia and obstetrical services throughout the 10-year period of analysis(14). None of the above mentioned studies distinguished the clinical activities and range of services provided by focused practice FPs from other FPs.

2.1.4 Predictors Contributing to the Changes in Family Physicians' Practice Pattern

The diverse patterns of family practice and the range of services offered by FPs are known to be influenced by multiple factors (45)(48). Dr. McWhinney outlined the main sources of variation in family practice, including factors related to the population being served, local conditions, the distribution of diagnosis in patient population, in addition to physician's age, gender, and whether he or she is a graduate of a vocational training program in family medicine or not(24). The common predictors for the changes in FP's practice patterns identified in the literature included the following: community needs, physicians' demographics, training background, years in practice, as well as practice location and payment structure.

Among the most discussed drivers of the development of focused practices in family medicine is a response to the population's health care needs, and need to fill in the gaps in specialty services in certain communities which required FPs contribution

(49)(50)(51)(52)(53)(54). The former president of CFPC, Dr. Rob Boulay stated: “From the perspective of communities, these physicians fulfill huge needs within the patient population that go unmet.” (4)

FPs have markedly contributed to fill gaps in the emergency medicine workforce(50). In Canada, emergency departments have been historically staffed by FPs, (who hold or do not hold a certification of added competency in Emergency Medicine), in addition to Royal College of Physicians and Surgeons of Canada Emergency Medicine certified physicians(55). According to the Institute for Clinical Evaluative Sciences Atlas Report on emergency department services in Ontario, most of the emergency medicine patient care was provided by FPs between 1993 and 2000(56). In addition, the Collaborative Working Group on the Future of Emergency Medicine in Canada showed that approximately 40% of urban and 62.5% of remote emergency departments were short-staffed, and the report called upon the Royal College of Physicians and Surgeons of Canada and CFPC for an expansion in the number of emergency medicine residency training positions (50).

The Canadian health care system has also been facing a shortage of geriatricians (51)(52)(57). As Canada’s population is steadily aging, there is a great need for physicians to provide care to seniors with complex health needs(58). Experts estimated the need for at least 500 to 700 specialists in geriatric medicine in 2000(52). According to the report of the Canadian Geriatrics Society Physician Resource Work Group in 2012, there were only 242 Royal College of Physicians and Surgeons of Canada certified specialists in geriatric medicine in all of Canada, and only 128 FPs with enhanced training in care of the elderly(52). The relative shortage of specialized physicians in geriatric medicine places FPs at the position of providing most of the geriatric care in Canada(51).

FPs have also had an important role in providing palliative care services to people living with a life-limiting illness(54)(59)(60)(61). Among physicians who provided palliative care in Ontario between 2011 and 2015, the majority (74.2%) were family doctors and the remainder were from other specialties including general internal medicine (8.3%),

medical and radiation oncology (3.1%), and general surgery (2.1%). Furthermore, palliative care was predominantly delivered by FPs in rural locations(59).

Another factor that is known to influence physicians' career choices is gender (13)(16)(25)(49)(55). In the 2014 National Physician Survey, the percentage of male physicians with focused practices was higher than females(2). Past research has shown that male physicians' participation in out-of-office patient care activities (e.g. emergency medicine, house-call, after-hours work, hospital, and obstetrical care, etc.) was higher than female physicians (48)(49)(62)(63)(64). The other determinant of physicians' scope of practice (range of services provided) appears to be the time since graduation(64). Older cohorts of physicians have a wider scope of practice than more recent cohorts (64)(65).

An important component of family medicine training in Canada has been the development of third-year postgraduate (PGY3) programs for family medicine graduates who wish to extend their training in particular areas of care(20)(27). One study revealed that undertaking a PGY3 program was strongly associated with practice patterns in the areas additional training was completed, reflecting a diversion from comprehensive family medicine(66). However, in contrast, additional postgraduate training was associated with a wider scope of practice in another study(13).

Practice location exerts a strong influence on physicians' practice patterns. Rural practice is different and frequently more diverse than urban practice (13)(25)(48)(67)(68). Among focused practice FPs, the 2013 National Physician Survey showed that there were more physicians working in emergency medicine, hospital medicine, and anesthesia fields in rural areas versus urban areas(69).

Furthermore, there has been a realization that training site could influence physicians' scope of practice. Urban and rural FPs who completed a rural residency program tend to have a broader scope of practice than urban program graduates (67)(70)(71).

The type of payment method is another factor that has been associated with physicians' practice patterns (13)(72). Traditionally, most FPs were self-employed in private

practices, and paid fee-for-service, where physicians' compensation related to each services rendered (e.g., office visit, hospital service, procedures). In addition, a small proportion of FPs worked in community-governed health centres which target poor and marginalized populations; these FPs are compensated through salaries(73)(74).

Strategies for primary care renewal emerged in Canada in the early 2000s, in association with the establishment of new payment structures for FPs, aimed at improving patients' access to primary care, after hour coverage, continuity of care, and the delivery of targeted services (e.g. preventive care, palliative care, chronic disease management)(73).

In Ontario, the primary care renewal process incorporated patient enrollment with a primary care provider, and were based on different forms of remuneration including: fee-for-service, capitation, incentives, and blended payment models(73)(74). In the capitation system, physicians are required to roster their patients through a formal enrolment process, and provide a defined basket of services covered under the capitated payment(75)(76) .

In 2001, the Family Health Network (FHN) was introduced in Ontario and was based on capitation reimbursement for physicians, blended with fee-for service payments(76). This was followed by the development of the Family Health group (FHG) and the Comprehensive Care Model (similar to FHG but for solo practice physicians) in 2003. These represented blended fee-for-service and comprehensive care incentive per enrolled patient reimbursement models(76). In 2007, the Family Health Organization (FHO) primary care model was introduced, and it contained most of the same provisions of the FHN model, but with larger capitation payment system(73)(76).

Additionally, Alternative Payment Plan formats emerged in Ontario and other provinces as ways of remunerating physicians for clinical work in distinct areas (e.g. HIV, Palliative Care, and Care of the Elderly long term care, Emergency Department) and some non-clinical activities such as administrative and teaching responsibilities and research(77)(78).

The participation of Ontario FPs in the traditional fee-for-service model declined dramatically from 94% in 2002 to 24% in 2012 as the majority of physicians transitioned to the newer primary care models(73)(74). Of the FPs who remained in traditional fee-for-service arrangements in 2012, about half were in focused practice and specialized services (e.g. emergency department, psychotherapy, hospital medicine, sports medicine, or long-term care)(73)(74). This was echoed in a previous study which reported that fee-for-service paid physicians had a narrower scope of practice, compared with those who worked in non-fee-for-service payment plans(13).

Primary health care initiatives in other Canadian provinces also included a shift from the predominant physician payment method (fee-for-service) to payment arrangements that included blends of fee-for-service, capitation, salary, or targeted payment for certain priority services(79).

In Quebec, Family Medicine Groups were introduced in 2000 and were followed by the Network-Clinic model. The bulk of the remuneration structure for physicians in these models is fee-for-service, in addition to some other sources of supplementary fees(79). In Alberta, Primary Care Networks have been considered the main primary care model since 2003, with approximately eighty percent of family physicians being registered in this model(80). Primary Care Networks physicians are remunerated through fee-for-service, Alternative Relationship Plans, and the Clinical Stabilization Initiative programs(80). Blended Capitation Model is one of the Alternative Relationship Plans that is being piloted in Alberta; the model blends capitation and fee-for-service payments in support of continuity and comprehensive team-based care(81)(82).

Different primary care innovation projects were introduced in Manitoba since 2006(79). These are: The Physician Integrated Network, Primary Care Networks that have transitioned to My Health Teams, and The Advanced Access Model. The remuneration sources for family physicians in Manitoba vary, including fee-for-service, alternative funding, blended funding, plus incentives and bonuses based on various performance indicators(79).

There is limited research available to assess the prevalence of different payment strategies among focused practice FPs or the association between the type of remuneration and the clinical activities provided by focused practice FPs.

2.2 Postgraduate Training in Family Medicine

2.2.1 Family Medicine Postgraduate Residency Training in Canada—A Historical Perspective

The CFPC, in partnership with Canada's 17 medical schools, sets the national standards for residency training programs, standardized examinations, and certification in family medicine(83). The first postgraduate training and certification in family medicine/general practice programs were established in Canada in 1966 at The University of Western Ontario (currently Western University) and the University of Calgary(84). By 1974, family medicine residency programs had developed in most of the schools of medicine across the country. In addition to vocational residency training in family medicine, an alternative pathway to family practice/general practice was through the one-year rotating internship after graduation from medical school that ended in 1992 (85). Family medicine residency training was three years in length at the beginning, which included first year rotating internship, followed by a two year residency program(85). In 1972 the residency program changed to two years due to political and financial pressures(86), and it was expected that the exposure to family medicine during undergraduate fourth year medical school was adequate to substitute for the third year of postgraduate training(87).

The standard two–year family medicine residency program includes core family medicine training in family practice settings and rotation through various specialties(83)(88). In addition, residents may choose electives to pursue certain learning interests within the 2 years residency curriculum(88). Since the 1980's, family medicine graduates have been able to pursue optional additional training in particular areas of practice through PGY3 Enhanced Skills programs(20). These programs are undertaken after 2-years core residency training and vary in length, between 3-12 months, according to the training domain(89).

In 2011, CFPC established the Triple C competency-based curriculum in family medicine to replace the traditional time-based educational strategies in residency programs, with emphasis on the following core principles: Comprehensive education and patient care, Continuity of education and patient care, and being Centred in family medicine(90). The curriculum is designed to enable learners to provide comprehensive continuing care, achieving the required professional roles defined within the Canadian Medical Education Directives for Specialists–Family Medicine, CanMEDS-FM framework (Family Medicine Expert, Communicator, Collaborator, Manager, Health Advocate, Scholar, and Professional)(91)(92). According to the Enhanced Skills Review Working Group Members "The clinical contexts that support enhanced skills development may differ from those used in the core family medicine residency program but are in line with the Triple C competency-based approach"(83). For accreditation purposes, CFPC organized PGY3 Enhanced Skills programs in two categories: Category 1 and Category 2. Category 1 programs are recognized at the national level. Each program has a defined domain-specific competency for assessment, and its graduates receive the Certificate of Added Competency (CAC) recognition(34). Current category 1 programs are: Care of the Elderly, Emergency Medicine, Family Practice Anesthesia, Palliative Care, Sport and Exercise Medicine, and Clinical Scholar program(83). Category 2 programs have local, university-based, domain-specific competencies defined for the purpose of assessment. Examples of these programs are: Women's care, hospitalist, addiction medicine(83).

2.2.2 Length of Family Medicine Training - Debates

The 2-year path for certification in family medicine in Canada is considered the shortest length of training in the Western world with comparable undergraduate curricula(92). Family medicine programs in the United States are 3 years long. The Australian General Practice training programs are 3 to 4 years for those who choose the rural pathway. The duration of training in European general practice/family medicine programs vary from 3 years in the United Kingdom, to more than 5 years in Denmark(92).

While the third year training in family medicine has increased the length of family medicine training for some residents by another year, the 2-year core family training has been debated academically for several decades, with concerns about whether the training

time is sufficient to achieve the necessary competencies required of FPs in order to master the wide breadth of knowledge, provide comprehensive care, and meet population needs(86)(89)(93)(94)(95)(96).

In 1984, The Canadian Medical Association Task Force on Education for the Provision of Primary Care Services examined the length of training for family physicians and reported (97) "...given the professional goals we have assumed for the family physician, we cannot defend the disparity of training efforts expended on the generalist and the specialist. Either the generalist is under-trained or the specialist is over-trained". In the same year, 20% of family medicine graduates commented that they would change their program to 3 years if they were to repeat their education(98).

In 2004, Saucier commented on PGY3 in family medicine and proposed an extension of family medicine training to 3 years for all residents(89). In 2012, the past president of CFPC, Dr. Buchman also suggested lengthening of family medicine residency training to three years, believing that new graduates were not prepared to provide the full scope of practice required from FPs in the 21st century(86). Their suggestions generated opposing views from other CFPC members(99)(100)(101).

The development of the Triple C competency-based curricula in family medicine training has added to the debate on the length of family medicine training as the curricula aims to enable residents to evolve at their own pace until they develop most of the expected competencies(90). According to the Working Group on Postgraduate Review on Triple C "Most residents should achieve the expected learning outcomes of the core family medicine program within a 24 month time frame; however, some will require a longer training period, which should be available when needed"(90).

A pilot qualitative study published in 2015 on the self-perceived level of readiness for independent practice of a group of family medicine residents reflected that the two years training was considered inadequate, and exposure to a broader spectrum of clinical domains for better preparation for independent generalist practice was suggested(102).

The Academic Family Medicine division of CFPC is currently conducting the Outcomes of Training project, in consultation with CFPC members, educators, patients, and health authorities and government officials. The project aims to address the educational process in family medicine, length of training, and training outcomes, evaluating the possible need for longer postgraduate training. The project is expected to be completed in 2020 (103)(104).

2.2.3 Enhanced Skills PGY3 Programs Development

Additional training opportunities through third-year postgraduate programs were introduced by CFPC to address the need for special and additional skills in various areas of practice beyond the core training in family medicine(20). Since the early 1980's, the Canadian Medical Association Task Force called for the increase in the PGY3 positions: "…sufficient extra residency training positions be funded to allow some family physicians to develop areas of special competence"(97). Emergency Medicine was the first PGY3 program recognized by CFPC in 1982, followed by the care of elderly program that was officially established in 1989 providing the option of additional 6 or 12 months of training in care of the elderly to better equip graduates for providing specialized geriatric services to meet societal needs(20)(89). PGY3 training in palliative care developed in 1999 with a joint accreditation by the CFPC and the Royal College of Physicians and Surgeons of Canada(105).

In 1989, family medicine program directors urged that more PGY3 positions should be approved; proposing that approximately 40% of graduating residents should have extended training opportunities(17). In 1991, four chairs of family medicine departments in Ontario put together a proposal that called for the increase in the number of third-year residency positions in family medicine to meet community needs(20). A follow-up survey with program directors of all 16 family medicine programs in Canada in 1996/1997 indicated that PGY3 positions have almost doubled nationally since 1989. The largest proportion of PGY3 positions were in emergency medicine, followed by geriatrics, anesthesia, and obstetrics(19). In 1990/1991, Lloyd et al. evaluated the need for different third year programs based on the perceptions of hospital chief executive officers and District Health Council executive directors from across Ontario. The local

health care administrators together emphasized the necessity for physicians in the care of the elderly domain as the highest priority, followed by emergency medicine and mental health programs (18). In a document released on the delivery of primary care services across Canada in 2000, CFPC advocated for additional training in family medicine: "While core family practice competencies must be included in all 2-year family medicine residency programs, each trainee should also have the opportunity to acquire extra skills to meet the needs of specific communities or populations (e.g., rural, inner city, aboriginal). These extra skills could be acquired as elective experiences during the 2 years of family medicine training or during optional third year (R3) programs", and proposed the increase in the number of PGY3 positions "..calling for an immediate fourfold increase in the total number of PGY3 positions to meet the needs of both the graduating physicians and the populations they will be serving."(22).

Various PGY3 programs have developed across the country over the past 3 decades to provide residents additional skills for rural practices, attain competencies in emerging clinical fields, and to ground teachers and researchers in the discipline of family medicine (11)(20)(106). Currently, there are over 120 Enhanced Skills PGY3 programs offered variously by Canada's 17 schools of medicine. All universities offer enhanced skills training in emergency medicine and most provide care of the elderly, palliative care, and anesthesia programs Table 1 represents the list of the Enhanced Skills PGY3 programs as of July 2019.

The Canadian Post-MD Education Registry (CAPER) contains medical training statistics of residents and fellows registered in the postgraduate training programs in Canada since 1988 (107). Based on CAPER, PGY3 training in family medicine has greatly evolved over the past three decades, in terms of the number of residents enrolled and the interest in different types of programs(108). In a secondary analysis of CAPER database (27), the trends of family medicine training from 1995 to 2013 were evaluated. Notable growth in the proportion of PGY3 graduates, from 10.9% to 21.1% of exiting trainees, was observed(27). Men were more likely than women to take extended family medicine training and emergency medicine was the most popular choice (56.4% of all PGY3s) during this period(27).

Examination of the CAPER annual census reports for the changes in the family medicine PGY3 positions funded by provincial ministries of health over the last decade, has revealed a significant increase in the number of PGY3 family medicine residents, increasing from 167 in 2007/2008 to 298 in 2017/2018(109)(108). During these 10 years, the proportion of residents enrolled in emergency medicine programs reduced in relation to the sizable increase in residents' participation in all other enhanced skills programs collectively. In 2007/2008, 103 (61.7%) PGY3 residents were in emergency medicine programs, compared with 64 (38.3%) in all other enhanced skills programs. By 2017/2018, 108 (36.2%) PGY3 residents were enrolled in emergency medicine programs, and the remaining 190 (63.7%) were in other enhanced skills programs. Curiously, the admission to the care of elderly programs remained unchanged. In 2007/2008, 10 (5.9%) residents and in 2017/2018 only 16 (5.3%) residents of all PGY3s pursued extended training in care of the elderly programs(109)(108).

2.2.4 Enhanced Skills PGY3 Training Intentions

2.2.4.1 System, policy makers, and pedagogical influences

One of the forces for the expansion in PGY3 positions and residents' interest in additional training is a response to community and health system needs(83)(89)(91). The development of third-year Emergency Medicine, Care of the Elderly, and Palliative Care programs was in response to the substantial shortfall of physicians in these areas of medical care (18)(51)(59)(88). Other programs enable physicians to build competency in caring for medically underserved populations (e.g. drug addiction, HIV and AIDS)(89). In addition, practice location may lead physicians to acquire special skills where there is a demonstrated need. For example, family medicine residents who plan to work in rural communities where access to specialist services is challenging could need to develop advanced skills in various areas like anesthesia, surgery, advanced maternity care, psychiatry, or Indigenous Health(83)(91).

Further to the significant role of PGY3 programs in meeting population needs, the CFPC has indicated that the essence of these programs lies in recruiting and retaining students in family medicine. Family medicine offers a flexible career path and enables residents to

acquire expertise in specialized domains through PGY3 Enhanced Skills programs within a short training period in comparison to other medical specialties(89)(90). Data from the 2007 National Physician Survey showed that the interest in a short residency program and the possibility of flexible work hours were important predictors for medical trainees to consider family medicine residency compared to other disciplines(94). The former Executive Director and Chief Executive Officer of CFPC, Dr. Cal Gutkin stated, "We also heard from medical students and residents that one of the most attractive things about considering a future in family medicine was the possibility of developing several special interests throughout their practice careers."(5)

Data on the relationship between the Canadian medical school student career interests and their postgraduate training disposition showed that of the students who indicated that emergency medicine was their top career choice on admission to medical school, 12.7% ultimately matched to a Royal College of Physicians and Surgeons of Canada (RCPSC) Emergency Medicine program, and 38.1% matched to a Family Medicine residency program. Only 37.5% of these individuals subsequently pursued PGY3 training in Emergency Medicine(110). The same study indicated that of the students who had not indicated that emergency medicine was their first choice for a career in medicine on medical school entry, 16% pursued PGY3 training in emergency medicine after family medicine training(110). Over one-third of medical students who were interested in the (RCPSC) Emergency Medicine program said they intended to apply to family medicine as a backup plan in case they were not accepted into a (RCPSC) Emergency Medicine program(111). Findings from these studies indicate that career preferences on entry into medical school can change during the course of training, and that PGY3 training in emergency medicine is seen as a fall back option for those interested in emergency medicine.

Other factors that may guide intentions for PGY3 training in family medicine are schools of medicine educational objectives and provincial government funding strategies. The variation in the types of the enhanced skills programs, the number of positions, in addition to the uptake by residents across universities and provinces support these notions (11)(27)(Table 1). Approximately thirty percent of family medicine trainees at the

University of Toronto and University of Saskatchewan pursued extended training compared with less than fifteen percent of those at the University of Montreal, Dalhousie University and Memorial University of Newfoundland in 2011–2013(27). Such variations may be attributed to the individual pedagogical considerations of each school of medicine, and the diversity in the provincial funding for extended family medicine training since the major source of the Canadian postgraduate education system funding is through the provincial government ministries(27)(112). Furthermore, CFPC established the Triple C competency-based curriculum in family medicine in 2011(90). The aim of Triple C curriculum is to prepare residents for the practice of comprehensive family medicine anywhere in Canada (90)(113). CFPC emphasizes that enhanced skills training programs objectives should remain consistent with Triple C curriculum goals(90). However, it is not clear how such pedagogic change will affect the practice patterns of enhanced skills program graduates(27).

2.2.4.2 Personal and professional influences

Some family doctors strive to enhance their knowledge and devote their time to particular clinical areas that they find personally compelling and intellectually stimulating, for example, sports medicine, palliative care, child health, and emergency medicine(20)(89). A survey explored the practice intentions of family medicine residents (from six Canadian family medicine residency programs) at the entry to residency in 2012 and at the end of training in 2014. Of exiting residents, 36.6% were considering having a focused practice and 70.8% intended to provide comprehensive care practice with an area of special interest (113).

A study conducted by Green et al. on the perspectives of residents and postgraduate program directors and third-year program coordinators on third-year family medicine programs revealed that the strongest drive for enrolling in PGY3 training, as generally indicated by all study participants, was residents' academic needs rather than community or health system needs or earning potential(20).

Furthermore, past research shows that exposure to a role model(114), and consideration of remuneration and prestige are appreciable factors in medical trainees' interest in sub-

specialization and career choices(114)(115). The income disparity between generalists and specialists has been identified as one of the elements that make specialization more attractive and prestigious compared to generalist practice(115). It is unclear if such factors could also drive family medicine residents to undertake extended training, yet, as noted earlier, residents and educators do not view income as an important predictor for the demand for PGY3 training(20).

Improved lifestyle and job satisfaction factors have been shown to attract residents to subspecialized fields of medicine(116)(117). An analysis of the 2013 National Physician Survey regarding the determinants of Canadian family physicians' job satisfaction indicated that focused practice FPs reported greater job and work-life balance satisfaction than their generalist counterparts(118). The study did not include information about physicians' training; however, it referred to the role of specialization in satisfaction with practice.

2.2.5 Scope of Future Practice of PGY3 Graduates

The skills that PGY3 graduates can bring to patient care are well recognized(11)(17)(18)(20); however, the impact of enhanced skills programs on future practice patterns of graduates is poorly understood. The 2012 National Physician Survey showed that more than a quarter (27.9%) of family medicine residents were planning to undertake a third year training position(10), up from 23% in 2010(30), and 28.7% of those residents were planning to have focused practices upon graduation (defined as dedicating more than 50% of practice time to a specialized focused area within family medicine)(10).

A study comparing the practice patterns of 2- and 3-year family medicine program graduates in Ontario revealed that undertaking a PGY3 program was strongly associated with physician practices that were confined to the areas of enhanced training obtained(66).

While changes in family practice and trends to PGY3 training have been reported, along with the forces that shaped these trends, there have been no previous studies that specifically address what factors relate to focused practice or PGY3 residents'

motivations in considering enhanced training. This thesis explores the factors associated with, and the range of clinical services offered by focused practice FPs, and the perspectives of PGY3 residents on undertaking extended training and their future career plans. Such information has implications for medical education, curricular development, physician recruitment, and policy making.

Table 1 Enhanced Skills PGY3 Programs as listed by Canada's 17 Schools of Medicine as of July 2019

University	**Number of programs**	**Category 1 Enhanced Skills Programs**	**Category 2 Enhanced Skills Programs**
Dalhousie University (119)	3	Emergency; Care of Elderly; Palliative.	
Laval University (120)	5	Emergency; Care of Elderly; Palliative; Clinical Scholar	Perinatal
McGill University (121)	7	Emergency; Care of Elderly; Palliative; Sports & Exercise; Clinical Scholar	Hospital Medicine; Mother and Child Health
McMaster University (122)	10	Emergency; Care of Elderly; Palliative; Anesthesia; Sports and Exercise.	Self-designed-Rural Regional Programs: Acute Care/Critical Care; Maternal/Child Health; Palliative care; Mental Health; or a combination of these.
Memorial University of Newfoundland (123)	3	Emergency; Care of Elderly.	Care of Underserved Populations.

University	Number of programs	Category 1 Enhanced Skills Programs	Category 2 Enhanced Skills Programs
Northern Ontario School of Medicine (124)	11	Emergency; Care of Elderly; Anesthesia.	Obstetrical Surgical Skills; Self-Directed Enhanced Skills, for example: Indigenous Health; Women's Health; Advanced Obstetrics; Northern and Remote Medicine; Wilderness Medicine; Infectious Diseases; Other areas deemed valuable, or relevant by the Program Director (in consultation with the learner and the community they serve).
Queen's University (125)	10	Emergency; Care of Elderly; Palliative; Anesthesia.	Women's Health; Global Health; Indigenous Health; Intellectual and Developmental Disabilities; Self-designed Rural Skills and general Enhanced Skills.
University of Alberta (126)	7	Emergency; Care of Elderly; Palliative; Anesthesia; Sports & Exercise.	Occupational Health; Customized Skills Programs

University	Number of programs	Category 1 Enhanced Skills Programs	Category 2 Enhanced Skills Programs
University of British Columbia (127)	18	Emergency; Care of Elderly; Palliative; Anesthesia; Sports & Exercise; Clinical Scholar	Addiction Medicine; Advanced Obstetric; Geriatrics; Global Health; HIV/AIDS; Hospital Medicine; Indigenous Health; Obstetrics; Oncology; Palliative Medicine; Women's Health; Emergency Medicine.
University of Calgary (128)	8	Emergency; Care of Elderly; Palliative; Anesthesia; Sports & Exercise.	Addiction Medicine; Global Health; Maternal Newborn Care
University of Manitoba (129)	7	Emergency; Care of Elderly; Palliative; Anesthesia; Sports & Exercise.	Obstetrics and Women's Health; Cancer Care
University of Montreal (130)	6	Emergency; Care of Elderly; Palliative; Clinical Scholar	Addiction Medicine; Advanced perinatal skills program.
University of Ottawa (131)	11	Emergency; Care of Elderly; Palliative; Anesthesia; Sports & Exercise; Clinical Scholar	Enhanced Maternity Skills; FP-Oncology; Global Health; Women’s Health; Self Design

University	**Number of programs**	**Category 1 Enhanced Skills Programs**	**Category 2 Enhanced Skills Programs**
University of Saskatchewan(132)	4	Emergency; Anesthesia; Sports & Exercise.	Enhanced Surgical Skills
University of Sherbrooke (133)	4	Emergency; Care of Elderly; Palliative; Clinical Scholar (Research); Clinical Scholar (Educator).	
University of Toronto (134)	19	Emergency; Care of Elderly; Palliative (Clinical); Palliative (Academic); Anesthesia; Sports & Exercise; Clinical Scholar (Research); Clinical Scholar (Education).	Addiction Medicine; Breast Diseases; Clinical Environmental Health; Global Health & Vulnerable Population; HIV Care; Hospital Medicine; Indigenous Health; Low-Risk Obstetrics; Women's Health; Medical Oncology; Self-directed Special Populations.

University	**Number of programs**	**Category 1 Enhanced Skills Programs**	**Category 2 Enhanced Skills Programs**
Western University (135)	12	Emergency; Care of Elderly; Palliative Care Program; Sports & Exercise Medicine	Academic Family Medicine; Child Health Program; Chronic Disease Management; Hospitalist; Obstetrics & Women`s Health; Family Medicine Oncology; Primary Care Rheumatology Program; Individualized Program.

Chapter 3

3 Study 1: Focused Practice in Family Medicine: A Quantitative Study

3.1 Introduction

The vision of the CFPC is for FPs to provide a comprehensive, continuing, broad scope of care to the communities they serve. However, a growing number of FPs are electing to narrow their scope of practice and concentrate on specialized areas of care. The aim of this study was to explore the factors associated with having a focused practice and assess the clinical activities of focused practice FPs.

3.1.1 Study Objectives

1. To identify the factors associated with having a focused practice among a sample of family medicine graduates in Canada.

2. To assess the clinical activities, including the range of services and procedures provided by focused practice FPs

3. To assess the range of services provided by focused practice FPs and the characteristics of focused practice FPs in relation to the scope of office-based care.

3.2 Methods

3.2.1 Design

In this study, a secondary analysis of data collected from the cross-sectional 2013-2014 Western Family Medicine Resident Follow-Up Survey was conducted (Appendix 1).

3.2.2 Sample and Survey Administration

The survey was mailed to all individuals who could be located and who had graduated from the residency program between 1985 and 2012 including International Medical Graduates and those who completed a third year. The contact information of the graduates was found in the databases of physician regulatory bodies in both Canada and

the United States. A paper survey was mailed with a follow-up reminder to all non-respondents after one month. This was supplemented by making available an on-line version of the survey. The survey was administered using modified Dillman method and it was approved by the Western University Health Sciences Research Ethics Board (File number.105015)(65)(Appendix 2).

3.2.3 Survey Description and Study Variables

The survey inquired about the nature of the physician's practice and whether respondents considered themselves family physicians with focused practices. Information about respondents' gender, training site (urban or rural), year of graduation, whether they did additional training (PGY3) beyond core two years of family medicine residency, and location were obtained from the departmental administrative database and matched to the unique identifier by the departmental research assistant.

The survey inquired about the size of population in which respondents practised, and the primary payment method of their practices. In addition, the survey provided information about the clinical activities the participants were engaged in by including questions regarding a number of services offered by participants, as well as the procedures either offered or performed by participants in the past 2 years.

Objective 1 - Study Variables

Appendix 3 outlines the dependent and independent variables for objective 1, the specific survey questions related to these variables and the response categories that were used to evaluate the results.

Dependent Variable

The dependent variable: focused practice or non-focused practice family physician was based on physician's response (yes or no) to the survey question: "The College of Family Physicians of Canada defines a family physician with a focused practice as (those family doctors with a commitment to one or more specific clinical areas as major part time or full time components of their practice). Based on this definition, do you consider yourself to be a focused family physician?".

Independent Variables

Physician characteristics

Physician's gender (male or female) and training site (rural or urban) were identified. The number of years since graduation was calculated from the time of graduation to the time the survey was conducted (2014-year since graduation).

To explore the most accurate number of survey respondents who completed PGY3 training, the research assistant staff searched survey respondents' training directory in the physician regulatory bodies' databases in both Canada and the United States, and identified the graduates with PGY3 training, and the type of PGY3 programs they had completed. The total number of respondents with PGY3 training was slightly higher than the number identified in the departmental administrative databases (56 versus 48). This updated PGY3 training information was added to the original data as a new variable and utilized in this study. Those who completed PGY3 training were categorized as "yes" and those who did not complete PGY3 training as "no".

Practice characteristics

Locations of practice were collapsed from the original categories that included eight Canadian provinces, other, and United States into two categories, Ontario and "others", to account for the small responses from those individuals not based in Ontario.

The size of population served was reduced from six categories into five: inner city, urban, suburban, small town, and rural/remote. The original categories of "rural" and "isolated/remote" were collapsed into rural/remote because of the low number of responses in each.

Remuneration type was also evaluated. The variables were: Fee for service (FFS), Family Health Group (FHG), Family Health Organization (FHO), Family Health Network (FHN), Salary, Community Health Center (CHC), Alternate Funding Plan or Alternate Payment Plan (AFP or APP). The original categories of FHG/FHO/FHN were collapsed together, hereafter referred to as Group Payment Models because of the similarity among

these models. These three payment strategies are based upon patient enrollment, and the care within these models are provided by family physicians practicing in groups and being reimbursed through blended payment strategies that involve capitation, along with partial fee-for-service and incentives that promotes the provision of comprehensive primary health care, preventive care, and requirements for after-hours services(76). Salary and CHC were combined into Salary/CHC because the physicians are paid on a salary basis in CHC(76).

Objective 2 - Study Variables

The clinical activities of focused and non-focused practice FPs were evaluated in this study. Survey respondents reported whether they had provided a list of services included in the survey (question 4) in their family practices. These services were: care in office, in-hospital patient care, after hours care, house calls, palliative care, nursing home visits, minor surgery, emergency medicine, sports medicine, intrapartum obstetrics, and walk-in clinic.

The survey also included a comprehensive list of 67 procedures either offered or performed by physicians in the past 2 years (question 8). The list of procedures were under the categories of integumentary, musculoskeletal, local anesthetic, injection and cannulation, ear, nose, eye, gastrointestinal, resuscitation, genitourinary and women's health, and obstetric procedures. These were derived from the College of Family Physicians of Canada list of core procedures in family medicine(136).

Objective 3 - Study Variables

Office-based care is considered the principal setting for family physician's practice(13). Therefore, the range of services provided and the characteristics of focused practice FPs were assessed in relation to the scope of office-based care.

Care in office was included in the list of services included in the survey (in question 4).

Focused practice FPs were divided into those who have an office-based practice (OBFFP), and those who have non-office-based practice (NOBFFP).

The rest of the services listed in question 4 of the survey were used to assess the range of services offered by NOFFPs, OBFFPs, and non-focused practice FPs. The services were: in-hospital patient care, after hours clinic, house calls, palliative care, nursing home visits, minor surgery, emergency medicine, sports medicine, intrapartum obstetrics, and walk-in clinic.

Physician characteristics (gender, years since graduation, PGY3 training) and practice characteristics (location, population size served, and primary payment model) variables were used in the analysis of the NOBFFPs, OBFFPs, and non-focused practice FPs.

3.2.4 Analysis

3.2.4.1 Objective 1 - Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 25(137). The dependent variable was focused practice or non-focused practice family physicians. The independent variables were gender, number of years since graduation, training site, PGY3 training, location of practice, population size served, and primary payment model. These variables are listed in Table 2.

Descriptive analyses were conducted to describe the characteristics of the sample. The frequencies of the dichotomous variables, and the mean and the standard deviation of the continuous variable were calculated and are reported in Table 2.

Associations between each of the 7 independent variables and the dependent variable were assessed in a bivariate analysis using chi-square tests for the nominal variables and an independent sample t-test for the continuous variable. Variables were considered statistically significant if p-values were less than 0.05(Table 2).

A logistic regression model was used for further assessment of the relationship between the independent and the dependent variables. The direct forced entry method was used to build a logistic regression model for the purposes of this study.

Before running the multivariate analysis, a logistic regression analysis for each independent variable was conducted separately to identify the unadjusted association

between each independent variable and the dependent variable. Tests were considered statistically significant if p-values were less than 0.05. Results of both logistic regression analyses are available in Table 3.

Multicollinearity among independent variables was examined by performing collinearity diagnostics tests. Multicollinearity occurs when there are high correlations between the independent variables (138)(139). Multicollinearity was examined by determining the tolerance and the variance inflation factor values. Variance inflation factor is the inverse of the tolerance value. Tolerance values that are less than 0.10 (or the variance inflation factor greater than 10) indicate high correlation between the variables in the model(138)(139). In this study, the tolerance value of each independent variable was greater than 0.10 (or variance inflation factor less than 10), indicating no issues with multicollinearity; therefore all independent variables were retained in the logistic regression analysis.

Next, outliers were assessed. Outliers are the cases with extreme values that can distort analyses(140). Residuals were examined to determine outliers. Outlier cases with standardized residual values above or below -2.5 were removed and the regression analysis was repeated(138). This resulted in a change in the coefficient of variable “years since graduation” but no change in the overall fit of the model. Therefore, outlier cases were retained in the analysis.

3.2.4.2 Objective 2 - Analysis

The clinical activities the participants engaged in were explored and analyzed. The range of services offered by focused and non-focused practice FPs were compared and analyzed using chi-square tests as illustrated in Table 4.

Variables were considered statistically significant if p-values were less than 0.05.

The top 10 procedures offered or performed by focused and non-focused practice FPs were described and reported in frequencies as shown in Table 5.

3.2.4.3 Objective 3 - Analysis

Focused practice FPs were divided into those who have an office-based practice (OBFFP), and those who have non-office-based practice (NOBFFP).

The range of services offered by NOBFFP, OBFFP, and non-focused practice FPs groups were compared and analyzed using chi-square tests as reported in Table 6.

The variations among NOBFFP, OBFFP, and non-focused practice FPs groups based on physician's characteristics (gender, years since graduation, training site, PGY3 training) and practice characteristics (location, population size served, and primary payment model) were compared and analyzed using chi-square tests for nominal variables and an independent t-test for the continuous variable (Table 7).

Variables were considered statistically significant if p-values were less than 0.05.

For the variables with cell sizes less than five, the significance values for Fisher's Exact tests were reported in Tables 4, 6, and 7.

3.2.5 Sample Size

This study looked at the relative contribution of a number of factors to the outcome of being a focused practice or non-focused practice family physician. PGY3 training was identified as a variable of primary interest for the purpose of sample size calculation as it is shown to be an important predictor of practice patterns in family medicine in the literature(10)(66). The approach of Hsieh in calculating sample size for logistic regression was used(141). Given a 2-sided $\alpha = 0.05$ with 80% power, the estimated sample size required was 60 (Appendix 4).

3.2.6 Missing Values

368 of 420 respondents (87.6%) had complete responses to survey items used for the variables in this study. Of all the variables included in the study, 3 had missing values as follows: 6.9% of population size served, 6.7% of primary payment model, and 1.9% of the dependent variable (focused or non-focused practice family physician) as shown in Appendix 5.

Multiple imputation was performed using the multiple imputation model function in SPSS version 25(138) to address missing values. Multiple imputation technique consists of three steps. The first step is imputation that involves the creation of several plausible datasets for the missing values from their predictive distribution based on the observed data. In the second step, an analysis of the imputed dataset is carried out, producing distinct parameter estimates. The final step involves combining the results obtained from each completed data analysis, which produces pooled estimates- aggregates of multiple imputed values(142).

The imputation number was chosen as 5 as five imputed datasets have been considered sufficient(142).The imputation was conducted using the fully conditional specification method, which is an iterative Markov chain Monte Carlo method that can be used when the pattern of missing data is arbitrary(143)(144).

A logistic regression analysis was conducted with the same data set after the missing values were imputed. Comparing the results of logistic regression after imputation to those conducted without imputation indicated that inclusion of the respondents with incomplete data would have had minimal impact on study results as illustrated in Appendix 5. Therefore, the original data set before imputation was used in the analysis.

3.3 Results

Of the 988 survey packages mailed to the list of Western University family medicine residency program graduates, 420 individuals completed and returned the survey, for a response rate of 42.5%. The profile of responders and non-responders is shown in Appendix 6.

3.3.1 Results - Objective 1

3.3.1.1 Descriptive Analysis

Table 2 describes the characteristics of the respondents to the survey. There were more male than female respondents (51.9% vs. 48.1%), and the majority (87.6%) were urban program graduates. Fifty-six (13.3%) respondents completed PGY3 training, and the

majorities (68%) of the respondents were emergency medicine program graduates (Appendix 7).

When the survey was conducted, the physicians had been graduates for 2 to 29 years, with a mean of 13 years (standard deviation= 7.9). Approximately 87% of the respondents were located in Ontario and most (43.1%) were practicing in inner cities (population size > 250,000).

There was a good response (98.1%) to the question "Do you consider yourself a focused practice family physician?" with 149 (35.5%) of survey respondents self-defining as focused practice FPs.

Focused practice FPs were principally involved in emergency medicine (41.8%), sport/exercise medicine (10.9%), hospital medicine (10.0%), and palliative care (9.1%) (Appendix 8). Approximately one-third (30.9%) of focused practice FPs had completed PGY3 training.

Focused practice FPs received payment mainly via fee-for-service (34.3%) or alternative payment plan /alternative funding plan (33.6%), compared to the majority of the non-focused practice FPs (75.9%) who were in group payment models.

3.3.1.2 Bivariate Analysis

Results of the bivariate analyses can be seen in Table 2 which shows the association between the dependent variable and each of the independent variables. PGY3 training, the size of the population served, and the primary payment model were all statistically significantly associated with the dependent variable. A significantly larger proportion of focused practice FPs than non-focused practice FPs had completed PGY3 training. The association between the population size served and the dependent variable was also significant with a greater proportion of focused practice FPs practicing in inner city, urban, and small town areas, and a smaller proportion of them practicing in suburban and rural/remote areas compared to non-focused practice FPs.

Similarly, the relationship between primary payment model and the dependent variable was significant. A larger proportion of focused practice FPs than non-focused practice FPs were remunerated through fee-for-service, alternative funding plan/alternative payment plan, or salary/community health centre payment models, while the majority of non-focused practice FPs were remunerated through group payment models.

Gender, years since graduation, training stream (rural or urban), and practice location (Ontario or other) variables were not significantly associated with the dependent variable.

Table 2 Characteristics of the Sample and Bivariate Analysis

Independent variables		**Total N= 420**	**Dependent variable N=412**		***P*-value***
			Focused Practice FPs N= 149	**Non-Focused Practice FPs N=263**	
Physician Characteristics					
Gender	N (%)	420 (100)			.742
Male		218 (51.9)	79 (53.0)	135 (51.3)	
Female		202 (48.1)	70 (47.0)	128 (48.7)	
Missing		0			
Years since graduation		420 (100)			.406
	Mean (St.D)	13.2 (7.9)	12.6 (7.4)	13.3 (8.1)	
Missing		0			
Training site	N (%)	420 (100)			.498
Rural		52 (12.4)	21 (14.1)	31 (11.8)	
Urban		368 (87.6)	128 (85.9)	232 (88.2)	
Missing		0			
PGY3 training	N (%)	420 (100)			<.0001
Yes		56 (13.3)	46 (30.9)	10 (3.8)	
No		364 (86.7)	103 (69.1)	253 (96.2)	
Missing		0			
Practice Characteristics					
Location	N (%)	420 (100)			.453
Ontario		365 (86.9)	127 (85.2)	231 (87.8)	
Other		55 (13.1)	22 (14.8)	32 (12.2)	
Missing		0			

Independent variables	Total N= 420	Dependent variable N=412		*P*-value*
		Focused Practice FPs N= 149	Non-Focused Practice FPs N=263	
Population size served N (%)	391 (93.1)			.002
Inner City (>250,000)	181 (43.1)	76 (53.9)	105 (42.5)	
Urban (100,001 – 250,000)	52 (12.4)	21 (14.9)	31 (12.6)	
Suburban (40,001 – 100,000)	44 (10.5)	13 (9.2)	30 (12.1)	
Small Town (10,001-40,000)	62 (14.8)	25 (17.7)	36 (14.6)	
Rural/ Remote (≤ 10,000)	52 (12.4)	6 (4.3)	45 (18.2)	
Missing	29 (6.9)			
Primary payment model N (%)	392 (93.3)			<.0001
FFS	86 (20.5)	47 (34.3)	38 (15.0)	
Group Payment Models	224 (53.3)	31 (22.6)	192 (75.9)	
Salary / CHC	20 (4.8)	13 (9.5)	7 (2.8)	
AFP/APP	62 (14.8)	46 (33.6)	16 (6.3)	
Missing	28 (6.7)			

*Statistically significant at p <0.05.
FPs = Family Physicians; FFS=Fee For Service; Group Payment Models- Family Health Group, Family Health Network, Family Health Organization; CHC= Community Health Centre; AFP/APP=Alternate Funding Plan/Alternate Payment Plan.

3.3.1.3 Logistic Regression

Before running a multivariate analysis, a logistic regression analysis for each independent variable (gender, years since graduation, training site, PGY3 training, location, population size served, and primary payment model) was conducted separately to identify the unadjusted association between each independent and the dependent variable.

Statistically significant associations were noted with PGY3 training, population size served, and primary payment model variables in the unadjusted logistic regression analyses.

In multivariate analysis, six variables were included in the logistic regression model: PGY3 training, population size served, and physician's primary payment model (significant in the bivariate and the unadjusted logistic regression analyses), in addition to gender, training site (rural/urban), and years since graduation. These variables were retained in the multivariate regression model as each was considered important in the

overall assessment of the factors associated with being a focused practice family physician or not. Practice location (Ontario versus "Other") was not included in the multivariate analysis as there were small responses from those individuals not based in Ontario and this variable did not show any statistically significant association with the dependent variable. Results of the logistic regression analyses (unadjusted and adjusted) can be seen in Table 3.

Two of the independent variables were statistically significant in the multivariate analysis (PGY3 training and primary payment model). PGY3 training was associated with being in a focused practice ($p < 0.001$) with a recorded odds ratio of 15, controlling for all other variables in the model. There was also an overall significant association between physicians' primary payment model and focused practice FPs ($p < .001$). When compared to physicians in fee-for-service model, those in group payment models were less likely to be in a focused practice. Gender, training site, years in since graduation, and the size of the population served were not significant in the multivariate model.

Table 3 Logistic Regression Analysis of Focused Practice/Non-focused Practice Family Physicians on Physician and Practice Characteristics N=412

Independent Variables	**Logistic Regression (Unadjusted)**			**Multivariate Logistic Regression (Adjusted)**		
	B	***P*-value***	**OR (95% CI)**	**B**	***P*-value***	**OR (95% CI)**
Physician characteristics						
Gender						
Male (Ref.)						
Female	-.07	.74	.93 (.62-1.39)	.24	.410	1.27 (.72 - 2.25)
Years since graduation	-.01	.40	.99 (.96-1.0)	-.02	.253	.98 (.94 - 1.01)
Training site						
Rural (Ref.)						
Urban	-.20	.45	.81 (.50 - 1.47)	.75	.114	2.12 (.83 - 5.38)
PGY3 training						
No (Ref.)						
Yes	2.42	.00	11.30 (5.49-23.2)	2.70	.000	15.00 (5.51 - 40.8)

Independent Variables	Logistic Regression (Unadjusted)			Multivariate Logistic Regression (Adjusted)		
	B	***P*-value***	**OR (95% CI)**	**B**	***P*-value***	**OR (95% CI)**
Practice characteristics						
Location†						
Ontario (Ref.)						
Other	.22	.45	1.25 (.70 - 2.24)			
Population size served		.005			.150	
Inner city (Ref.)						
Urban	-.07	.84	.93 (.50 - 1.75)	-.01	.97	.98 (.43 - 2.23)
Suburban	-.51	.16	.60 (.29 - 1.22)	-.55	.24	.58 (.22 - 1.46)
Small town	-.01	.89	.96 (.53 - 1.73)	.05	.90	1.05 (.46 - 2.38)
Rural/remote	-1.69	.00	.18 (.07 - .45)	-1.31	.02	.27 (.09 - .81)
Primary payment Model		.000			.000	
FFS (Ref.)						
Group Payment Model	-2.04	.00	.131 (.074 - .23)	-1.99	.00	.136 (.07 - .27)
Salary / CHC	.41	.43	1.50 (.54 - 4.13)	.63	.27	1.88 (.61 - 5.8)
AFP/APP	.84	.02	2.32 (1.14 - 4.73)	.45	.31	1.58 (.65 - 3.8)

*Statistically significant at $p<0.05$. † Excluded in multivariate model.

OR= Odd Ratio; CI= Confidence Interval; Ref.= Reference category; FFS= Fee For Service; Group Payment Models- Family Health Group, Family Health Network, Family Health Organization; CHC= Community Health Centre; AFP/APP =Alternate Funding Plan/ Alternate Payment Plan.

3.3.2 Results - Objective 2

3.3.2.1 The range of services offered by focused and non-focused practice family physicians

Respondents reported whether they had provided a set of services (included in the survey) in their family practices. The types of services offered by focused and non-

focused practice FPs varied as shown in Table 4. While providing care in the office was reported as the most common clinical activity in both groups, less than fifty percent of focused practice FPs provided care in office settings compared to over ninety percent of non-focused practice FPs. Approximately 60-70% of non-focused practice FPs reported after hours clinic, house calls, and palliative care as part of their practices, whereas only about 25% did so of focused practice FPs. More focused practice FPs reported working in emergency medicine (36.9%) than did non-focused practice FPs (21.7%).

Nearly 10% of focused practice FPs reported providing care in nursing homes, whereas (31.6%) of non-focused physicians included this service in their clinical activity. Non-focused practice physicians also provided more in-hospital patient care, intrapartum obstetrics, and walk-in clinic services than the focused practice physicians, but the differences were not statistically significant.

Table 4 Services Offered by Focused and Non-Focused Practice Family Physicians N= 412

Services	**Total N (%)**	**Focused practice FPs 149 (35.5)**	**Non-focused practice FPs 263 (62.6)**	***P*-value***
Care in office	318(77.2)	72 (48.3)	246 (93.5)	<.0001
In-hospital patient care	147(35.7)	49(32.9)	98 (37.3)	0.217
After hours clinic	222(53.9)	40 (26.8)	182 (69.2)	<.0001
House calls	195(47.3)	32 (21.5)	163(62.0)	<.0001
Palliative Care	191(46.4)	38(25.5)	153(58.2)	<.0001
Nursing home visits	97 (23.5)	14 (9.4)	83(31.6)	<.0001
Minor Surgery	174(42.2)	24 (16.1)	150 (57.0)	<.0001
Emergency Medicine	112(27.2)	55(36.9)	57 (21.7)	0.001
Sports Medicine	52 (12.6)	21 (14.1)	31 (11.8)	0.298

Services	**Total N (%)**	**Focused practice FPs 149 (35.5)**	**Non-focused practice FPs 263 (62.6)**	***P*-value***
Intrapartum Obstetrics	32 (7.8)	9 (6.0)	23 (8.7)	0.215
Walk-in Clinic	15 (3.6)	4(2.7)	11(4.2)	0.314
*statistically significant at $p<0.05$. FPs= Family Physicians.				

3.3.2.2 Procedures offered/performed by focused and non-focused practice family physicians

The top 10 procedures offered or performed by focused and non-focused practice FPs were also examined as shown in Table 5. Nearly all the top procedures provided by the self-defined focused family practitioners were those typically done in emergency settings while the non-focused practice family physicians group provided more of the standard office based procedures(136).

Table 5 Top 10 Procedures Offered/Performed by Focused and Non-focused practice Family Physicians

	Focused Practice FPs N= 149		**Non-Focused Practice FPs N= 263**	
	Procedures	**%**	**Procedures**	**%**
1	Lumbar puncture in adult	54.3	Pap smear	77.2
2	Insert peripheral venous line in infant	49.4	Excise dermal lesions	75.9
3	Insert nasogastric tube	47.4	Cryotherapy of skin lesions	75.0
4	Insert peripheral intravenous line in both adult and child	46.5	Pare skin callus	74.8
5	Endotracheal intubation	45.6	Insert intrauterine device	74.4
6	Perform cardiac defibrillation	44.8	Scrape skin for fungus determination	74.3
7	Place transurethral catheter	43.8	Perform endometrial aspiration biopsy	73.5
8	Insert oral airway	43.1	Perform skin biopsy	72.9
9	Perform bag and mask ventilation	42.8	Cryotherapy or chemical therapy for genital warts	72.8

	Focused Practice FPs N= 149		Non-Focused Practice FPs N= 263	
10	Perform slitlamp examination	42.7	Electrocautery of skin lesions	72.7
FPs= Family Physicians.				

3.3.3 Results - Objective 3

3.3.3.1 The range of services offered by focused practice family physicians (office-based/non-office based), and non-focused practice family physicians

Differences in the range of services provided by focused practice FPs in the light of their principal practice setting (office versus non-office based) were examined, and are shown in Table 6. Just over fifty percent (51.7%) of focused practice FPs had non-office based practices. The most common areas of focused practice among OBFFPs were sport medicine (21.1%), emergency medicine, and child/adolescent health with the proportion of (13.2%) for each. NOBFFP were involved in emergency medicine (63.1%) and hospital medicine (10.8%) (Appendix 9).

Further analyses were conducted to evaluate the variations in the range of clinical activities offered by NOBFFPs, OBFFPs, and non-focused practice FPs (Table 6). When evaluating the clinical activities reported by each group, except for emergency medicine there was globally less participation of NOBFFPs in all other practice activities when compared with OBFFPs and non-focused practice FPs. Furthermore, a significant decline was notable in the proportion of physicians providing afterhours clinic care, house calls, palliative care, nursing home visits, and minor surgery from the non-focused practice FPs, to the OBFFPs, to the NOBFFPs group. For example, 62% of non-focused practice FPs provided house calls, compared to 34.7 % of OBFFPs, and to only 9.1% of NOBFFPs group. Also seen in Table 6 that in terms of range of services offered, the OBFFP tend to lie between the non-focused physicians and the NOBFFP.

Non-focused practice FPs and OBFFPs had higher participations in a variety of medical services, including in-hospital patient care, sports medicine, intrapartum obstetrics, and walk-in clinics compared to NOBFFPs, although this finding had no statistical significance.

Table 6 Services Offered by Focused Practice Family Physicians (office-based/non-office based) and Non-focused Practice Family Physicians N= 412

Services	**Focused Practice FPs N= 149**		**Non-focused Practice FPs N (%) 263 (62.6)**	***P*-value***
	NOBFFP N (%) 77(51.7)	**OBFFP N (%) 72 (48.3)**		
In-hospital patient care	24 (31.2)	25 (34.7)	98 (37.3)	.373
After hours care	3 (3.9)	37 (51.4)	182 (69.2)	<.001
House calls	7 (9.1)	25 (34.7)	163 (62.0)	<.001
Palliative Care	16 (20.8)	22 (30.6)	153 (58.2)	<.001
Nursing home visits	4 (5.2)	10 (13.9)	83 (31.6)	<.001
Minor Surgery	2 (2.6)	22 (30.6)	150 (57.0)	<.001
Emergency Medicine	46 (59.7)	9 (12.5)	57 (21.7)	.001
Sports Medicine	5 (6.5)	16 (22.2)	31 (11.8)	.498
Intrapartum Obstetrics	0 (0.0)	9 (12.5)	23 (8.7)	.444
Walk-in Clinic	0 (0.0)	4 (5.6)	11 (4.2)	.587
*Statistically significant at $p<0.05$. FPs= Family Physicians. NOBFFP= Non-office based Focused Practice Family Physician. OBFFP= Office-based Focused Practice Family Physician.				

3.3.3.2 Characteristics of focused practice family physicians (office-based/non-office based) and non-focused practice family physicians

Table 7 describes the variation among NOBFFPs, OBFFPs, and non-focused practice FPs as analyzed by participant characteristics. There was a significant difference in PGY3 training with a greater proportion of NOBFFPs completing a PGY3compared to OBFFPs and non-focused practice FPs.

In terms of the population size served, the highest proportion of respondents were located in inner cities with population areas of 250,000 (or more) across the 3 physicians groups. None of the NOBFFPs were located in rural/remote areas with population size of 10000 or less, as opposed to 8.7% among OBFFPs, and less than twenty percent (18.2%) among non-focused practice FPs; these were significant differences.

In addition, a significant difference in primary payment model was observed among the physicians' groups. A greater proportion of non-focused practice FPs and OBFFPs were in group payment model compared to NOBFFPs. A greater proportion of OBFFP were remunerated through FFS payment model compared to the NOBFP and non-focused practice FP groups. The NOBFFP were more likely to be in an AFP/APP model, reflecting the availability of these payment models for emergency medicine and hospitalist physicians who were the majority of those focused practice FPs not in office based practices.

Gender, training site, and years since graduation variables were not significantly different across the physician groups.

Table 7 Characteristics of Focused Practice Family Physicians (office-based/non-office based) and Non-focused Practice Family Physicians N=412

Variables	**Focused Practice FPs N= 149**		**Non-focused Practice FPs N= 263**	***P*-value***
	NOBFFP N= 77	**OBFFP N= 72**		
Gender N (%)				.742
Male	45 (58.4)	34 (47.2)	135 (51.3)	
Female	32 (41.6)	38 (52.8)	128 (48.7)	
Years since graduation				.536
Mean (St.D)	13 (7.2)	12.2 (7.6)	13.3 (8.1)	
Training site N (%)				.498
Rural	15 (19.5)	6 (8.3)	31 (11.8)	
Urban	62 (80.5)	66 (91.7)	232 (88.2)	
PGY3training N (%)				<.001
Yes	34 (44.2)	12 (16.7)	10 (3.8)	
No	43 (55.8)	60 (83.3)	253 (96.2)	
Location N (%)				.453
Ontario	68 (88.3)	59 (81.9)	231 (87.8)	
Others	9 (11.7)	13 (18.1)	32 (12.2)	

Variables	Focused Practice FPs N= 149		Non-focused Practice FPs N= 263	*P*-value*
	NOBFFP N= 77	OBFFP N= 72		
Population size served N (%)				.001
Inner city	34 (47.2)	42 (60.9)	105 (42.5)	
Urban	13 (18.1)	8 (11.6)	31 (12.6)	
Suburban	10 (13.9)	3 (4.3)	30 (12.1)	
Small Town	15 (20.8)	10 (14.5)	36 (14.6)	
Rural/remote	0 (0.0)	6 (8.7)	45 (18.2)	
Primary payment model N (%)				<.001
FFS	20 (28.6)	27 (40.3)	38 (15.0)	
Group Payment Models	1 (1.4)	30 (44.8)	192 (75.9)	
Salary/CHC	7 (10.0)	6 (9.0)	7 (2.8)	
AFP/APP	42 (60.0)	4 (6.0)	16 (6.3)	

*Statistically significant at $p<0.05$. NOBFFP= Non-office based Focused Practice Family Physician; OBFFP=Office-based Focused Practice Family Physician; FFS=Fee For Service; Group Payment Models- Family Health Group, Family Health Network, Family Health Organization; CHC= Community Health Centre; AFP/APP=Alternate Funding Plan/ Alternate Payment Plan.

3.4 Discussion

3.4.1 General

This study examined the factors associated with having a focused practice in family medicine and the range of the clinical activities of focused practice family physicians. There were four main findings of this study: 1) completing additional postgraduate training was associated with having a focused practice, especially among non-office based focused practice physicians, 2) focused practice FPs were mainly remunerated by fee-for-service or alternative payment/alternative funding plans compared to non-focused FPs who were more likely to participate in group payment models, 3) focused practice FPs offered less overall primary care services compared to non-focused practice FPs, 4) focused practice family physicians can be further divided into those who have an office base (OBFFP) and those who practice out of an office (NOBFFP). The OBFFP were less likely than the NOBFFP to have completed a PGY3 and more likely to be in a FFS or group payment model. Further, the range of primary care services offered by the OBFFP

group was wider than the range of services of the NOBFFP group, but less than the non-focused FPs.

Over one-third of Western University family medicine program participants who graduated from 1985 to 2012 identified themselves as focused practitioners, for whom a special clinical area was the main component of their practice. The proportion (35.5%) was slightly higher than family physician respondents to the National Physician Survey of 2007 (29.5%), 2010 (30.5%), and 2014 (32.4%)(2)(28)(29), and close to the percentage of exiting family medicine residents (36.6%) of six Canadian family medicine residency programs in 2014 reporting an intention to have focused practice(113).

3.4.2 Factors Associated with Focused Practice

This study revealed that pursuing additional postgraduate training after family medicine residency is associated with working in a focused practice. Although most of the self-defined focused practice FPs in this study did not do a PGY3, the proportion of PGY3 graduates among focused practice FPs was higher than those among non-focused practice FPs. Other studies have indicated that completing a PGY3 in family medicine was associated with restricted scope of practice among FPs(145)(146). For example, undertaking PGY3 training explained the variation in the practice patterns of core 2-year and 3-year family medicine training program graduates from 1996 to 2002, where PGY3 graduates practiced mostly in the areas in which additional training had been obtained(66). Two other separate studies evaluated the practices of FPs who completed PGY3 training in emergency medicine from Western University (147) and University of Toronto (145) between 1982-2004 and1982 -2009 respectively. Findings from these studies reported that most of the graduates were exclusively practicing emergency medicine. One could speculate that family physicians, who wish to commit to a specific clinical area as part-time or full-time components of their practice, are pursuing further education before entering workforce to enhance their skills in these specialized areas.

The present study showed a relationship between physician practice patterns and primary payment model, which are similar to findings elsewhere(13)(73)(74). Most focused practice FPs were remunerated through FFS or AFP/APP. Focused practice FPs in this

study were mainly involved in emergency medicine and sport medicine. In Ontario, where the majority of study participants practiced at the time of the survey, AFP/APP models are available for focused practice FPs in emergency medicine, and for those in sports medicine, generally FFS is the predominant payment model(78)(77)(148)(149). Group payment models are based on patient enrolment and the provision of comprehensive primary health care, preventive care, and after-hours services(150). In the present study, there was an association between being remunerated in group payment models and being in a non-focused practice. Non-focused practice FPs offered a wider range of services in multiple settings compared to focused practice FPs. This supports previous research findings that indicated that family physician group practice and mixed payment methods other than fee-for-service were associated with a wide scope of practice (13).

The research literature addresses the impact of gender on family physicians' career choices(12)(13)(16)(55). A study identifying the pool of primary care physicians in Ontario from 1992/93 to 2014/15 showed that male physicians were more likely than female physicians to be in focused practice(3). Similar findings were noted in the latest National Physician Survey with a higher percentage of male physicians in focused practices than females(2). In the present study, the proportion of male physicians in focused practice was slightly higher than female, but this finding was not statistically significant.

Physician age was not included in this survey, but we could assume that those with long years of practice are older than those with short years of practice. A previous study showed that longer established physicians offered a wider scope of practice compared to younger physicians(64). In this study, the number of years since graduation was not a predictor of being in a focused practice.

The literature reveals that geographic location is an important predictor of physician practice patterns (13)(16)(67)(68). In this study, focused practices FPs served populations of varying size, but were less prevalent in rural and remote geographic areas. Focused practice FPs were concentrated in inner cities with higher population densities. This

finding is consistent with other studies where physicians who work in rural areas tend to provide more comprehensive care(67)(68). This may also reflect family physicians in rural areas maintaining greater practice variety even if they have special areas of interest.

3.4.3 Reported Clinical Activities of Focused Practice Family Physicians

The delivery of family medicine services has evolved in Canada. Researchers have described the scope of practice and the comprehensiveness of services provided by FPs (12)(13)(14)(15)(16)(25)(48)(65). The primary care office is considered the principal setting in which FPs encounter their patients. Past studies have addressed services offered by FPs who practiced mainly in office settings(13)(151). Other studies have shown a decline in the out-of-office services provided by general practitioners(14)(15)(16). These studies did not exclude or specifically address the clinical activities of FPs with focused practices whose work context can be influenced by their special interest and area of focused practice.

In the present study, the range of services offered by FPs varied in terms of their scope of practice (focused vs. non-focused) and the practice setting of focused practice physicians (office versus non-office based practices). Focused practice FPs provided more emergency medicine and sport medicine services than their non-focused practice FPs counterparts, who consistently reported participation in wider variety of clinical activities including afterhours care, house calls, palliative care, and nursing home visits, in addition to in-hospital patient care, intrapartum obstetrics, and walk-in-clinic services.

Additionally, most of the top 10 procedures provided by self-defined focused practice FPs were those typically done in emergency settings, while the non-focused practice family physicians group provided more of standard office based procedures, such as pap smears, excision of dermal lesions, and cryotherapy of skin lesions. Such differences can be explained since most focused practice FPs were principally involved in emergency medicine and the majority of the non-focused practice FPs provided office-based patient care.

Furthermore, the results of the current study suggest that having an office-based practice influences the scope of practice of FPs. Among focused practice FPs, the proportion of those who delivered care in non-office setting (NOBFFPs) was slightly higher than those who practiced in office setting (OBFFPs). The NOBFFPs group had less variety in terms of their reported clinical activities than those who practiced in an office setting, indicating that they had more specialized practices. On the other hand, the OBFFPs were more similar to the non-focused group in terms of range of services offered. This suggests that the provision of care in an office setting is associated with the delivery of a wider range of services among family physicians as reported in the literature(3)(13)(146), but new with respect to focused practice FPs.

Moreover, considerable differences existed between NOBFFP, OBFFP, and non-focused practice FP groups in terms of undertaking additional (PGY3) training and physician remuneration structure. Completing a PGY3 was significantly associated with practicing in non-office setting. While the associations identified in this study do not necessarily imply causation, it is not surprising to see that the NOBFFPs who had more specialized practices had originally pursued additional and more specialized training after their family medicine residency. Previous research suggested that the physicians who choose to sub-specialize do not engage in comprehensive practices(15)(146). However, another study showed that among office-based FPs, additional postgraduate training was associated with a broad-based family practice(13).

The present study also found that remuneration models varied substantially across physicians' groups, particularly between OBFFPs and NOBFFPs. It reaffirmed previous findings that group payment models are associated with broader scope of practice among FPs(152), whereas FFS and AFP/APP payment structures are associated with more specialized practices(149).

Approximately fifty percent of OBFFPs were remunerated by group payment model. As mentioned above, this group of focused practice FPs offered a wider range of clinical activity compared to NOBFFPs, who were mostly paid through AFP/APP. These findings could have significance for health care planners. Attempts to increase focused practice

FPs' scope of practice might be achieved by encouraging these physicians to engage in patient enrolment models and group practices which support a more comprehensive pattern of care.

The present study illustrates differences in the distribution of physicians based on geographic practice setting. Of non-focused practice FPs, 18.2% were in rural and remote areas, compared to a much smaller proportion (8.7%) of OBFFPs and none of the NOBFFPs working in these areas. This finding is similar to that found in other studies where physicians who work in rural areas tend to provide more comprehensive care(67)(68). This also may reflect that FPs in rural areas maintain greater practice variety even if they have special areas of interest.

These findings have implications for family medicine workforce planning efforts. Focused practice FPs appear to be a heterogeneous population with different practice patterns that could be distinguished by having an office-base practice, and by their training background, geographical distribution, and the remuneration structure of their practices.

The study showed that most focused practice FPs offer specialized services through their focused practices. These findings do not match with CFPC's notion of FPs with focused practice as indicated in its Best Advice guide for Communities of Practice: "Providing patients and communities with services that meet their needs should remain a priority for family physicians…the in-depth knowledge of physicians with focused practices should not be viewed as a way to take that particular domain out of the scope of practice of comprehensive physicians. Areas such as intrapartum and palliative care continue to be integral parts of full-scope family medicine"(6). The CFPC encourages FPs with enhanced skills and focused practices to join comprehensive care settings and collaborate with other family physicians and health care providers in team-based practices within the concept of Patient's Medical Home, to ensure the delivery of patient-centered, broad ranged primary care and consulting services that meet community and patient needs(6). Significantly, in this study, OBFFP appear to come closest to this goal.

3.5 Study Strengths and Limitations

This is the first study to examine the factors associated with, and the medical services provided by a group of focused practice FPs, thus building a broad picture of focused practices in family medicine in Canada. The study was limited to graduates from one family medicine program, and the majority of participants were practicing in Ontario. As such, the study cannot be assumed to reflect Canada's diverse family physician population.

The study is based on a cross-sectional survey, and could not examine the changes in the career trajectories of individual physician over time. However, as the survey included physicians with a wide range of years after graduation (from 2 to 29 years), the respondents reflected a variety of career stages. As a secondary analysis of a survey, the variables chosen for the purpose of this research were limited to the questions and information present in the dataset. This research, as with other studies based on self-report, was potentially subject to social desirability bias, in which respondents tend to report an answer that is presumed desirable and acceptable by others(65).

Furthermore, the response rate to the survey was 42.5%. Focused practice FPs among non-respondents could have had different rates of participation in medical services. Nonetheless, the overall response rate to the 2014 National Physician Survey was only 16%(2); however, the proportion of FPs who reported having focused practices (32.4%) was comparable to those (35.5%) in this study.

Another limitation of the study is that the age of the survey data used for this study is now five years old, and there could be important changes in physicians' practices since. Despite the limitations, this study provides a greater awareness into focused practice in family medicine and enhances the present literature on the topic.

3.6 Conclusion

This is the first study that sheds light on the factors associated with having a focused practice in family medicine in Canada, and the range of the clinical services provided by these physicians. Completion of PGY3 training and physician's remuneration model were

both associated with focused practice. Office based focused FPs differ in important ways from those focused practice FPs who were not office based. Health care planners, policy makers, and researchers must take into account that focused practice FPs are heterogeneous in a variety of ways.

Chapter 4

4 Study 2: The Perspectives of Family Medicine Residents in Pursuing Enhanced Skills PGY3 Training: A Qualitative Study

4.1 Introduction

Training in family medicine prepares residents to adopt the practice of community-oriented, comprehensive family medicine. Certification in family medicine requires two years of training in Canada, the shortest length of training in the discipline in the Western world(92). For those wishing additional training, CFPC accredits various PGY3 programs that exist in designated areas(20). Trends in PGY3 training have been reported along with the forces that influenced these trends (11)(17)(20)(27)(88). The quantitative study part of this thesis identified an association between PGY3 training and being in a focused practice. However, little is known about what PGY3 residents considered to be important when they planned to undertake further training. The aim of this study was to explore PGY3 residents' decisions in pursuing extended training and their ideas about the nature of their intended practice.

4.1.1 Study Objectives

1. To explore the perspectives of Enhanced Skills PGY3 family medicine residents regarding their decision to pursue Enhanced Skills training.

2. To understand the career intentions of PGY3 residents, particularly as they relate to the type of practice they envision themselves working within.

4.2 Methods

4.2.1 Study Design

A descriptive qualitative method is an appropriate approach to explore family medicine graduates' decisions to undertake Enhanced Skills PGY3 training. Qualitative descriptive studies allow for the clear description of the characteristics of a phenomenon, it is

considered "the least "theoretical" of the spectrum of qualitative approaches, in that researchers conducting such studies are the least encumbered by pre-existing theoretical and philosophical commitments(153). Qualitative description involves a "low-inference" interpretation of events(153). Research conducted using descriptive qualitative study methods tend to interpret the events and experiences from a naturalistic perspective, staying close to the data(153)(154). As such it was felt that this method best fit the purpose of this study.

This study received ethics approval from the Western University Health Science Research Ethics Board (Project number: 111543) (Appendix 10), and from the Lawson Health Research Institute (Approval: R-18-441) (Appendix 11).

4.2.2 Sampling and Recruitment

A purposeful sample technique was employed to recruit participants for this study(155). All residents accepted in the Family Medicine Enhanced Skills PGY3 programs in 2018, at Western University were invited via e-mail (Appendix 12) to take part in the study. A letter of information about the study was included in the e-mail to inform and obtain consent from potential participants (Appendix 13). A follow-up reminder e-mail was sent to those who did not respond after two weeks. The invitation and follow-up reminder e-mails were sent by the administrative staff in the Department of Family Medicine at the Schulich School of Medicine & Dentistry at Western University on behalf of the research team. Participation was confirmed by e-mail.

4.2.3 Data Collection

Using a semi-structured interview guide (Appendix 14), in-depth, face-to-face interviews were conducted by the investigator (MM), between August and December 2018. Interviews were in person and scheduled at participants' preference and convenience. Interviews lasted 25-55 minutes. Two recording devices were used to audio-tape each interview. All interviews were transcribed verbatim, 7 interviews by an independent transcribing service and 3 by the investigator (MM). Personal identifiers were removed during transcription prior to data analysis. Participants were sequentially referred to by

number, starting at 1, based on order of their interview. All data was securely stored in a locked filing cabinet at the Centre for Studies in Family Medicine in London, Ontario. One encrypted and password protected USB flash drive was used to transport data for transcription. All electronic data was password protected and stored in the study's designated folder in the Schulich School of Medicine & Dentistry (Schulich) network drive, to which only the investigators have access. Data collection continued until theme saturation was achieved.

4.2.4 Data Analysis

A thematic approach to data analysis was utilized. After the interviews had been transcribed, each investigator read and coded the transcripts individually. Subsequently, they met as a team and iteratively discussed the codes, key ideas, and emerging themes. An initial template of eleven key codes was identified during the analysis of the first three interviews. The coding scheme was revised and refined as each subsequent interview was analyzed identifying new codes, similarities and association between the codes/ ideas, until thematic saturation of the data was reached. A final analysis template consisted of nine main codes with subsidiary sub-codes (Appendix 15).

An important step in qualitative research analysis is immersion and crystallization, which is described as the process that "consists of cycles where the analyst immerses him-or herself into and experiences the text, emerging after concerned reflection with intuitive crystallizations, until reportable interpretations are reached"(156). This process requires well-recorded data that combines both collected notes from interviews and researchers' inter-subjective experience in the topic and their ability to reflect back on their own roles, and listen and contemplate the data. (156). In this study, immersion in the data was conducted by the investigators through cycles of concentrated textual review of transcripts and rigorous interpretation of data, then crystallization of contextual types and content categories establishing patterns of importance for the emerging themes. Two of the investigators (TF and AT) have appreciable expertise in immersion and crystallization and in qualitative research overall and acted as mentors throughout the process. The investigators met once or twice a month, on average, throughout the data collection and

analysis process for reflection on the interview questions, transcripts, emerging themes, and the analysis process.

4.2.5 Trustworthiness and Credibility

Trustworthiness and credibility of the data were enhanced through the use of multiple techniques. The audio-taped semi-structured interviews were transcribed verbatim. The accuracy of transcription was verified by checking samples of the transcripts against the original recordings. A comprehensive analysis of the interviews was ensured by the involvement of the three investigators (TF, AT, MM) at all stages of data analysis. The researchers independently reviewed each interview transcript before meeting together to review each interview, and discuss codes and developing themes. MM tracked coding changes using memos as new categories and themes emerged. The investigators used the memos throughout the analysis process to interpret and reflect upon the data. Data analysis was concurrent with data collection, to allow for emerging ideas to inform subsequent interviews.

Reflexivity which "refers to the technique by which researchers turn the focus back on themselves to evaluate their influence on the findings and interpretations" (157) was performed at different steps of the research process. MM is a family physician who feels strongly about the role of family physicians in providing comprehensive continuing care to her patients, thus she was aware that this might influence her approach to the subject. In addition, as a graduate of Enhanced Skills PGY3 program who shares the educational background of study participants, MM was mindful that she would readily grasp participants' statements and that would affect the meaningful interpretation of participants' perspectives. Therefore, MM thoughtfully tried to set aside her personal experiences and views and strove to maintain a neutral stance throughout the data collection and analysis processes. Reflexivity was also undertaken by having three investigators work together as a team during data interpretation and analysis processes. Moreover, the variation in investigators' backgrounds and experiences contributed to the reflexive spirit of the research. Two of the investigators (TF and MM) are family physicians but at different stages of their careers, and the investigator (AT) is an

epidemiologist. The process of team decision-making in data interpretation and analysis promoted a continuous dialogue among the investigators, allowing them to share their beliefs, assumptions, and professional perspectives in a transparent manner. These helped to mitigate the biases that each investigator might have brought to the conducted research and provided a richer context for analysis.

4.2.6 Sample and Demographics

The final sample included ten participants, of the 22 residents accepted in the Family Medicine Enhanced Skills PGY3 programs at Schulich School of Medicine and Dentistry in 2018(158). There was a variation in the type of PGY3 program and gender of participants. There were four males and six females ranging in age from 26 to 33 years. Participants represented a variety of the specific areas of Enhanced Skills in PGY3 programs.

4.3 Findings

4.3.1 Overview of Findings

Participants described how their knowledge and experience of the discipline of family medicine and their training, in addition to their personal and prospective career factors, influenced their decision to pursue PGY3 training and how they envision their future career.

Analysis of the data yielded three main themes: Family Medicine Context; Family Medicine Training Context; and, Resident Context.

The first theme of "Family Medicine Context" describes PGY3 residents' experiences of the discipline of family medicine, and includes the following subthemes: 1) Family medicine is a community-based discipline; 2) Family medicine is a complex discipline; and 3) Family medicine is an evolving discipline.

The second theme "Family Medicine Training Context" illustrates PGY3 residents' experiences with training under two subthemes: 1) Length of family medicine training; and 2) Enhanced Skills PGY3 training opportunities in family medicine.

The third theme of "Resident Context" relates to: 1) Individual resident's personal context and interest, and 2) Prospective careers.

There was an inter-relationship between the major themes and some of the subthemes, highlighting ideas related to participants' insights into what shaped their training and career decision-making processes. The thematic framework in Figure 1 depicts these themes and their inter-relationship. These will be discussed in the following sections.

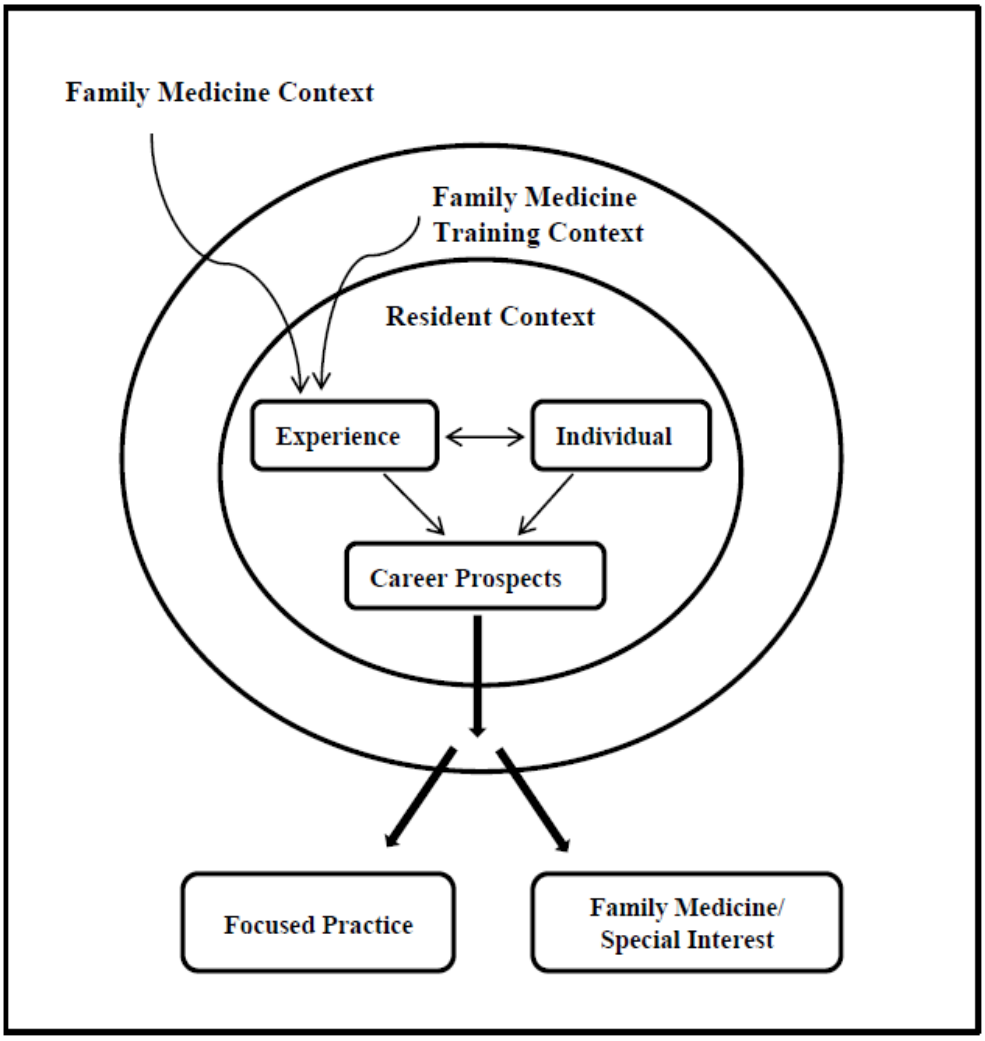

Figure 1 Framework of What Shapes the Intended Career Pathway of PGY3 Residents

4.3.2 Family Medicine Context

Enhanced Skills PGY3 resident evaluations of their overall experience and knowledge of the nature of the discipline of family medicine appeared to weigh heavily on their decision to pursue further training. Several aspects associated with family medicine influenced participants' decisions to seek extended training. The subthemes that formed the core of respondents' view of the family medicine context included: 1) family medicine is a community-based discipline; 2) family medicine is a complex discipline; and 3) family medicine is an evolving discipline.

4.3.2.1 Family medicine is a community-based discipline

Recognizing the roles of family physicians (FPs) in providing primary care to individuals within the context of the community, participants commented on the broad nature of family medicine, in terms of scope of practice and clinical problem management, the variability of family practice according to location, and the care coordination role of FPs in primary care setting. Participants provided an insight about their perceived responsibility of being "ready for anything":

"We see a little bit of everything. And it's interesting because we don't actually get to pick what we see. What we see kind of picks us and we just kind of respond to it. And so, in that sense, we have to be ready for anything. So I think the work of family physicians is variable, unpredictable, challenging and very broad based." (Interview3)

While identifying the traditional role of FPs in providing a broad scope of practice and being accountable for the context and needs of communities, participants placed an emphasis on obtaining additional knowledge in a particular field to deliver specialized care when and where it is necessary. They identified that achieving expertise in the area of special interest would enable them to act as resources to their patients and colleagues, and improve access to specialist level care for patients within family medicine;

"..so I think certainly it [PGY3 training] allows me to feel confident in the MSK cases that I'm seeing and there will be a lot of them, particularly because I'll have a focused practice. But I think acting as a resource for my colleagues who may feel a little less

confident with injections or with the diagnostic piece … certainly I can offer that.." (Interview7)

Participants appreciated the primary care responsibilities of FPs in providing health care for all in the context of the community, and underlined the importance of PGY3 training programs in equipping family medicine graduates with the necessary set of competencies required to care for patients in areas of specialized services within family medicine.

4.3.2.2 Family medicine is a complex discipline

Study participants were unanimous in identifying the complexity of family medicine as an important factor that influenced their decision to undertake PGY3 training, as well as their future career intentions.

Participants commented on the difficulties and challenges posed by the expansion of medical knowledge, the management of a vast array of medical problems, and dealing with uncertainty in generalist practice. Participants considered PGY3 training as an opportunity to enhance their knowledge and skills and become experts in areas of special interest, and ultimately as a way to overcome the perceived challenges of family medicine.

"So it's getting more complicated... with the aging population, with all the additional co-morbidities that patients accrue as they get older .., all these medications that they're on and the poly-pharmacy, I find that even just an average day like in the family medicine office, it can be very complicated,,, and that's one of the things that actually pushed me to do this extra year is because I take some time to learn more and more about the complexities..," (Interview4)

"I found that for me the uncertainty that comes with family medicine was a little bit unsettling. And I saw PGY3 as an opportunity to become expert in a topic that's still within the scope of family medicine." (Interview8)

In addition, participants commented on the workload and administrative aspects of family practice, including the amount of FP's work that is spent on indirect patient care (e.g.

reviewing reports, paperwork, extra work hours, scheduling), as leading causes for work-related stresses. They hoped that working in areas of special interest associated with focused practice settings would alleviate these perceived work stresses in family medicine. Comparing the work of emergency medicine physician to office practice FPs, one resident stated:

"There isn't that paperwork piece of emergency practice, there's no homework, you finish your shift and you're done and if you have a negative experience with a patient, you only see them once." (Interview6)

In addition to the participants' own perception of the complexity of family medicine, one participant shared her preceptors' opinions of the challenges in family medicine and the consideration of working in an area of special interest as a way to cope with future work challenges:

"A lot of my preceptors, although they are not practicing this way, they did say that family medicine on its own can become overwhelming and demanding and you need something on the side to mix things up … so that was the advice that I was given... and I'm following their advice."(Interview8)

The complexity of family medicine made participants consider specialized training so that they would be well-equipped to deal with future work challenges by increasing their expertise in a topic and/or focusing their future practice on an area of special interest.

4.3.2.3 Family medicine is an evolving discipline

In this study, participants identified the evolution of family medicine's landscape of care by citing the changes in the areas of clinical activities FPs have traditionally engaged in. In addition, they pointed to ongoing changes in policy and shifts in interprofessional roles that have contributed to a change in FP's work. For example, they referred to the expansion in the scope of practice of nurse practitioners whose work overlaps with FPs in primary care. They also cited the FP role in assuming responsibilities primarily provided by specialist physicians, and how PGY3 training facilitated the way for FPs to provide specialist level care at accredited facilities:

"I think family practice has evolved somewhat, family physicians are filling roles that they didn't fill five, ten years ago. Family doctors are working in tertiary care centers as emerge docs, in tertiary care centers as palliative care docs, in sports medicine focus clinics, as sports medicine docs. And I think in the past, these roles were filled by doctors who did more training, were more specialized for those roles.… I do think that the PGY3 year prepares a family doctor to work in those more specialized areas." (Interview6)

Participants were crafting their professional identity while at the same time identifying uncertainty about the current and future profile of family medicine. They pursued advanced training in specialized fields to allow them to undertake different roles in the medical system and establish a sustainable career.

"I think it [PGY3] fills a niche that we need to do,.. so with the changing politics of family medicine,.. we don't know what the outcomes are going to be…with government's proposals.. They are introducing more nurse practitioners, more nurses to do some work that family doctors do and a lot of people are saying that physicians, family physicians, will have to subspecialize."(Interview10)

Family medicine residents are approaching a time when they are seeking their professional identity just as the discipline of family medicine is in evolution, and there is an uncertainty about their profession's future. Residents embraced specialized training opportunities to adapt to the emerging roles of FPs in the health system and to shape their career path.

4.3.3 Family Medicine Training Context

Residents' experience during family medicine training was clearly articulated by the participants as being crucial in influencing their transition to a higher level of training through the third-year program and in assuming professional roles in specialized area of care to meet their learning needs.

The key findings for participants' experience during residency categorized by the following subthemes: 1) residents' perception of the length of family medicine training, and 2) the Enhanced Skills PGY3 programs in family medicine.

Residents' experiences during core family medicine and appreciation of the shift in learning during the PGY3 year described by participants are explored below.

4.3.3.1 Length of family medicine training

Among the residents interviewed, there was a sense that the core two-year family medicine training was too short to build more experience and to achieve the many competencies required to practise family medicine in different settings:

"…I feel.., there's a lot of knowledge to know…personally, I think it's kind of crazy that it's only a two-year program."(Interview4)

Participants stated that their two-year residency training prepared them to practice in the same setting where they did their training. However, the majority of the participants revealed that their core family medicine training did not adequately equip them to practice in other settings. They identified that the PGY3 programs allow residents to fill the gaps in their training and expand their competence in areas of special interest.

"I think after my two years in residency in family medicine .. I would feel prepared to practice family medicine in more of an urban/suburban setting because my family medicine..residency was in the city of [place] .. But if you ask me if I felt comfortable practicing family medicine in a rural setting where I'd have to do emerge, maybe obstetrics, maybe hospitalist, I don't think I'd feel fully comfortable with doing all those things just with my two years residency.. So I think the PGY3 can act as extra training, if you didn't get it in residency." (Interview1)

The application for the enhanced skill programs is a competitive process. For the residents interested in the PGY3 programs, the elective time spent during the two-year family medicine training is usually focused on the area of special interest. Participants indicated that they dedicated their clinical electives to the areas of interest:

".. so it's very competitive to get into [Emergency Medicine program],,,so you had to do pretty much all your electives in Emerge [and]for acute care related rotations". (Interview2)

The two-year family medicine training is considered inadequate for skills development to practice in various clinical settings. In addition, some family medicine residents tailor the majority of their core residency training to the area of special interest to create a successful application for the enhanced skills programs. This may reduce residents' exposure to various other clinical rotations relevant for the practice of family medicine.

4.3.3.2 Enhanced Skills PGY3 Programs

Participants emphasized that PGY3 training is an important part of the family medicine training system in Canada. The analysis of the interviews revealed that most of the participants were strong advocates for the existence and expansion of PGY3 programs:
"..overall I think PGY3 training should be available to anybody that wants to do it." (Interview2)

Participants were able to evaluate the difference in their learning experiences of core family medicine and PGY3 training. Residents relayed that their educational encounters during elective residency rotations in their areas of interest were incomparable to their PGY3 learning experience:

"I think when you do an elective, iit was more general, and more the framework of what you need to know. I'm finding now my focus in PGY3 is to… get more comfortable with.. more complex topics that comes with palliative care. I don't think you can quite get that from just elective experiences in your residency." (Interview8)

Emphasizing the value of PGY3 training, participants highlighted the advantages of the cumulative exposure to the subject, the formal teaching resources, and mentorship as favorable opportunities during the PGY3 year to optimize residents' learning potential. One resident provided an example of the structured teaching model in the Emergency Medicine program:

"..we did teaching like full day, once a week… And we did a lot of simulation and hands on procedural skills and the cadaver labs and things that they don't integrate into a family medicine program.." (Interview2)

Additionally, participants indicated that obtaining credentials through PGY3 training would facilitate career opportunities in certain domains. For instance, the participants from the emergency medicine, hospitalist, and palliative care programs alluded to the need for additional training requirement when considering a career in large hospitals:

"I want to practice in (place), and I know some of the bigger hospitals, they won't officially say this but they won't consider you unless you have the Added Competency." (Interview8)

Participants' experiences during core family medicine residency training and PGY3 training helped them grow professionally and meet their personal and professional interests in special and added-skills areas of care.

4.3.4 Resident Context

Resident context was identified as an important theme in understanding the overall experience of participants as they decided to pursue extended training and determine their future career plans. Individual residents' personal aspirations and professional interests, as well as their prospective careers, are key subthemes discussed in the following sections.

4.3.4.1 Individual factors and interests

Participants articulated how their unique individual context, including their personal factors and professional interests, were influential in deciding to undertake PGY3 training and in shaping their future career plans.

Personal factors comprised personality traits *"., just my mannerism, .. I think I could be of service in this area,. I think that's what made me want to do it."(Interview8),* and family and partner influences *".. my wife actually did the PGY3 ahead of me and so I knew kind of what the expectations were.." (Interview3)*

Participants also described the suitability of the stage of life they were in to engage in additional training: *"I was at a point in my life where like an extra year was fine, like I didn't have a big push to, to have like a full time job or make money or that I needed to*

move and that kind of thing, so there was no downside and there was a lot of benefit". (Interview2)

The decision to undertake extended training at a transitional stage of residents' lives, from a period of medical training to career launch, had to fit each resident's life outside medicine, including their unique personal and lifestyle considerations.

Additionally, interest in a specific field was viewed as an overwhelmingly important contributor to choosing PGY3 training for the participants. Residents pursued the programs about which they felt the most passion, as illustrated by residents' statements from different programs:

"I definitely like enjoyed it [emergency medicine] and I found it really challenging and really scary and it was like something that you couldn't back away from once I started being interested."(Interview2)

"I enjoy Sports Medicine, I enjoy exercise,...I was an athlete myself in 2 sports.., so I think I have a passion for athletics,.."(Interview9).

Participants of this study illuminated that interest and intellectual curiosity about a field were strong motives for them to engage in the third-year programs and in preparing for careers in their areas of special interest.

4.3.4.2 Career prospects

Participants' plans for future practice were influenced by different factors and thus were not easily predictable. There were three factors participants expressed that were important to their career decision making plans. These factors were: the type of PGY3 program; lifestyle; and system factors.

<u>Type of Enhanced Skills PGY3 program</u>

Participants' career prospects were influenced by the type of specialty training they were pursuing. This included having a focused practice in the chosen specialty, or a mixed practice that included working in specialty clinics, in addition to family medicine.

A participant had a vision for providing a broad scope of practice in addition to teaching: *"Doing a little bit of everything, so family medicine, surgical assisting, looking after in-patients, doing some teaching, maybe doing some palliative care."(Interview3)*

Study participants could see and project for themselves an initial career in their area of special interest, then a change in gears for a later career in family medicine. This was a common theme:

"..definitely will be doing emergency medicine and how long into my career I'll be doing emergency medicine, I don't know."(Interview2)

Participants from other different skills programs expressed somewhat different opinions regarding their future practices; some were planning to have a mixed practice:

"I envision myself doing a little bit of both. Like doing a little bit of family medicine and sports as well."(Interview9)

A participant shared concerns about the potential difficulty of doing palliative and family medicine together:

"I know that I enjoy palliative care. There are certain aspects of family medicine that I enjoy. It would be nice to have a mixture of the two. How realistic that's, I don't know." (Interview8)

In another comment, the same participant shared the common type of practice palliative care program graduates do: *"But the pattern that I'm finding more and more is that people who had trained in palliative care exclusively do palliative care." (Interview8)*

The type of the PGY3 program a participant was pursuing influenced their career trajectory and the range of clinical services they planned to offer in their future practices.

<u>Lifestyle</u>

Preventing burnout and work-life balance were identified as important influences on participants' future career choices. Participants believed that having variability in clinical

practice was important for avoiding burnout and maintaining an ideal work-life balance. They articulated how achieving variability at work could be facilitated by completing a PGY3 program:

"I think one of the ways doctors can avoid burnout is to have a more varied career… I see the PGY3 year as working to prevent kind of that emotional drag of, that medicine can be, I'm hoping that it will be for me anyway. I think doctors are happier when they have a bit of variety in their career."(Interview6)

When thinking about their future work plans, participants anticipated "burnout" to be a turning point in their career:

"I think really depends on how burnt out I get from emerge. Because emerge is more a high burnout specialty, the lifestyle is a little bit tougher in terms with the shift work and night shifts and so depending, you know family factors, if I have children … if emerge is too busy too much then probably transition." (Interview1)

Participants could also appreciate the flexibility that family medicine offers in terms of what they could do long-term*:*

"..because I'm a GP as well, I've got a lot of options that if I'm getting burned out I can step back and take up other things."(Interview2)

Participants referred to the favorable effect of variation at work and the positive influence of flexibility in family medicine in preventing burnout and improving physicians' career satisfaction.

<u>System factors</u>

In addition to the type of PGY3 program and lifestyle considerations, participants' future career plans were linked to system factors. These included payment method, funding arrangements for practice setup, and the potential need for retraining if they plan to change their scope of practice in the future.

One participant did not have a clear career plan, mostly because of: 1) system factors related to the emergence of a new area of care within traditional family medicine; and 2) whether there would be any specific remuneration for graduates providing consults in a specialized practice setting.

Another participant reiterated the influence of system factors on future career goals:

"So I don't know like logistically how,…this program really is successful because of the multi-disciplinary bit of it.. Like you need to have the dieticians and nurse practitioners and nurses and stuff like that involved too. And to get that funding, I don't know how, you know, setting up another clinic is going to be like."(Interview4)

An additional point made by a few participants was the importance of continuing some aspects of family medicine work in addition to their specialized focused practices to maintain their family medicine skills. The interviewees acknowledged that the skills learned in residency could be lost quickly if they were not practiced. Participants believed that they could maintain their family medicine skills by integrating some aspects of family medicine work to their focused practices:

"..if I don't end up having a family practice, I want to do walk in clinics, I don't want to lose the skills that I learned during my family medicine training." (Interview5)

Participants were aware of the College of Physicians and Surgeons of Ontario (CPSO) standard which requires retraining for focused practice family physicians who plan to return to family medicine practice in the future:

" ..the College has the kind of two-year requirement, you know where you have to,..be in practice, in the practice of family medicine."(Interview6) The same participant summed it by saying *" You can't be out of it [family medicine] for two years without retraining, I guess is the best way to say it because you do get rusty". (Interview6)*

Participants had different perspectives about their career plans; from planning to provide a wide spectrum family medicine care, to practicing predominantly in the area of specialized training, to considering a mixed practice that included family medicine and

their areas of special interest. Some participants were still undecided during the interviews. Residents practice intentions were driven by the type of PGY3 program, as well as lifestyle and system factors.

4.3.5 Conclusion of Findings: What Shapes the Career Path of PGY3 Residents?

Reflecting upon the participants' decisions to pursue enhanced training and their career prospects illuminated the inter-relationship among the main themes and subthemes- that influence the intended career pathway of PGY3 residents (see Figure 1). Participants described their experiences of the challenges and opportunities within the family medicine discipline. The availability of the Enhanced Skills programs swayed residents' decisions to seek their area of special interest and advance their skills in a specialized field, and to obtain credentials through a formal learning program in the PGY3, paving the path to whatever scope of practice they envisaged in their career. Some participants foresaw themselves in focused practices, while others envisioned themselves engaging in mixed practices of working in specialized clinics in addition to a family practice. Participants accounted for the perceived flexible nature of family medicine which enables graduates to choose the scope of practice that meets their personal plans:

".. in Canada you have the opportunity to really make your practice whatever you want, however you want, whether that's in-patient, out-patient, whatever demographic you want. You really have a lot of flexibility ..." (Interview5)

Findings from this study indicate that the intended career pathways of PGY3 residents are variable, governed by forces exerted by the family medicine discipline and training contexts, and an individual resident's circumstances and aspirations.

4.4 Discussion

4.4.1 General

This study contributes to a better understanding of Family Medicine Enhanced Skills (PGY3) residents' perspectives with regards to pursuing extended training and their

future practice decisions. These perspectives were categorized into three main themes: Family Medicine Context; Family Medicine Training Context; and, Resident Context.

Participants' experiences and knowledge within the "Family Medicine Context" were described under the following subthemes: 1) family medicine is a community-based discipline; 2) family medicine is a complex discipline; and 3) family medicine is an evolving discipline. Participants' experiences within the "Family Medicine Training Context" are divided into two subthemes: 1) length of family medicine training; and 2) Enhanced Skills PGY3 programs. Lastly, "Resident Context" described within the following subthemes: 1) individual resident's personal context and interest, and their 2) prospective careers.

There was an interrelationship among the findings across the contexts, shaping the intended career pathway of PGY3 residents. Each theme will be discussed sequentially in the following sections.

4.4.2 Family Medicine Context

Participants expressed their perceptions of the challenges and opportunities within the discipline of family medicine – a context within which they made decisions about joining the third-year postgraduate program and their future roles. Describing family medicine as a community-based discipline and the influence of community factors on FPs' practice, participants identified diversity and broad-based care as defining features of family medicine; nevertheless, they placed an emphasis on meeting certain population needs through specialization when conceptualizing their individual roles within the discipline. Findings surrounding the role of PGY3 programs in meeting community and population needs are supported in the literature (18)(20)(22)(89). This study adds to the observations noted about the common career trajectory of PGY3 graduates in specialized fields, with preference shown to expanding physicians' scope of care and providing broad-based family practice (11)(89).

Participants were explicit about the complexity of family medicine as an influencing factor for their interest in the PGY3 program. The complexity was identified in terms of

the ongoing expansion in medical knowledge, caring for an aging population, the complexity of diseases, and dealing with uncertainty in general practice. This echoes findings from previous research in the field(14)(25)(159). Moore et al. noted that visits to primary care physicians are getting more complicated because of growing population morbidity(159). Residents hoped that the enhanced training through the PGY3 year would help them build confidence and provide more competent services in defined areas of medicine. On the other hand, facing the workload and administrative demands of family medicine practice were identified as separate frustrations by study participants. In a qualitative study with groups of family medicine residents from 3 countries, "specialization as a solution to the perceived burden on family practice" emerged as a theme in the interviews with Canadian trainees(160). Participants in this study had similar opinions; they assumed that focusing practice to a specialized field was a means to reduce workload and to achieve their personal expectations for work-life balance. These findings align with previous research where FPs with focused practice were described as being more satisfied with their work and work-life balance than generalist physicians(118).

In describing the evolving nature of family medicine, participants pointed to the changes in Canadian FPs' scope of practice, and in the interprofessional roles and policy directions. This prompted FPs to reconsider their activities and position in the health system; this finding has been echoed in previous research(14)(161). Participants displayed apprehensions about their profession's future while recognizing that family medicine is in flux. The present study indicates that family medicine residents are at a point in their career when they are solidifying a professional identity even as the discipline itself is undergoing an identity crisis(161). In this context, seeking further training is seen as a way of reducing the inherent uncertainty they face. This finding reinforces the tendency toward the development of "specialized family physician" among the new generation of FPs in response to the emerging challenges associated with the evolution in the profession of family medicine (161).

Furthermore, the perception of flexibility in family medicine was considered an opportunity and an important finding that counterbalanced the perceived challenges of

family medicine. Flexibility resulting from the ability to control the type and location of work as well as work hours were considered appealing aspects of the profession; this has been also been reported in previous studies(162)(163). A new finding from this study indicates that the availability of PGY3 programs was viewed as contributing to the flexible nature of family medicine. Participants underscored the role of PGY3 programs in enabling residents to learn new skills and tailor their scope of practice to areas of special interest, to maintain control and satisfaction over their future work.

Proper attention to these findings by the CFPC, family medicine educators, health system planners, and policy makers is warranted. While the practice of family medicine is based on commitment to the patient, continuity of care, and meeting the health care needs of the population, the current complex environment of family medicine and advancements in medicine have influenced residents to consider specialization. If the challenges within the family medicine context persist, we could expect that more residents will choose specialized training and focused practice at the expense of comprehensive family practice; this would have implications for primary care in this country(3).

4.4.3 Family Medicine Training Context

The importance of training context in fulfilling residents' unique learning needs for their professional lives and future careers was strongly expressed by participants. This is congruent with the literature in that the training circumstances are influential in learners' career decisions (5)(110)(162). The present study emphasizes the valuable learning structure during the third-year training and builds on the debates about the length of family residency(86)(89). A previous qualitative study explored residents' readiness for independent practice indicated that the core two-year training was considered inadequate to attain the competencies required for generalist practice(102). In the present study, residents had mixed feelings regarding the standard two–year family medicine training. Participants conveyed that their core residency had properly prepared them to undertake roles in clinical domains similar to their training setting, i.e. office-based family practice, but it did not equip them for other areas of care, such as rural medicine, in-patient, or acute care. This observation adds to what has been reported, where residents' opinions

across Canada - indicates that their family medicine training contexts are not pertinent to their future family practices(164).

These findings are relevant for family medicine program directors and educators to consider further development in the postgraduate curriculum to ensure residents are exposed to a wide range of clinical domains to support them in gaining confidence in managing the breadth of family medicine in different settings upon graduation.

It is worthy to note that participants in this study were urban program graduates and their training experience could be different than those who are in rural programs. There is a paucity of data exploring the difference in PGY3 training trends between urban and rural program graduates. However, a previous study showed that graduates of rural residency programs tend to have a broader scope of practice compared to urban program graduates, even if they practiced in urban settings(67)(70).

Participants' perception of the length of their core training was probably affected by the fact that some of them dedicated their elective rotations to their area of special interest in preparation for a competitive application to PGY3 programs. As such, their exposure to broader clinical services during the two-year training was limited. A comparable urge for focusing clinical electives to the field of interest was noted to exist in the hidden curriculum of family medicine training as perceived by PGY1 & PGY2 residents in another study(165).

These findings have implications for family medicine departments in ensuring that their residents have adequate exposure to different rotations and in multiple settings to achieve the necessary education required to practice comprehensive family medicine, in addition to expanding skill sets in areas of clinical interest during the two-year family medicine training. Findings are also important for Enhanced Skill PGY3 program directors to reconsider the requirements for a successful application to PGY3, so interested residents do not have to devote the majority of their core training to improve their chance of getting accepted in PGY3 programs, but could keep their elective options diverse and more relevant for general family medicine.

Participants distinguished the valuable learning environment during PGY3 which is designed to support the learning needs of each resident. Residents applauded the effectiveness of the focused training and the direct application of knowledge in clinical settings, and the structured educational modules, as well as the meaningful interaction with preceptors in their learning process. These findings are new and have implications for future research as this is the first study that identifies PGY3 residents' perspectives on their training. Participants further noted the importance of PGY3 programs in helping them obtain credentials required to secure employment in certain settings, like large hospitals, and in specialized domains where the work of family physicians and the specialties overlap; a finding echoed elsewhere(89).

4.4.4 Resident Context

In describing a pathway to medical practice, it is important to recognize the personal motivations of residents for enhanced training. Although various influences arising from the family medicine discipline and training contexts contributed to residents' decisions, participants considered their unique personal factors as essential for career planning. They identified personality traits, spouse and family, and the suitability of the stage of life as important motives for their enhanced training and career-decision making. This finding is consistent with other studies that described what impacts specialty and career choices of medical learners in general(114)(115), but this study presents new findings with regards to the viewpoint of family medicine PGY3 trainees.

Interest in a specific domain was a salient influence in the decision process of individual residents, concurrent with previous studies(20). Participants pursued the Enhanced Skills program that they found personally compelling and intellectually stimulating, in the area of care that they felt the most passionate about. Some residents indicated that their interest in a specialized field developed during medical school before commencing residency, as noted in past research(110)(111), and appreciated the PGY3 opportunity in family medicine in achieving their professional interests. Other factors, like role model, prestige, and financial incentives noted in past research(114)(115)(166) were not apparent factors in the residents' decisions to undertake extended training in the present study.

While the reasons for pursuing PGY3 training are numerous, the learner's context and personal aspirations are critical in shaping the residents' career paths.

An important finding of this study was that, broadly speaking, the future career plans of participants varied depending on what PGY3 program a resident was pursuing, and the influence of lifestyle factors, opportunities, and system issues such as billing codes. For example, some residents envisioned themselves in focused practices initially then perhaps returning to family medicine later in their career. On the other hand, participants from different Enhanced Skills programs foresaw themselves engaging in mixed practices of working in specialized clinics in addition to a family practice. One participant recognized uncertainty in that the area of the enhanced skills program was very new and how it fits into the wider system remains to be developed. A participant from a different program anticipated a future practice that provides a broad spectrum of practice in both office and non-office settings, combined with teaching.

Further research exploring the differences in the training curriculum and environments of various PGY3 programs and to what degree these differences affect the scope of practice of graduates, irrespective of system and physician factors, is worthwhile.

Participants were aware of CPSO's requirement for retraining and assessment for physicians who intend to return to a scope of practice in which they have not practiced for two or more years(167). A few of the participants who were planning for a focused specialized career, were also considering providing some sort of primary care services in outpatient facilities, such as walk-in clinics, on a part-time basis, with the intention of retaining wider primary care knowledge. The consideration of maintaining family medicine skills in their future roles as focused practice physicians is a new finding of this study and underlines the impact of system factors and regulations on physicians' practice intentions.

Findings from the present study indicate that the majority of participants reported that they wanted to work in their area of advanced training, solely or in combination with family medicine, in the beginning and for the most of their career for as long as they were

satisfied with their employment, taking into consideration lifestyle, burnout, and system factors that would influence a change in their future career.

This study expands on previous work about the scope of practice of PGY3 graduates(66). Green et al. compared the practice patterns of graduates of core two-year family medicine training and those who completed third year programs and found that the practice activities of PGY3 program graduates were focused mostly to the areas of the enhanced training obtained(66).

This study has established that the motivation and future career intentions of PGY3 graduates are highly variable; they should not be seen as homogeneous. While the expected outcomes for graduates of all Enhanced Skills programs are the same as indicated by CFPC "..to develop additional skills and, in some instances, added competence to support and extend the delivery of comprehensive, community-adaptive care by family physicians"(83), residents' practice intentions differ, and their scope of practice may evolve according to personal or system demands.

4.5 Strength of this study

A qualitative approach was particularly appropriate for the purpose of this study because it allowed the participants to express the thoughts and personal experiences that influenced their decision to pursue enhanced training. Participants were in their third-year training, so their experiences within the family medicine discipline and training contexts were fresh, but also more mature than the learners in their earlier years of training in terms of informing their career prospects.

Sampling technique, data collection, and the methodology utilized in this study also contributed to its strengths. Study participants represented a variety of the specific areas of Enhanced Skills in PGY3 programs.

Using semi-structured, in-depth, face-to-face interviews allowed the collection of a breadth of knowledge about participants' perspectives in pursuing extended training and planning for their future career. The qualitative descriptive method of data analysis facilitated comprehensive analysis of the interviews and development of themes. Data

analysis was concurrent with data collection, thus allowed emerging ideas inform subsequent interviews.

4.6 Limitations of this study

The study has several limitations. This study intended to examine the perspectives of a group of residents undertaking enhanced training, and the participants were from one residency program in Ontario. Therefore, these findings may not be transferable to other Canadian programs given the possible variations between residency programs, and the differences in the provincial practice policies that could influence the type of practice graduates plan to pursue.

In addition, participants were urban family medicine program graduates and their practice intentions could have been different from graduates of rural programs as the site of training (urban versus rural) may shape the scope of practice of family physicians(70). This study examined residents' practice intentions that would not necessarily reflect what graduates will actually do after training. Grierson et al. identified the influence of subjective norms that include "the individual's perception of relevant others' beliefs that he or she should or should not perform the behavior" on residents' practice intentions(168). Furthermore, the data collection proceeded until saturation of themes achieved; however, further sampling may have provided additional insights. Participants who chose to participate in the study may have had different perspectives about their training and career plans than those who did not participate in the study.

4.7 Conclusion

This study contributes to the currently minimal literature about the factors influencing family medicine residents to consider extended (PGY3) training and the intended career trajectory of PGY3 residents. It highlights that PGY3 residents' career decision making is a complex and multifactorial process, shaped by their experiences within the family medicine discipline and training contexts, and conditioned by individual resident's personal and professional aspirations, the type of the PGY3 program, and system factors. The study summarizes the main factors that shape the intended career path of PGY3

residents. Commitment to comprehensive family medicine was not clearly conveyed as a career plan by the majority of the participants. These findings are important for the CFPC and family medicine programs in re-evaluating the objectives and the training environment of the Enhanced Skills programs to ensure that graduates' future practices do not impact access to comprehensive care. The study findings also have implications for healthcare workforce planners who will want to examine how the practices of PGY3 graduates can provide the most relevant health outcomes for communities.

Chapter 5

5 What Shapes the Path to, and the Intended Service Provision of Focused Practice Family Physicians?

5.1 Integrated Summary of Findings

Family physicians are the main provider of primary care; their roles have evolved to suit the health needs of the communities they serve and the Canadian health care system(14). Family medicine residents are trained to provide a broad range of clinical services to patients of all life stages. Upon graduation, they may choose to provide general family medicine, or have a focused practice in specialized areas such as emergency medicine, palliative care, or sports medicine. The practice patterns of family medicine graduates determine the majority of the primary care services available to patients(22)(45). There are concerns about the growing trend towards focused practice in family medicine that divert physicians away from comprehensive care and impact the availability of primary care providers in the Canadian physician workforce. This thesis provides a unique contribution to the existing literature regarding the trend toward specialization and focused practice within family medicine.

The thesis contains two research studies: a quantitative, secondary analysis of the 2013-2014 Western Family Medicine Resident Follow-Up Survey data, and a qualitative descriptive study using in-depth interviews with family medicine residents accepted into the Enhanced Skills PGY3 programs at Western University Department of Family Medicine in 2018.

The quantitative study described in Chapter 3 showed that over one-third of family medicine graduates identified themselves as focused practice FPs. Focused practice FPs appeared to be a heterogeneous group who were distinguished by having an office-based (OBFFP) or non-office-based practice (NOBFFP). The study highlighted that PGY3 training was associated with being in a focused practice, especially among the NOBFFPs. Non-focused practice FPs were remunerated mainly by group payment models compared to focused practice FPs who were remunerated mostly by fee-for-service or alternative

payment/alternative funding plans. The NOBFFPs were more likely than the OBFFPs to be in an alternative funding/alternative payment plan. In terms of clinical activities, focused practice FPs had less participation in a wide variety of clinical activities when compared to non-focused practice FPs. On the other hand, OBFFPs offered a broader range of services than their counterparts in non-office-based practices, but still less than the non-focused practice FPs.

The qualitative study described in Chapter 4 identified the importance of enhanced training in fulfilling residents' professional desire for expertise in special domains of medical care. Participants cited their knowledge and experience of the family medicine discipline and training contexts, in addition to their individual and professional aspirations, as factors in their decision to pursue extended training and in their career intentions. The career prospects of participants were variable according to the PGY3 program a resident was undertaking, and were influenced by system issues as well as personal factors unique to each resident.

The findings of both studies are compared, common themes include: 1) PGY3 training and the path focused practice, 2) payment strategy could influence focused practice family physician's practice pattern, and 3) focused practice: narrowing or broadening the scope of family medicine. Together, these three themes provide the composite background on what could shape the intention to focused practice and the range of the clinical activities undertaken by focused practice FPs.

5.1.1 PGY3 Training and the Path to Focused Practice

Residents' pursuit of enhanced training and the type of PGY3 program they undertake are linked with a career in focused practice. The quantitative study showed that completing PGY3 training after family medicine residency is associated with having a focused practice. Although most of the self-defined focused practice FPs did not do a PGY3, the proportion of PGY3 graduates among focused practice FPs in the survey was significantly higher than those among non-focused practice FPs, especially among the focused practice physicians who were practicing in out of office settings. Further ideas about the career intentions of PGY3 residents were explored in the qualitative study.

Participants pursued advanced training to build competency in specialized areas of care, and for some to enter the workforce with credentials added to their family medicine certification. While all participants reported that they planned to integrate the area of enhanced skills training into their future practices, their intentions about having a focused practice after graduation varied, based on the type of PGY3 program the resident was pursuing, in addition to lifestyle choices and system factors. For example, some participants reported that they intended to focus their work to emergency medicine and in-patient care, while others from different enhanced skills programs were planning to work in specialized clinics in addition to family medicine. The literature also demonstrates a variation in the practice patterns of different PGY3 program graduates(66). The majority of FPs who completed PGY3 in emergency medicine restricted their work to emergency departments(145)(146), whereas most of the graduates of Anesthesia (169) and Care of the Elderly (51) programs continued to provide general family medicine in addition to their areas of enhanced training. Findings from this thesis align with those from previous studies in that undertaking extended training in areas of special interest helps explain one path to a focused practice (66)(146), taking into consideration the type of PGY3 program in which graduates had trained.

Within the past decade, family medicine programs across the country adopted a competency-based approach to education by introducing the Triple C curriculum with the goal of preparing residents for the practice of comprehensive continuing care(90). Residents interviewed in the qualitative study were exposed to Triple C curriculum, but their intention to practice comprehensive family medicine was not strong. Previous studies showed that patterns of care developed during residency may guide future practice(66)(70)(147). Findings from this study have important implications for family medicine educators in assuring that learning experiences during PGY3 foster continuity of care, comprehensiveness, and patient-centered care, which are key principles of family medicine. In addition, enhanced training in a specialized domain should not divert residents' attention from whole-person care to disease-oriented care. This will weaken rather than strengthen the comprehensive role of FPs as described by McWhinney(21). Maintaining comprehensive care skills as part of the PGY3 curriculum, and ensuring that PGY3 program faculty model a commitment to comprehensive family medicine and

patient-centred care would help guide PGY3 residents to the practice of comprehensive family medicine.

5.1.2 Payment Strategy could Influence Focused Practice Family Physician's Practice Pattern

Family physician's remuneration models vary among regions in Canada(148). FPs may not have direct control over their payment model, but it could influence their practice patterns(73)(170). The FFS or AFP/APP payment models are the principal forms of remuneration available to focused practice FPs in Canada, particularly in Ontario(73)(74)(78). There is a paucity of information in the literature about the impact of different payment models on the practice behaviors of focused practice FPs.

In the quantitative study, variations in the remuneration models between focused practice and non-focused practice FPs, and among focused practice FPs in relation to the scope of office-based care were evident.

The majority of non-focused practice FPs were remunerated through Group Payment Models. The same physicians group offered a broader range of clinical services when compared to focused practice FPs who were remunerated mainly by FFS or AFP/APP.

Among focused practice FPs, the OBFFPs were more likely to be in a FFS or Group Payment Models compared to NOBFFPs, who were remunerated mainly by AFP/APP. The services provided by NOBFFPs were dedicated mostly to focused specialized practices. On the other hand, the range of services offered by the OBFFPs was wider than the range of services of the NOBFFPs, but less than the non-focused FPs.

Participants in the qualitative study referred to the potential effect of remuneration method on their future practice choices. There was a recognition that, for some areas of focused practice in Ontario, there was a need to attain an Access Bonus Exemption(77) designation to facilitate referrals from other FPs and obtain compensation for consulting services that they provide. In addition, establishing a practice in a specialized field would be subject to funding availability.

The possible financial advantages of working in specialized fields as suggested elsewhere (4)(115) were not identified by participants. As the trend toward focused practice is increasing, remuneration methods may also need to shift. While the most relevant payment model for focused practice FPs may vary according to the type and setting of their practice, compensation models that encourage focused practice FPs' participation in various aspects of family medicine should be considered to optimize patients' access to a broad range of primary care and consulting services in family medicine.

5.1.3 Focused Practice: Narrowing or Broadening the Scope of Family Medicine?

Traditionally, FPs have taken pride in delivering a broad range of services and meeting the needs of the communities they serve. This has been recognized as foundational to well-functioning healthcare systems (171).

Some believe that the trend toward focused practice affects the number of physicians providing care in traditional family practices (3)(25)(26)(161). Others recognize that the trend improves patients' access to a wider range of specialized services, especially in areas of medical practice that have staffing shortages, and particularly when a community need has been identified (4)(6)(172).

Findings from the quantitative study illustrate that the majority of focused practice FPs offered more emergency medicine and sports medicine services; however, they provided less overall range of services compared to non-focused practice FPs who reported participation in wider variety of clinical activities including afterhours care, house calls, palliative care, and nursing home visits. In addition, most of focused practice FPs in the quantitative study did not have an office-based practice, which is considered the basic setting for physicians to provide a range of primary care services and ensure continuity of care for a patient population (13).

Career plans of PGY3 residents in the qualitative study were variable. All participants were planning to integrate the area of enhanced training into their future work; either in a focused or mixed practice setting that included family medicine and specialized clinics.

However, their provision of the range of the clinical activities that they would consider including in their future practices was not clearly identified.

The range of clinical services provided by FPs can differ between communities and location of practice, in response to population needs. Participants in the qualitative study recognized local needs for the area of specialized training that they were pursuing. For instance, residents identified the need for enhanced skills in exercise medicine and rheumatology to address the musculoskeletal conditions of patients. Another participant referred to the shortage of emergency physicians in rural areas. As the graduates' survey data used for the purpose of the quantitative study did not include information about whether the practice patterns of participants matched population need, identifying the association between communities' demands and the medical services offered by focused practice FPs was not possible. However, when accounting for the geographic distribution of survey respondents as indicator for healthcare demands, there were a greater number of focused practice physicians responding to the survey who lived in in urban areas than rural areas. Rural physicians are more likely to maintain wide scope of practice in multiple settings and provide comprehensive care (15).

FPs in rural communities play a pivotal role in providing primary care and performing certain clinical tasks typically done by specialists in urban settings(173). The quantitative study showed that none of the non-office-based focused practice FPs were located in rural and remote areas. The same physician group provided a smaller range of services when compared to office-based focused practice FP and non-focused practice FP groups. This suggests that FPs in rural settings may work in primary care office settings and continue to provide a wide range of services to patients even if they develop enhanced skills in specialized domains. Other reasons for focused practices being strongly associated with urban areas could include the volume of work available in a particular focused service. The volume in rural areas may not be as great, due to lower population density and, perhaps, rural FPs are more likely to provide a broad range of services, lessening the need for focused practice FPs. The extent to which health policy and market forces may influence focused and comprehensive practices are important areas for future research.

FPs with focused practice can bring a valuable skill set to the work of FPs in the health system by filling in the gaps in specialty domains in some communities and expanding the range of clinical services offered to patients in primary care settings. Although most of the focused practice FPs in the quantitative study dedicated their work to a specialized field, it is interesting to recognize that those who had an office-based practice delivered a broader range of services than those who were not office-based. Supporting the provision of care in an office setting would facilitate the delivery of comprehensive care among focused practice FPs. Furthermore, integrating FPs with specialty interests and enhanced skills into some form of group practice would encourage them to have a mixed practice in collaboration with other health care professionals, thus providing a full basket of family medicine services to a patient population.

The CFPC's vision of the Patient's Medical Home (47) adopts this approach and encourages FPs with focused practices to amalgamate their additional expertise with primary care teams to deliver broad scope and continuing comprehensive care for a defined practice population. In order to make this a reality, health care planners, policy makers, and remuneration systems will need to facilitate the integration of focused practice FPs into primary care teams.

5.2 Implications of the Thesis

Family physicians have a central role in primary care delivery, and focused practice FPs constitute an important component of family medicine workforce in Canada. As noted in this study, multiple factors could shape family medicine graduates' choice of scope of practice and their roles in the medical community. These could relate to physician's training, the discipline of family medicine, system factors, in addition to individual physician's aspirations. That being said, these findings indicate that several initiatives could be undertaken at different levels to support the provision of comprehensive care among family medicine graduates and the incorporation of the advanced skills of focused practice FPs into the delivery of primary care.

5.2.1 Implications for Family Medicine Education

The results of this study have implications for family medicine education. Although all family medicine programs across Canada train residents in a broad range of skills required for the practice of comprehensive family medicine, physicians' practices after graduation vary. The findings of this thesis have significance for family medicine departments and Enhanced Skills PGY3 programs directors, highlighting the need to: a) identify the ways in which the training environments and the current curriculum of different PGY3 programs influence the scope of practice of their graduates; b) consider strategies to ensure that residents' exposure to a wide scope of family will be maintained during the PGY3 year of training; c) ensure that the basic two year program in family medicine provides sufficient exposure to comprehensive family practice across a variety of clinical settings to ensure that graduates are competent to enter into practice in a variety of settings. Consideration of increasing the length of family medicine residency programs to three years is already being discussed(103)(104); d) allow re-entry to brief training positions of up to one year for those who have been in practice and have found a community need for services not currently available; and e) ensure that the number and types of PGY3 (and re-entry positions if made available) should be demonstrably linked to community needs.

5.2.2 Implications for Healthcare Policy and Planning

With the appreciation of the role of comprehensive family medicine in the delivery of robust, high quality, and cost-effective primary care, there has been a growing attention to primary care renewal, which resulted in the development of different compensation models for family physicians(73).

In the quantitative study, most of the focused practice FPs were under FFS or AFP/APP compensation models. In addition, differences in the payment structure were noted between focused practice FPs who provided care in office and out of office settings. The majority of OBFFPs were in FFS or group payment models, compared to NOBFFPs who were remunerated mostly through AFP/APP models.

A reconstruction of the remuneration methods of FPs with enhanced skills and focused practice can be supported to facilitate these physicians' inclusion in family practice groups, and encourage them to commit to a broader-scope of practice and continuity of care to best serve patients' needs for primary care and specialized services.

Additionally, with the recognition of the disproportionate reduction in the supply of comprehensive family physicians and overall population growth (3), findings from this thesis provide valuable data for family medicine workforce planning in Canada.

Findings from the quantitative study indicated that the range of the clinical services provided by most of the focused practice FPs, who constitute approximately 30% of family physicians' workforce(2), were focused to specialized fields. In addition, the range of services offered by focused practice FPs was different in terms of their practice setting (office versus non-office based practices).

The career intentions of PGY3 residents in the qualitative study were variable, and influenced by the type of enhanced training, system factors, and personal interests and lifestyle considerations of individual residents.

It is pertinent for healthcare planners to identify if the services offered by focused practice FPs help to fill gaps in the communities for specialized areas of care, and determine how the trend to focused practice and Enhanced Skills training in family medicine affect family physicians' availability to meet health care demands for comprehensive primary care services.

5.3 Recommendations for Future Research

This study provides important information about the factors related to focused practice and PGY3 training in family medicine. Future studies are required to provide further insights about the topic. An important association between undertaking PGY3 training and being in a focused practice was noted in this thesis; however, most of the self-defined focused practice FPs in the quantitative study did not complete a PGY3. Future research needs to look at those focused practice FPs who did not complete a PGY3 and identify

the route taken to focus practice for this group: what influenced them to choose their focus, and what shaped their career path?

This is the first study that examined the current practice patterns of focused practice FPs and explored the career intentions of PGY3 residents. Additional studies are required to explore the initial and long term practice patterns of PGY3 graduates and whether those will align with their stated practice intentions while still in training. Moreover, it is evident that the type of PGY3 program could further shape the type of practice adopted by future FPs. This warrants further research to explore the source of variation in the practice patterns of different PGY3 programs graduates, and if other factors shape choices physicians make as they navigate the early stages of their careers.

This study found that most focused practice FPs are located in urban rather than in rural areas. Future research examining the range of medical activities offered by focused practice FPs in rural settings is important. In addition, the extent to which health policy and market forces may influence focused and comprehensive practices in urban and rural areas are important areas for future research.

This study revealed differences in the range of services provided by focused practice FPs who had office-based and non-office-based practices. Longitudinal research is required to explore the participation of focused practice FPs in different services that are provided within and outside the office. Additionally, future studies could help explain whether the changes in physicians' scope of practice and the trend to focused practice in family medicine are meeting community needs.

This research study provides an insight about focused practice and PGY3 training in family medicine based on inputs from graduates and residents of one residency program in Ontario. Studies from other training programs and regions of the country will provide further understanding and a more robust picture about the trend to and the practice patterns of focused practices and specialization within family medicine in Canada.

5.4 Conclusion

This thesis explored the factors associated with being in a focused practice, linking training and practice in family medicine. The collective findings of both studies highlight the role of extended training and the type of PGY3 program on physicians' future patterns of practice. This thesis also provides useful perceptions on the effect of system factors; especially with regard to physicians' payment strategy on their practice patterns. It is imperative for health care planners to take into consideration that the services provided by most focused practice FPs are confined to specialized areas of care. Results from this thesis offer baseline data and preliminary insights for family medicine education, workforce planning, and policy making for the delivery of primary care and specialized healthcare services in Canada.

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Appendices

Appendix 1 Western Family Medicine Resident Follow-Up Survey 2013-2014

Schulich MEDICINE & DENTISTRY — Family Medicine

Western Family Medicine
Resident Follow-Up Survey 2013-2014

1. If you responded to our survey previously, have you made changes to your practice since then?
   If so, in what way?

Location	Y	N
Services Offered	Y	N
On Call arrangements	Y	N
Other _____		

2. What is the population of the city, town or village in which you currently practice?
   Population: _____

3. Are you currently doing a locum?
   Yes No

4. Please indicate on the list below those services which you currently offer to your regular patients and/or to other patients you see: (Check all that apply)
   - Care in Office
   - In-hospital patient care
   - Intrapartum Obstetrics
   - House calls
   - Palliative Care
   - After hours clinic
   - Home for the Aged/Nursing Home Visits
   - Minor Surgery
   - Emergency Medicine
     - Emergency Medicine is my main practice
     - I do ER shifts in addition to my family practice
   - Sports Medicine
   - Walk-in Clinic only

5. The College of Family Physicians of Canada defines a family physician with a focused practice as "*those family doctors with a commitment to one or more specific clinical areas as major part time or full time components of their practice*". Based on this definition, do you consider yourself to be a focused family physician?

   Yes No

What is your focus?_____

6. The College of Family Physicians of Canada defines family physicians with special interests as "*family doctors with traditional comprehensive continuing care family practices who act as the personal physicians for their patients and whose practices include one or more areas of special interest as integrated parts of the broad scope of services they provide.*" Based on this definition do you consider yourself as a Family Physician with a Special Interest?

   Yes No

What is/are your special interest(s)? _____

7. Do you consider yourself to be a comprehensive family physician?
   Yes No

Schulich School of Medicine & Dentistry, Western University,
Western Centre for Public Health and Family Medicine, 1st Floor, London, ON, Canada N6A 5C1
t. 519.661.2037 f. 519.661.3878 www.schulich.uwo.ca/familymedicine

Version Date: September 4, 2014

Western

8. Have you performed any of these procedures in the past 2 years? Please indicate which services you have performed and/or offered. For those performed please mark with "p", and those offered but not performed "o".

INTEGUMENTARY PROCEDURES		**MUSCULOSKELETAL PROCEDURES**	
Incise and drain abscess		Splint injured extremities	
Perform wound debridement		Apply sling to upper extremity	
Insert sutures: simple, mattress, and subcuticular		Reduce dislocated finger	
Repair laceration: suture and gluing		Reduce dislocated radial head (pulled elbow)	
Perform skin biopsy: shave, punch, and excisional		Reduce dislocated shoulder	
Excise dermal lesions (eg, papilloma, nevus, or cyst)		Apply forearm cast	
Perform cryotherapy of skin lesions		Apply ulnar gutter splint	
Perform electocautery of skin lesions		Apply scaphoid cast	
Scrape skin for fungus determination		Apply below-knee cast	
Use Wood lamp		Aspirate knee joint	
Release subungual hematoma		Inject knee joint	
Drain acute paronychia		Aspirate shoulder joint	
Partially remove toenail		Inject shoulder joint	
Perform surgery for ingrown toenail		Aspirate epicondyle (for tennis elbow)	
Remove foreign body (eg, fish-hook, splinter, or glass)		Aspirate bursae (eg. Patellar, suacromial)	
Pare skin callus		Inject bursae (subacromial)	

LOCAL ANESTHETIC PROCEDURES		**INJECTION AND CANNULATION PROCEDURES**	
Infiltrate local anesthetic		Perform intramuscular injection	
Perform digital block of finger or toe		Perform subcutaneous injection	
		Perform intradermal injection	
		Perform venipuncture	
		Insert peripheral intravenous line in both adult and child	
		Insert peripheral venous line in infant	
		Perform lumbar puncture in adult	

EAR PROCEDURES		**GASTROINTESTINAL PROCEDURES**	
Remove cerumen		Insert nasogastric tube	
Remove foreign body		Perform anoscopy and proctoscopy	
NOSE PROCEDURES		Incise and drain thrombosed external hemorrhoid	
Remove foreign body			
Cauterize for anterior epistaxis			
Pack anterior nasal cavity			
		RESUSCITATION PROCEDURES	
EYE PROCEDURES		Insert oral airway	
Instil fluorescein		Perform bag and mask ventilation	
Perform slitlamp examination		Perform endotracheal intubation	
Remove corneal or conjunctival foreign body		Perform cardiac defibrillation	
Apply eye patch			

GENITOURINARY AND WOMEN'S HEALTH PROCEDURES		**OBSETRIC PROCEDURES**	
Place transurethral catheter		Perform normal vaginal delivery	
Perform cryotherapy or chemical therapy for genital warts		Perform episiotomy repair	
Aspirate breast cyst		Perform artificial rupture of membranes	
Perform Pap smear			
Fit and insert diaphragm			
Insert intrauterine device			
Performendometrial aspiration biopsy			

9. I have up to date BCLS certification Yes No

10. I have up to date ACLS certification Yes No

11. Are there any services you would like to provide but are unable to do so?

    Yes No
    If so, please list and describe why: _____
    _____
    _____

12. Are you involved in any research endeavors? Y or N
    If yes, Please describe project (s)_____

13. Are you currently supervising residents and/or students?

14. Are you presently or have you ever been involved in leadership activities related to health care at the local, provincial, national or international level? If yes, please describe.

15. Which of the following arrangements, if any, have you made for after hours coverage? (Check all that apply)
- ○ Share call with a group
- ○ Return calls in the morning
- ○ Use a signout service
- ○ Take own call
- ○ Advise patients to go to the Emergency Department and/or Walk In Clinic
- ○ Not applicable

- Do not offer after hours coverage?
- Other _____

16. What is the primary funding model for your income? : (Please select ONE)
- Fee for service (FFS)
- Family Health Group (FHG)
- Family Health Organization (FHO)
- Family Health Network (FHN)
- Community Heath Centre (CHC)
- Alternate Funding Plan or Alternate Payment Plan (AFP or APP)
- Salary
- Other (please specify) _____

17. If you answered you are in a FHO or FHN (or any other interdisciplinary network) are you also part of a Family Health Team (FHT)? Please circle.

Yes No

18. How satisfied are you with your current practice? (Check one)
- Very satisfied
- Moderately satisfied
- Not very satisfied
- Not at all satisfied

19. What was the size of the community in which you went to high school?
- Inner city (>250, 000 people)
- Urban (100,001 to 250,000 people)
- Suburban (40,001 to 100,000 people)
- Small town (10,001 to 40,000 people)
- Rural (2,501 to 10,000 people)
- Isolate/Remote (<2,500)
- Other/combination – specify_____

20. We are interested in your comments on how you might evolve the residency program in Family Medicine at UWO. Reflecting back on your own residency experience and subsequent practice experience:

a. What would you identify as the strengths of the training program? Please comment on clinical, educational and research aspects of the program.

b. What needs to be improved? Please comment on clinical, educational and research aspects of the program.

Appendix 2 Western University Health Science Research Ethics Board Delegated Approval (105015) on March 28, 2014

Western Research

Research Ethics

Use of Human Participants - Initial Ethics Approval Notice

Principal Investigator: Dr. Tom Freeman
File Number:105015
Review Level: Delegated
Protocol Title: Family Medicine Graduates Follow-Up Survey
Department & Institution: Schulich School of Medicine and Dentistry\Family Medicine,Western University
Sponsor:
Ethics Approval Date: March 28, 2014 **Expiry Date:**February 29, 2016
Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Other	Reminder/Thank You notice	2014/01/29
Instruments	Survey-Received Mar 11, 2014	
Western University Protocol	Received Mar 11, 2014	
Letter of Information & Consent		2014/02/24

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the University of Western Ontario Updated Approval Request Form.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

The Chair of the HSREB is Dr. Joseph Gilbert. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Signature

Ethics Officer to Contact for Further Information

Erika Basile (ebasile@uwo.ca)	Grace Kelly (grace.kelly@uwo.ca)	Mina Mekhail (mmekhail@uwo.ca)	Vikki Tran (vikki.tran@uwo.ca)

This is an official document. Please retain the original in your files.

Appendix 3 Variables Definitions for the Quantitative Study

Variable		**Variable Definition**
Dependent variable		
Self-defined as a Focused Practice or Non-focused Practice Family Physician	Survey Question: 5. The College of Family Physicians of Canada defines a family physician with a focused practice as "those family doctors with a commitment to one or more specific clinical areas as major part time or full time components of their practice". Based on this definition, do you consider yourself to be a focused family physician?	Yes (Focused practice Family Physician) No (non-focused practice family physician)
Independent variables		
Gender*	Gender	Male Female
Years since graduation*	Year of graduation	2014-Year of graduation
Training site*	Training site	Rural Urban
PGY3 training*	PGY3 training	Yes No (Absence information about PGY3 training interpreted as No)
Location*	Alberta, British Columbia, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan, United States, Other.	Ontario Others The original categories of Alberta, British Columbia, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Quebec, Saskatchewan, United States, and Other were collapsed into "Others".

Variable		**Variable Definition**
Population size served	Survey Question: 2. What is the population of the city, town or village in which you currently practice?	Population size was divided into the following categories: inner city (>250,000), urban (100,001 - 250,000), suburban (40,001 - 100,000), small town (10,001 - 40,000), rural (2,501-10,000), and isolated or remote (≤ 2,500). The original categories of rural, and isolated or remote were collapsed into rural/remote (≤10,000).
Primary payment model	Survey Question: 16. What is the primary funding model for your income? (Please select one) Fee for Service (FFS) Family Health Group (FHG) Family Health Organization (FHO) Family Health Network (FHN) Community Health Centre (CHC) Alternate Funding Plan or Alternate Payment Plan (AFP or APP) Salary	FFS Group Payment Models (FHG, FHO, FHN) Salary/CHC AFP or APP The original categories of FHG/FHO/FHN collapsed into Group Payment Models, and Salary and Community Health Centre into Salary/CHC.
*Information obtained from the Department of Family Medicine, Western University, administrative databases		

Appendix 4 Sample Size Calculation- Quantitative Study

The sample size was calculated based on the primary research objective in identifying the associated factors with being a focused practice family physician (FP) among a sample of graduates who responded to the survey. Completing PGY3 training was considered a reasonable independent variable for the purpose of sample size calculation.

Null hypothesis: PGY3 training is not associated with being a focused practice FP

Alternative hypothesis: PGY3 training is associated with being a focused practice FP

The following formula was used in calculating sample size(141):

$N= [(p (1-p) (Z1-\alpha/2 + Z1-\beta)^2] / [b (1-b) (p1-p2)^2]$, where,

p=proportion of focused practice FPs in the sample: 149/420 = 0.35

b= proportion of PGY3graduates in the sample: 56/420 = 0.13

p1= proportion of focused practice FPs among PGY3 graduates in the sample:

46/56 = 0.82

p2= proportion of focused practice FPs among non PGY3 graduates in the sample: 103/364 =0.28

α=alpha set at 0.05 and β=beta set at 0.20

$Z_{1-\alpha/2} = 1.96$ when $\alpha = 0.05$

$Z_{1-\beta} = 0.84$ when $\beta = 0.20$.

These values were obtained from “Designing Clinical Research”(174).

$N= [0.35(1-0.35) (1.96+0.84)^2]/ [0.13(1-0.13) (0.82-0.28)^2]$

N= 60

Appendix 5 Missing Data Analysis - Quantitative Study

- Dependent variable: Focused or non-focused practice family physician: 412 (98.1% of N)
- Respondents with complete data: 368 (87.6% of N)
- Missing data on >1 variable data element: 52 (12.4% of N)

Logistic Regression Results With Missing Data Analysis			
Variable	**Number of missing values (% of N=420)**	**Original data** ***P*- value ***	**Imputed data** ***P*- value ***
Population size served	29 (6.9)		
Inner city (Reference)			
Urban		.97	.897
Suburban		.24	.172
Small town		.905	.841
Rural/Remote		.02	.011
Primary payment model	28 (6.7)		
FFS (Reference)			
Group Payment Models		.000*	.000
Salary / CHC		0.27	.203
AFP/APP		.310	.186

*Statistically significant at $p<0.05$.

Group Payment Models- Family Health Group, Family Health Network, Family Health Organization; CHC= Community Health Centre; AFP/APP=Alternate Funding Plan/Alternate Payment Plan.

Appendix 6 Characteristics of Survey Respondents and Non-Respondents

Table 1. Characteristics of respondents versus nonrespondents

CHARACTERISTIC	RESPONDENTS (N = 420)	NONRESPONDENTS (N = 490)*
Sex, n (%)		
• Male	218 (51.9)	240 (49.0)
• Female	202 (48.1)	250 (51.0)
Training site, n (%)		
• Urban	368 (87.6)	438 (89.4)
• Rural	52 (12.4)	52 (10.6)
Location, n		
• Alberta	14	12
• British Columbia	21	14
• Nova Scotia	7	2
• Ontario	351	437
• Prince Edward Island	2	1
• Quebec	2	2
• Yukon Territory	0	1
• Newfoundland and Labrador	3	0
• United States	8	14
• International	1	2
Alumni group, n (%)		
• 1985-1994	105 (25.0)	105 (21.4)
• 1995-2004	145 (34.5)	171 (34.9)
• 2005-2012	170 (40.5)	214 (43.7)

*This includes nonrespondents for whom information was available.

Source: Freeman TR, Boisvert L, Wong E, Wetmore S, Maddocks H. Comprehensive practice Normative definition across 3 generations of alumni from a single family practice program, 1985 to 2012. (65)

Appendix 7 Types of PGY3 Programs Completed by Survey Respondents N=56

Type of PGY3 program	**PGY3 graduates** **N (%)**	**PGY3 graduates among focused practice FPs 45(80.4)**	**PGY3 graduates among non-focused practice FPs 11(19.6)**
Emergency Medicine	38 (67.9)	34 (75.6)	4 (36.4)
Care of Elderly	4 (7.1)	3 (6.7)	1 (9.1)
Anesthesia	6 (10.7)	5 (11.1)	1 (9.1)
Obstetrics	2 (3.6)	0	2 (18.2)
Academic	3 (5.4)	0	3 (27.3)
Sports Medicine	1 (1.8)	1 (2.2)	0
Unknown	2(3.6)	2 (4.4)	0
FPs= Family Physicians.			

Appendix 8 Areas of Focused Practice by Focused Practice Physicians N=103*

Areas of Focused Practice†	**Focused Practice FPs N (%)**
Emergency Medicine	46 (41.8)
Sport/exercise medicine	12(10.9)
Hospital medicine	11 (10.0)
Palliative Care	10(9.1)
Family Physician Anesthesia	8 (7.3)
Child/adolescent health	5(4.5)
Maternity/newborn	4(3.6)
Occupational Medicine	3(2.7)
Care of the elderly	2(1.8)
Addiction Medicine	1(0.9)
Mental health	1(0.9)
Prison health	0
Respiratory Medicine	0
Chronic non-cancer pain	0
Developmental disability	0

*N=103 [69% of focused practice FPs (149)]

†Areas of focused practice as defined in the National Physician Survey

FPs= Family Physicians.

Appendix 9 Areas of Focused Practice by Practice Setting (office-based/non-office based) N=103*

Areas of Focused Practice†	**Office-based Focused Practice FPs** **N (%)**	**Non-office-based Focused Practice FPs** **N (%)**
Child/adolescent health	5 (13.2)	0
Emergency Medicine	5 (13.2)	41 (63.1)
Anesthesia	3(7.9)	5 (7.7)
Addiction	1 (2.6)	0
Care of Elderly	1 (2.6)	1(1.5)
Hospital Medicine	4 (10.5)	7 (10.8)
Maternity/Newborn	4 (10.5)	0
Mental Health	1 (2.6)	0
Occupational Therapy	2(5.3)	1(1.5)
Palliative Care	4(10.5)	6(9.2)
Sport/exercise medicine	8 (21.1)	4(6.2)

* N=103 [69% of focused practice FPs (149)].

†Areas of focused practice as defined in the National Physician Survey.

FPs= Family physicians..

Appendix 10 Western University Health Science Research Ethics Board Delegated Approval (111543) on August 10, 2018

Western Research

Date: 10 August 2018

To: Dr. Thomas Freeman

Project ID: 111543

Study Title: The Perspectives of Family Medicine Graduates in Undertaking Enhanced Skills PGY3 training.

Application Type: HSREB Initial Application

Review Type: Delegated

Full Board Reporting Date: August 21, 2018

Date Approval Issued: 10/Aug/2018

REB Approval Expiry Date: 10/Aug/2019

Dear Dr. Thomas Freeman

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above mentioned study as described in the WREM application form, as of the HSREB Initial Approval Date noted above. This research study is to be conducted by the investigator noted above. All other required institutional approvals must also be obtained prior to the conduct of the study.

Documents Approved:

Document Name	Document Type	Document Date	Document Version
FM PGY3- email scripts	Email Script	Received August 4, 2018	
FM PGY3 Inerview guide	Interview Guide	Received August 4, 2018	April 2018
FM PGY3- Letter of Information and consent-revised Aug 1-2018	Written Consent/Assent	01/Aug/2018	
FM PGY3 Research plan-revised.	Protocol	10/Jul/2018	

No deviations from, or changes to, the protocol or WREM application should be initiated without prior written approval of an appropriate amendment from Western HSREB , except when necessary to eliminate immediate hazard(s) to study participants or when the change(s) involves only administrative or logistical aspects of the trial.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University HSREB operates in compliance with, and is constituted in accordance with, the requirements of the TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the Medical Devices Regulations and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Karen Gopaul, Ethics Officer on behalf of Dr. Joseph Gilbert, HSREB Chair

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).

Appendix 11 LAWSON Health Research Institute Approval (R-18-441) on August 13, 2018

LAWSON
HEALTH RESEARCH INSTITUTE

LAWSON FINAL APPROVAL NOTICE

LAWSON APPROVAL NUMBER: R-18-441

PROJECT TITLE: The Perspectives of Family Medicine Graduates in Undertaking Enhanced Skills PGY3 training.

PRINCIPAL INVESTIGATOR: Dr. Thomas Freeman

LAWSON APPROVAL DATE: Monday, 13 August 2018

ReDA ID: 4696

Overall Study Status: Active

Please be advised that the above project was reviewed by Lawson Administration and the project:

Please provide your Lawson Approval Number (R#) to the appropriate contact(s) in supporting departments (eg. Lab Services, Diagnostic Imaging, etc.) to inform them that your study is starting. The Lawson Approval Number must be provided each time services are requested.

Dr. David Hill
V.P. Research
Lawson Health Research Institute

Appendix 12 Recruitment Email Invitation for the Qualitative Study

1) The following is the proposed email invitation:

Dear _____,

I am contacting you with an invitation to participate in a study of Family Medicine Enhanced Skill PGY3 training. The purpose of this study is to explore the perspectives of family medicine graduates regarding their decision to pursue PGY3 training, and to understand the career plans of PGY3 residents, particularly as they relate to the type of practice they envision themselves working within.

I am writing with a request to participate in this study by doing an interview.

You will find additional background about this study in the Letter of Information letter attached to this email. The interview would take approximately 30-45 minutes and take place at a location and time of your choice.

Please confirm your participation by contacting Melad Marbeen (co-investigator), by email … or …, at your earliest convenience.

Thank you for considering participation in this study.

Sincerely,

Melad Marbeen, MBChB, CCFP

….

..

2) The following is the proposed follow-up email script to be used with non-respondents:

Dear_____,

We recently contacted you regarding a research study on Family Medicine Enhanced Skill PGY3 training. I am writing to determine your interest in participating in this study. We would like to understand your views on this topic and hope to confirm your participation.

Please contact Melad Marbeen (co-investigator), by … or phone .., at your earliest convenience

Sincerely,

Melad Marbeen, MBChB, CCFP

…..

Appendix 13 Letter of Information and Consent Form

Schulich MEDICINE & DENTISTRY

Western UNIVERSITY · CANADA

LETTER OF INFORMATION AND CONSENT

Study Title: The perspectives of family medicine graduates in undertaking Enhanced Skills PGY3 training.

Investigator:
My name is Melad Marbeen and I am a candidate for the Masters of Clinical Science (FM) in the Department of Family Medicine at Western University. This study is part of my Research Thesis for the Master's degree. My Thesis supervisors are Drs. Thomas Freeman and Amanda Terry.

Principal Investigator: Dr. Thomas Freeman
Center for Studies in Family, Western Centre for Public Health and Family Medicine, 2nd Floor, Western University, London, Ontario N6A 3K7. ...
Email ....

Co-Investigators: Dr. Amanda Terry; email .....

Dr. Melad Marbeen; email ...

Sponsor: None

Conflict of Interest: No conflicts of interest to declare for this study.

Introduction

You are invited to participate in this research study that aims to explore your thoughts about the factors that influenced your decision to engage in the Enhanced Skill (PGY3) program, and your intended practice plan.
The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

Who can participate?
You are invited to participate in this research if you are a third-year family medicine resident at Western University.

Background/Purpose
While the National Physician Survey revealed that almost thirty percent of family medicine residents were planning to undertake a third year residency position and approximately thirty percent of those residents were planning to have focused practices upon graduation, little is

known about what influences family medicine residents to undertake PGY3 training. The purpose of this study is to explore the perspectives of family medicine graduates regarding their interest in pursuing PGY3 training, and to understand the career plans of PGY3 residents, particularly as they relate to the type of practice they envision themselves working within.

Study Design

This will be a descriptive qualitative study. If you decide to participate you will be asked to complete a semi-structured face-to-face interview with a member of the research team. The length of the interview will be approximately 30-45 minutes and will take place at a location and time of your choice.

If you are interested in talking about your views on PGY3 training and the factors that have influenced your decision to extend your residency training, and your intended career plans, please contact Melad Marbeen (Co-Investigator), by email … or phone … and she will respond to you to set a date for an individual semi-structured interview.

You will be asked to sign consent before starting the interview. The interview will be audio-recorded using two digital recording devices to ensure that the entire interview is captured in case of failure of one of the recorders for technical reasons.

The interviewer will also take notes during the interview. Recording may stop at any time during the interview upon your request. If you do not wish to be audiotaped, please inform the researcher, who will instead take handwritten notes.

Rights and Responsibilities as a Participant

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. Only the research team will know if you decided to decline or withdraw participation from the study. If you choose not to participate or to leave the study at any time it will have no effect on your residency training or your future employment. You do not waive any legal right by signing this consent form.

Withdrawal from Study

You have the right to withdraw your participation at any time during the study period. Your information and data collected from you will be removed and destroyed from our database if you decided to withdraw from the study.

Risks

There are no foreseen risks to your participation in this study.

Benefits

There are no known benefits to you personally for participation in this study. Data collected in this study may give an insight about family medicine residents' standpoint in engaging in Enhanced Skills PGY3 training, and their ideas about the nature of their future practice. Such information will support family medicine education and primary care workforce planning.

Confidentiality

Your confidentiality as a participant in this study will remain secure. Your identity will remain private and accessible only to research team. You will be given a unique study identification number. A master list linking participant's individual study identification number with his/her name and email address will be kept in a secure place, separate from the study data.

Electronic study data file will be stored on a secure, password-protected folder in the Schulich School of Medicine & Dentistry (Schulich) network drive. Hard copy study data files and consent forms will be placed in a locked filing cabinet at the Centre for Studies in Family Medicine, to which only the investigators have access.

During the interview, we will collect data about your age, gender, and the type of your PGY3 program. Voice records of the interviews will be taken off-site for transcription by a professional transcriptionist. The transcripts of the individual interviews will not contain any of your personal information. If any personal information, names, or places are mentioned during the interviews, they will be transcribed as "name" or "location". Audio files will be destroyed once they have been transcribed and the transcripts verified.
Your personal information will not be revealed in any reports, publications, or presentations that may come from this study. Any direct quotations from the interview, or summary of ideas and information collected from the interview will be anonymous in publications.

As this study is affiliated with Lawson, all data and information will be destroyed 15 years after data collection according to Lawson's data retention policy.

Representatives of Western University's Health Sciences Research Ethics Board may require access to your study-related records to monitor the conduct of the research. Representatives of Lawson Quality Assurance Education Program may also access study data for quality assurance purposes.

Compensation

You will receive as a participant honorarium a $20 gift card as a token of appreciation for participating.

Questions about the Study

If you have questions about this study, please contact the Principal Investigator, Dr. Thomas Freeman; email: …, phone ... You may also contact Melad Marbeen (co-investigator); email: …; phone ….

If you have any questions about your rights as a research participant or the conduct of this study, you may contact the Patient Experience Office at LHSC at (519) 685-8500 ext. 52036 or access the online form at: https://apps.lhsc.on.ca/?q=forms/patient-experiencecontact-form.
You may also contact The Office of Human Research Ethics (519) 661-3036, 1-844-720-9816, email: ethics@uwo.ca if you have any questions about your rights as a research participant or the conduct of this study. The REB is a group of people who oversee the ethical conduct of research studies. The HSREB is not part of the study team. Everything that you discuss will be kept confidential.

Thank you for considering taking part in this research.

CONSENT FORM

Study Title: The perspectives of family medicine graduates in undertaking Enhanced Skills PGY3 training.

Principal Investigator: Dr. Tom Freeman
Co-Investigators: Dr. Amanda Terry; Dr. Melad Marbeen

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction. I understand that I do not waive any legal rights by signing this consent form.

Participant's Name (please print):

_____

Participant's Signature:

_____

Date:

_____

Person Obtaining Informed Consent (please print):

_____

Signature:

_____

Date:

_____

Appendix 14 Interview Guide

Thank you for setting aside the time for this interview. The purpose of the interview is to explore your perspectives on taking a third-year family medicine program. For this interview, we ask that you think about the nature of family practice in Canada, and what factors have influenced you to do PGY3 training, and how this shapes your career plan. This interview will take about 30-45 minutes and will be recorded.

[Confirm participants have read the letter, are comfortable with the study procedures, and ask them to sign the consent form].

1. Characteristics of participant: age group, gender, type of PGY3 program
2. What are your thoughts about the nature of family practice in Canada?
3. Could you share your ideas about what you think constitutes the work of family physicians in Canada?
4. Can you share your thoughts regarding how prepared you feel you are to practice family medicine?
5. Could you share your views about PGY3 training overall?
6. How did you go about making your decision to extend your training/do PGY3 in Family Medicine?
7. What influenced your decision to choose this particular program?
8. Could you share your perspectives on how you think PGY3 training shapes the care family physician can offer to their patients?
9. What do you think your PGY3traning will mean to your patient care?
10. Thinking of the future, what do you envision your practice looking like?

Appendix 15 Qualitative Study Analysis Template

a- Primary care/initial contact; b- Preventive care; c- Coordination/ help patients navigate the health system/Gateway to specialists; d- Continuity of care; e- Variable/unpredictable/ deal with undifferentiated problems; f- Dealing with complex conditions, comorbidities, mental health, societal issues; g- does whatever is needed; h-work in interdisciplinary team; i-Health advocate
Code 3 The training of family physicians can result in a care that differ from specialists: a-Treatment of the whole person; b- Long term relationship with patients; c- Addressing psychosocial problems; d- Specialists have more skills than family physicians working in the same field.
Code 4 Perceived challenges of family practice a- work in a high volume environment; b- difficult patients management; c- Long work hours after patient care/ Some of the work unrecognized & never paid; d- System barrier (e.g .can't follow up own patients in palliative care unit at the hospital); e- Potential impact on family & personal life.
Code 5 Readiness to practice family medicine a-Ready to practice in settings similar to where did training; b- Unprepared to work in rural setting, hospitals, ER, do certain procedures, palliative care, Nursing home.
Code 6 Perceived role and effect of PGY3 training in family medicine/ experiences during PGY3 training a-Provide extra competencies/ enhanced skills in a specific field; b- Prepare physicians to work in more specialized areas/ to be comparable to specialists in certain fields; c- Prepare physicians to expand their scope of practice outside the clinic; d- Help physicians do a job couldn't do without PGY3/gain credentials; e- Respond to community needs; f- Relieve some pressure off the system; g- Transferable skills to family practice.
Code 7 Influences to do PGY3 a- Educational need: 2years training were not enough to work in certain settings/ or lack of training in certain areas during residency; b- Interest in a specific field c-To develop comfort and confidence in practice/develop certainty in practice;d- To expand opportunities to work in certain locations; e- To take on a leadership role; f- To participate in education/become a resource to colleagues;g- Partner; h- mentor "specialist"; i- As a solution to the potential negative impacts of family practice; j-Peer influence; k-Identity formation; i-Preceptor influence; m-experience in rotation.

Code 8 Future practice intentions a-do both family medicine and the area of specialty; b- work exclusively in the area of specialty; c- Focused practice in the area of specialty with some primary care; d- Concerns about keeping family medicine skills/balance between family practice and specialty based focused practice.
Code 9 Factors may influence the type of practice choices a-Location of practice; b-Family/ Partner's training and work situation; c- Perceived lifestyle issues/ burnout from one type of practice; d- billing code

Curriculum Vitae

Name: Melad Marbeen

Post-secondary Education and Degrees:

Baghdad University
Baghdad, Iraq
2000-2006 M.B.Ch.B

Postgraduate Internship
Kirkuk, Iraq
2007-2009

Postgraduate Family Medicine Residency Training
Western University
London, Ontario, Canada
2013-2015

Academic Family Medicine Enhanced Skills Training
Western University
London, Ontario, Canada
2015-2016

Master's of Clinical Sciences in Family Medicine (candidate)
Western University
London, Ontario, Canada
2015- Present

Honours and Awards:

Martin J. Bass/PSI Memorial Award in Family Medicine 2016
Dr. John F. Sangster Graduate Studies Family Medicine Award (MClSc) 2019

Related Work Experience

2017- Present	Physician, Oxford Medical Centre, London, Ontario
2017- Present	Physician, Chelsey Park Long Term Care, London, Ontario
2015-2018	Physician, Doctors Walk-In Medical Clinic, London, Ontario
2016-present	Adjunct Faculty, Department of Family Medicine, Western University, London, Ontario
2016	Locum Tenens, St. Joseph's Family Medical and Dental Centre, London, Ontario
2009-2010	Physician, Taza Heath Centre, Kirkuk, Iraq