REGISTRARS' PROFILE AND THEIR PERCEIVED READINESS FOR SPECIALIST TRAINING IN THE NEW FAMILY MEDICINE REGISTRARSHIP PROGRAMME IN SOUTH AFRICA

Submitted in partial fulfilment of the requirements for the award of the MMed (Family medicine) degree at the University of the Witwatersrand, South Africa

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Declaration

I, Dr Olusegun Solomon Akinsanya, declare that this research report is my own work. It is being submitted for the degree of Master of Medicine (Family Medicine) of the University of Witwatersrand. It has not been submitted before for any degree or qualification at this or any other University or institution of learning.

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This ……Day of October 2015.

Dedication

First and foremost, this work is dedicated to the Almighty God who has always been my enabler, provider and guide in all my endeavours.

Secondly, I dedicate this work to all those who strive in different ways to improve health care delivery in sub-Saharan Africa and across the globe.

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From the depth of my heart, I express my gratitude to my better half Ejura and my angelic daughters, Ireoluwade and Jadesola as well as my wonderful son, Adedeji. Thank you for supporting and coping with me as well as my tight schedule throughout the MMed (Family Medicine) programme.

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Abstract

Background: Since the formal training of Family medicine registrars was launched in 2008, a number of graduates have been produced but factors that influence registrars' readiness for this training remain unknown. Registrars in this new programme also enter into training with some attributes that influence their ability to learn and attain certain academic outcomes. It is important to explore these attributes in order to identify characteristics that may influence learning. Where skills gap exists, interventions could also be made to bridge the gap. The aim of this study was to describe family medicine registrars' pre-training characteristics, the factors that influence their training and their perceived readiness for specialist training in family medicine.

Methods: This study had a cross sectional design that used a structured web-based online questionnaire sent by e-mail to 218 registrars who were currently enrolled for at least one year in the new family medicine specialist training programme at the time of the study. Responses were anonymous and received through a secure web-host server. It was a multisite cross-sectional study of registrars across the eight training universities in South Africa. Information on participants' demography, their pre-registrarship clinical, ancillary and self-directed learning skills, and their current training in family medicine were collected. Main outcomes of data analysis included descriptive statistics of participants' pre-registraship characteristics, the barriers and enhancers of their current learning and the perceived readiness of registrars for specialist training.

Results: Out of 218 registrars that received the online questionnaire, 123 completed the questionnaire (56.4% response rate). Of these respondents, 45 (36.6%) perceived themselves as being ready for registrarship training in family medicine. Pre-enrolment into the registrarship program, except for ambulatory general practice skills, only a minority of respondents perceived themselves good or excellent in any other clinical, ancillary or self-directed learning skills.

The majority of respondents reported that pressure of clinical work (85.9%) assignment load (75.6%), research requirements (67.2%) and training program design (56.9%) are barriers to their current learning. Clinical experience post-basic medical qualification (99.0%), the last work setting prior to joining the registrarship programme (95.0%), prior communication skills (64.2%) and additional qualifications (52.7%) were the main reported

enablers of learning. Registrars with postgraduate qualifications were found to be 2.6 times more likely to be ready for specialist training in family medicine than those without postgraduate qualifications ($\rho = 0.015$).

Conclusions: Registrars joined the training in family medicine with gaps in requisite skills for successful training. This finding calls for context-specific strategies to bridge the gap in skills and knowledge at an early stage in the training programme.

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Abbreviations

CHC	Community Health Centre
GP	General Practitioner/Practice
HPCSA	Health Professions Council of South Africa
SDL	Self-Directed Learning
FAMEC	Family Medicine Education Consortium

CHAPTER 1 INTRODUCTION

Specialist registrar training in family medicine in South Africa became a requirement for registration as a specialist in the discipline by the Health Professions Council of South Africa (HPCSA) and the formal training of family medicine registrars was launched in 2008, after the promulgation of the new specialty in the Government Gazette of August 2007.[1] This new phase in the evolution of family medicine as a discipline which began in 2008 led to the HPCSA accepting the training posts for registrars for a formal full-time training programme by family medicine departments in South African universities in conjunction with relevant agencies in provincial Departments of Health across the country.[1] The new registrar programme in family medicine is a post-graduate programme (Masters degree and Fellowship) co-ordinated by departments of family medicine at designated universities but linked to primary health care sites with emphasis on clinical service under supervision and academic development in the discipline of family medicine.[2] Upon successful completion of the 4-year training programme, registrars in family medicine would quality as specialist family physicians with both a Masters Degree and the Fellowship of the South African College of Family Physicians.[2]

The emergence of family medicine as a speciality training programme led to the expectation that this approach would produce a cohort of adequately-trained Family Physicians that are capable of managing Community Health Centres (CHCs) and District Hospitals in the future.[3] To achieve these expectations with the new generations of Family Physicians, it is necessary to explore whether the current registrars are prepared for specialist training that will enable them play the expected roles effectively. Future generations of teaching staff in clinical disciplines often emanate from registrars.[4] Registrars, as core resources of teaching programmes are gifted with a wealth of information emanating from their own experiences which can be used as bedrock in their quest to be more effective teachers.[5]

Lewis et al. proffered that over an extended period of time, health policy experts have expressed concerns about the troubled status of primary care.[6] It has been suggested that governments, policy-makers and eventually the populace in any setting where health systems are anchored on effective primary care with well-trained Generalist Physicians (Family Physicians) serve to gain as they would not only have the benefit of more cost-effective health care but also a clinically effective care compared to those with less focus on primary care.[7] However, it may too simplistic to expect that having well-trained family physicians would lead to a more effective care in primary health cares settings. The need for family physicians to ensure that their training leads to improved patients' outcomes cannot be overemphasized. In order to achieve the necessary improvement to meet the expectations of health policy makers,

it would be worthwhile to identify areas of possible improvement in the current training programme.

Registrars in this new programme enter into the training programme with some attributes that influence their ability to learn and attain certain academic outcomes. It is important to explore these attributes in order to identify characteristics that may influence learning. Where skills gap exists, interventions could be made to bridge the gap. Since the commencement of the full time training programme in family medicine in South Africa, evidence suggests lack of uniformity in the clinical rotations of family medicine registrars as well as the training received by them. In addition, factors that promote or impede registrars' learning remain unknown. The barriers to academic progression may also vary across universities and without identifying these factors, it would be difficult to employ a targeted approach to solving these problems. This issue is of importance in the light of the fact that all registrars in family medicine are currently required to participate in a national unitary Fellowship exit examination from 2013, through the Colleges of Medicine, South Africa.[8] Anecdotal evidence has shown that the failure rate among family registrars writing the exit examinations is quite high. There is also a high drop-out rate at the early stages of the training programme in family medicine. Although all the University departments subscribe to a common list of exit outcomes and their registrars write the same exit Fellowship examination, their training programs are different and it is unknown if the challenges faced by the registrars are also different. There is a possibility that prior exposures of the registrars enrolled into the family medicine training programme did not adequately prepare them to achieve success in the programme. The current study aims to determine the registrars' perceptions regarding their readiness for specialist training in the hope that the results could inform future recruitment of registrars into the training programme and their development during the registrarship training.

CHAPTER 2 LITERATURE REVIEW

The literature search entailed, to a greater extent, the use of Pub Med which yielded few articles. Articles related to the study topic were sought for relevance and with preference for articles written in English. Due to the paucity of data during the search, the year of study was not used to limit the yield of articles through the Pub Med search engine, particularly for articles of strong relevance to the research topic. The search terms used include: “family medicine” “registrars”, “challenges”, “readiness”, “training”, "registrarship," "barriers", "South Africa”, programme", and “specialist”. With the understanding that there is paucity of data in South Africa on the issues addressed by the research, efforts were made to search further for useful literature. Google scholar was utilised in the search for more articles related to the objectives of this research. The search terms used include: “family medicine” “registrars”, “challenges”, “readiness” ,“training”, "registrarship," "barriers", "South Africa”, programme", “specialist”, With this approach, more articles were obtained and subsequently reviewed.

This review of the literature sets out to explore the pertinent issues associated with registrarship programmes in family medicine within the South African context. Articles reviewed were selected based on their relevance to the aims and objectives of the research. The year of publication was ignored if the article had significant bearing on the research topic. However, with regards to certain issues on this new training programme, when information was inadequate or not available from local research findings, attempts were made to explore findings from similar programmes in other settings. The core issues that were considered in this review were the relevance and issues associated with the integration of family medicine into the primary health care setting; the evolution of the family medicine programme in Africa and South Africa; the importance of exploring the views of the registrars; the common motivating factors for joining registrarship programmes; barriers to learning by registrars; influencers of registrars’ learning; the impact of pre-registrarship characteristics of learning by registrars; self-directed learning principles and learning by registrars as well as the goals and expectations of registrars prior to joining registrarship programmes. “Postgraduate trainees in medical specialties in South Africa are referred to as registrars (also known as residents in the United States and Europe)”.[4]

2.1 The importance of profiling, pre-training characteristics and competencies

It has been asserted that, to achieve the much-anticipated success in family medicine training, the prerequisites are trainers’ commitment and trainees’ ownership of, and responsibility for, the educational process involved in the training of registrars.[9] In a study conducted among registrars in family medicine in Canada, France, and Belgium, there was uniformity in the

findings with regards to the stereotype among registrars about their roles as family physicians being at variance with what are generally considered as the core features of general practice.[10] Although these groups of registrars were interested in general practice as a career they had many concerns and expressed uncertainties.[10] In another research, it has been suggested that the future popularity of general practice is likely to depend on addressing training-related concerns and on the clarification of the future direction of the profession.[11] It has also been suggested that in some universities that train family medicine registrars in South Africa, the dropout rate in the first year of training is more than 50%. This possibility, which needs to be further explored, could be due to lack of readiness on the part of the registrars.

In a report on the development of family medicine in South Africa, Hellenberg et al. indicated that the mandatory rotation of medical interns through the department of family medicine and the creation of registrar posts in family medicine that entailed rotation, would help elevate the status of family medicine specialty and contribute towards advancing the discipline in a positive manner.[12] Another finding from research is that applicants to medical schools with an initial interest in primary care or general practice are more likely to eventually practice in rural areas and this is believed to have significant implications for the selection criteria and policies of medical universities.[13] This finding led to suggestions that there is a need to review the selection criteria of medical faculties, particularly in primary care or general practice (family medicine) by considering the career aspirations of applicants especially those of rural origin during the selection process at medical schools.[13]

A concerning trend, particularly in the United States, is the sharp decline (52.6% reduction) of medical graduates choosing family medicine as a career as well as the workforce shortages at Community Health Centres (CHCs) involved in the current training programmes.[14] In a research conducted among graduates from London dental school, respondents identified the potentials for professional development, the possibility of achieving work/life balance as well as remuneration, as some of the factors responsible for their choice of career but there were differences between males and females.[15] The females were mainly concerned about their family life with many opting for family medicine based on their expectations that it would allow them more time for family and child care.[15] Professional status within a social environment, job security, and flexible working conditions as well as the impact of family and child care on the choice of female registrars were some of the motivating factors.[15] In a large survey into motivation and satisfaction with United Kingdom General Practice (GP) training, the most popular reason for choosing general practice as a career was its compatibility with family life.[16] Although this reason was cited by more women than men (76.6% versus 63.2%), it was the

most popular reason given by men. With regards to the choice of careers, it is evident that different people might be motivated by different factors depending on the peculiarity of their current situation and future expectations. These findings underscore the importance of identifying key issues affecting the registrarship programme, which might have resulted in this trend. Our research also hopes to ascertain the various reasons that influenced the choice of career of the registrars in the new family medicine training programme in South Africa.

Yogeswaran et al. in an article on community-based education for registrars in family medicine at Walter Sisulu University, proffered that health education should be directed at the priorities set by the community and the training of family medicine registrars in one of the South African departments of family medicine would be guided by inputs from the community.[17] However, this article seemed not to take cognizance of the importance of the views of the registrars who are an integral part of the training programme. The fact that registrars are one of the key stakeholders of specialty training cannot be overemphasized.[18] It is invaluable to recognize that in designing context-specific training programmes in any specialty, one needs to gain a good understanding of the perceived needs of registrars in that particular specialty.[19] To advance family medicine as a discipline, it is essential that all the relevant stakeholders have a better focus on, and work towards better educational management.[9]

Lo Presti et al. also reported the use of learners' inputs in adjusting the design of residency programme.[20] In that particular instance the registrar doctors in family medicine had the opportunity of making changes to the contents and length of the training programme. In another similar training setting involving second year registrars, learners' inputs have been used to design effective training programmes that ensured the trainees were able to relate theories to learning goals in a manner that mitigated the effect of local challenges.[21] This is consistent with the findings of the research among registrars in internal medicine in which registrars also favoured an approach to learning that allowed them to tailor their learning plans according to their needs.[22] These findings lends credence to the view that adopting a participatory approach to the development and organisation of residency training programmes could offer significant benefits to both the trainees and the trainers. Hence the focus of our research on asking the registrars to identify the impact of key aspects of training and other key factors from other settings on their academic progression and the attainment of exit outcomes.

In a qualitative study conducted among registrars in both outpatients and inpatients departments in a Swiss University Hospital, registrars in outpatients were of the opinion that communication skills were essential in addressing chronic diseases and social problems.[19] The same study also revealed that the factors associated with registrars' perceived needs for

communication skills may differ not only because of their contrasting service priorities but also due to the differences in their past experiences with communication skills training.[19] It was noted that more registrars in the outpatient setting found communication skills training to be of more significance compared to those in the inpatient setting.[19]

Weissman et al. were of the opinion that self-perceived preparedness may not predict future abilities, actual provision of care, or the quality of care provided.[23] It has also been reported that the absence of a definite criterion standard to assess preparedness, there is wide acknowledgement of self-assessments as an important component of adult and lifelong learning as well as student evaluations as indicators of educational experience.[23] Studies have also shown that students match their teachers in competence with regards to predicting their own scores.[24,25] Furthermore, in a study conducted among registrars completing graduate medical education in the United States, some useful insights on the level of preparedness of the registrars to perform future clinical duties were obtained through self-perceptions of the abilities of the registrars.[24] Studies have also shown that self-reported high levels of preparedness are linked with good performance and that self-reported preparedness has been used as an indicator of educational quality.[24,26,27] In another study conducted in the United States, residents tended to have a positive view of the overall quality of their training and overwhelming majorities were leaving their programmes feeling somewhat or very prepared to manage most of the common clinical problems they are likely to encounter.[28] Some of the useful insights that emanated from the studies include the tendency of residents to have a positive opinion regarding their training and the realisation that a very significant majority of these residents were exiting the programme with a great feeling of preparedness to manage most of the common future clinical problems. This study further highlights the fact that perceptions of the residents were considered in determining the quality of training they have received and their ability to perform their duties as specialists in future. However, based on research conducted in some United States academic health centres, it was observed that the gap between perceptions of preparedness in the general sense and preparedness for specific situations could represent a failure by the registrars to incorporate these key concepts into their work during training.[23] In the South African setting the impact of the ability of the registrars to incorporate key concepts into their learning on their perceived level of preparedness for postgraduate learning is unknown.

Encouraging the teaching of junior registrars by senior registrars is believed to be a potential enhancer of learning by the junior registrar and it is also seen as mutually beneficial.[28] The process of developing a good programme that helps the registrars to become good trainers

should entail a synthesis of educators' knowledge of the literature and pedagogy and registrars' life learning and experiences.[5] It is unknown if some registrars might have some attributes or competencies that could make them valuable to the programme as teachers of other registrars. Identifying these registrars' potentials at enrolment could assist educators in family medicine in developing future teachers of family medicine.

Self-directed learning (SDL) skills have been found to be essential for the development and maintenance of ongoing competence of medical practitioners who work in the context of widening scientific knowledge and the constantly changing health systems.[22] Views have been expressed that relying on the traditional method of discharging registrarship training which entails the provision of teaching through clinic or hospital rotations and lecture formats does not encourage the development of independent learning skills and it also limits the content that can be absorbed into an already saturated curriculum.[29] SDL entails individuals taking responsibility for the planning, implementation, and evaluation of their efforts towards achieving a learning outcome.[30] The reality is that residency programmes have relatively incorporated self-directed learning into their curriculum but the effectiveness of this approach is often limited by weak designs and outcome measures.[30] Periodic reassessment of their abilities and knowledge base is one of the challenges that new generation of trainees anticipate with regards to their family medicine careers.[31] Trainees who have imbibed SDL principle are often tasked with recognizing intrinsic information needs, seeking appropriate information, appraising information, and ultimately the application of the information to the triggering scenario.[30] The challenge is that there might be significant differences in the abilities of enrolled registrars in family medicine to engage in self-directed learning during their training. The difference in self-directed learning skills level of the registrars could be related to their past experiences. This possibility suggests a need for the training programme to fill a certain level of gap in skills at an early stage in the training programme.

2.2 Programme Design and training settings

Registrarship programmes in different settings have challenges that are peculiar to those settings and the nature of the programmes. The challenges could be either those emanating from the impact of the programme on the registrars or those related to the nature of the programme. It remains unknown what the key challenges faced by registrars are, with regards to registrarship training in South Africa. In the United States, a significant determinant of the quality of training in family medicine was found to be the structured availability of learning opportunities for registrars.[4] In developed countries such as Ireland and Australia, the private sector is the platform for family medicine training. In contrast with South Africa, family medicine

registrars receive their training in the public health sector within the District Health system with supervision by the eight university family medicine departments.[32] It is believed that private sector involvement in the training of Family Physician in developed countries is attributable to their high standard of family medicine as a discipline but it remains to be seen if the training of Family Physician in the public sector in South Africa is having a similar effect on the family medicine as a specialty.[32] Based on the peculiarity of the South African context, the outcome observed in the developed countries through their partnership with private General Practitioners (GPs) may not be replicable here. Stemming from the findings of research from other settings, a key area of focus of this research would be to determine the barriers and enhancers of learning by registrars.

In a study conducted in Denmark, it was discovered that ensuring that registrars return to general practice for one day per month during their hospital training offer immense benefits in terms of not only providing them the necessary breathing space in a turbulent educational programme but by also strengthening the professional competencies of the registrars as this approach encourages a stronger focus on family medicine perspective during their training.[9] One major advantage of return days to primary health care setting once a week is the fact it potentiates the transferability of skills which invariably strengthens the ability of the family medicine registrars to obtain the requisite skills for their current and future practice.[9] This outcome, in view of the inherent challenges in the South African health system and apparent inadequacy of family physicians, may not be the same in our setting. It would be useful to determine if the registrars' training within the district health system enhances the transferability of skills and the extent to which this occurs. These findings underlie the importance of self-directed learning skill as one of the prerequisites for the successful completion of any postgraduate training. In view of the significance of SDL and pre-training skills in registrars' learning, It is worthwhile to determine the competencies of the registrars as well as their understanding of adult learning principles such as self-directed learning, reflective thinking, and critical thinking prior to their joining the registrarship programme. These are particularly significant issues as they have been found to impact on the learning outcomes of registrars. As far as the researcher is aware, this is yet to be proven by research within the South African context. Hence, in addition to the clinical skills and knowledge, the emphasis of this research will be on the key principle of self-directed learning as measures of readiness for specialist training in the unique discipline of family medicine.

In a study conducted among registrars in teaching hospitals in the South Western part of Nigeria on their level of perceived stress, intimidation/harassment, mental health and well-being, 50% of registrars (registrars) reported that their life was stressful, 61.4% admitted that

given another chance to make a choice of career, they would pursue another career entirely, 34.5% would continue with their residency programme but would consider changing to another teaching hospital for their training and 31% reported to have had emotional or mental health problems during their residency training.[33] Based on the findings of this research, a training programme was designed, which factored in the difficulties expressed by the registrars. This research also revealed that wrong choice of career and training sites may be barriers militating against registrars achieving academic outcomes.

Based on research conducted in the United States, it has been suggested that governments, policy-makers and eventually the populace, in any setting where health systems are anchored on effective primary care with well-trained family physicians, stand to gain as they would not only have the benefit of more cost-effective health care but also a clinically effective care compared to those with less focus on primary care.[7] The impediments to successful affiliations between CHCs and family medicine registrar programmes include incongruence in their mission (i.e. service delivery versus educational goals), differences with regards to sharing financial burden of the affiliation, governing institutional barriers, administrative challenges and quality-related issues.[14] The difficulties experienced by registrars as a result of the barriers to successful affiliation of CHCs and family medicine training programmes impact on the training of the registrars and this was based on the expressed opinions of registrars in family medicine training in the United States.[14] Weissman et al. asserted that due to the fact that trainees' enthusiasm and preparation can be influenced by implicit training experiences, it is essential to assess the educational climate and support for training at training sites as well as measure the perceived barriers to delivering expected quality of care.[23] This assertion seems to suggest that registrars who might be ready for specialist training in family medicine may encounter challenges that could be attributable to other factors within the training programme itself. Anecdotal evidence has seems to suggest that this situation exists in South Africa and efforts are continually being made to integrate the family medicine specialty as well as the training programme into the district health system but the challenges from the point of view of the registrars are yet to be determined. Our research proposes to use a quantitative approach to identify the key challenges faced by the registrars in family medicine regarding the integration of their training programme into primary care settings in South Africa.

2.3 Learning barriers and enhancers

The significance of community-based research is that it enables the development of systems that ensure the discharge of accessible and effective primary care services to communities in addition to expanding knowledge and frontiers in family medicine as a discipline.[7] In a study

conducted among registrars in Family Practice in Australia, it was observed that many registrars were planning to pursue their interests in research but lack of funding, supervision, opportunities and collaboration were some of the identified barriers.[33] It is widely accepted that research in general practice is of importance to ensure a more desired improvement of patient health care outcomes.[34] The importance of research in primary health care certainly calls for an urgent need to develop capacities in this regard.[34] However, developing capacities with the aim of improving research capabilities and patient healthcare outcomes would require concerted efforts on the part of both the trainees and trainers. It is therefore necessary to understand the level of deficiencies or the capacities of the enrolled registrars prior to training in order to develop appropriate and effective strategies to bridge the gap or maximise the potentials of the trainees. It would also be useful to determine if the registrars' research abilities prior to joining the registrarship programme contributed to their readiness for training in family medicine.

In addition, research has found that general practice learners appreciate sensitive positive and negative feedback from their trainers.[35] Another issue is the perceived need for the re-orientation of family medicine teachers, trained in the biomedical paradigm to a more appropriate and required, patient-cantered approach.[36] In research conducted among registrars in Pennsylvania with regards to monitoring the effectiveness of their teaching, registrars representing a cross-section of programmes identified structural factors, poor provision of feedback, lack of clarity of written communication, difficulty in finding suitable academic mentors, lack of research support, inadequate supervision as some of the factors found to be associated with learning outcomes.[37] In another research, registrars in internal medicine identified structural factors like goal-setting and expectations at the beginning of their rotation as well as the control of the agenda and teaching during ward rounds as key facilitating factors in their learning.[20] The provision of adequate guidance and mentorship by senior registrars and consultants, the allocation of teaching and learning time, and shadowing are some of the strategies that have been posited to be effective in ensuring that teaching and learning activities continue to meet the academic and educational needs of registrars in the face of diverse constraints in the service environment.[4] These findings suggest a need for robust feedback mechanisms as well as the regular review and improvement of trainers' abilities in training programmes in family medicine.

In a study conducted in Canada which sought the opinions of registrars and other faculty members on the collaboration between family physicians and other specialists identified obstacles to effective collaboration as, increasing distances in three key areas that border on

the workplace arena, the training setting, and the production of academic knowledge.[38] In a multisite study conducted among family practice registrars in four separate training programmes, It was discovered that the hospital-based direct provision of care by family practice registrars under the supervision of non-family practice specialists was the most common form of educational experience for the registrars in each of their three years of their training.[39] Schwenk et al. were of the opinion that this finding raises significant concerns regarding the adequacy of the educational influences of family physicians as well as their mentoring role in the training of family medicine registrars.[39] This observation raises an important question about the impact of the supervisory role of family physicians on the learning of registrars in the training programme. In the South African context, the adequacy and impact of registrars' supervision by family physicians remains unknown.

2.4 Conceptual framework

A conceptual framework has been described as an account of the researcher's map of the territory being investigated and it may develop as the research evolves.[40] This section provides such a framework in terms of which this research project was conceptualised.

A family physician is a doctor who has undergone postgraduate training in the medical discipline of family medicine while a general practitioner is a medical officer working in public or private practice without postgraduate specialist training in family medicine.[41] This is the scenario that exists within the South African context. However, in some countries such as Australia and the United Kingdom, a general practitioner is equivalent to a family physician, that is, they require postgraduate specialist training, and become fellows of a College of General Practitioners. In South Africa, similar postgraduate specialist training will qualify a medical practitioner to become a fellow of the College of Family Physicians of South Africa and a specialist on the register of the Health Professions Council of South Africa. During postgraduate training these doctors are referred to as Registrars, except in North America and a few other countries where they are referred to as "Residents".

Literature has shown the impact of different key aspects of registrarship training on registrars' learning.[22,24,27,30] Some of these aspects include the views of registrars on improving their training programmes, the impacts of pre-registrarship characteristics on learning, and barriers to, and facilitators of, registrars' learning. These studies from settings outside South Africa report that such aspects of registrars' training have impacted on their learning but there is no available data on this issue from the South African setting.

In this research, the researcher assumed that registrars enter the training programme with different skill capabilities based on their prior trainings and experiences. Some of these

capabilities include self-directed learning ability, clinical skills and ancillary skills. Self-directed learning principles entail a range of capabilities that include the ability of a trainee to plan, set targets and effectively manage tasks associated with a set learning outcome. The clinical skills considered are those at the core of the variety of clinical disciplines that contribute to the skills level of trainees in family medicine. The ancillary skills (i.e. communication, research, and academic writing skills) that this research focused on encompass essential skills that have been identified by the training curriculum as core to successful training by a registrar in family medicine in South Africa. The three major skill areas that this research focused on are interconnected in various ways. A well-grounded doctor in primary care (family medicine) needs to have adequate clinical acumen and skills in order to effectively manage the patients' problems. It is also important to be able to use the strength in ancillary skills to effectively utilise academic materials and conduct necessary research projects in primary care. Ultimately, the need for the ability to plan, set targets and effectively coordinate all areas of strength in order to achieve desirable learning outcome would be invaluable for success in the training of a family medicine registrar.

Based of family medicine curricula, self-directed learning skills are considered as core skills for registrars to achieve family medicine training outcomes. On the other hand, based on the current programme design, registrars are expected to achieve the set academic outcomes without any prior evaluation. The impact of the different types of skills outlined above on registrars' ability to achieve the learning outcomes has not been evaluated. Self-directed learning skills, clinical skills, and ancillary skills, which this study used to determine readiness for specialist training, are all embedded in the FAMEC exit outcomes (figure 2.2) that have been adopted as the basis for family medicine specialist training in South Africa. Stemming from multi-dimensional nature of the FAMEC exit outcomes, they were used as a guiding framework in determining the main outcomes of this research work (figure 2.3). The main outcomes align with the objectives of this research work. These learning outcomes are aggregated into clinical skills, ancillary skills, and self-directed learning principles as indicated on the questionnaire.

In South Africa, the learning outcomes for a Family Physician (FP) include effective self-management, continuing self-development and leadership role that promotes the provision of high quality health care in a professional and ethical manner.[42] The overall success of these outcomes might be debatable, particularly in view of the varying training approaches, focus and implementation across the eight family medicine departments in South Africa. Understanding the specific attributes of individual registrars could allow the educators in family

medicine an opportunity to identify key deficiencies that require specific attention during enrolment, training, curriculum development, review and implementation (figure 2.1).

This study profiled registrars and examined how they perceived themselves as being ready to succeed in the family medicine training programme in South Africa. It also examined the different factors that may impact on registrars' training in family medicine.

PROCESS FROM PRE-ENROLMENT TO THE ACHIEVEMENT OF TRAINING EXIT OUTCOMES

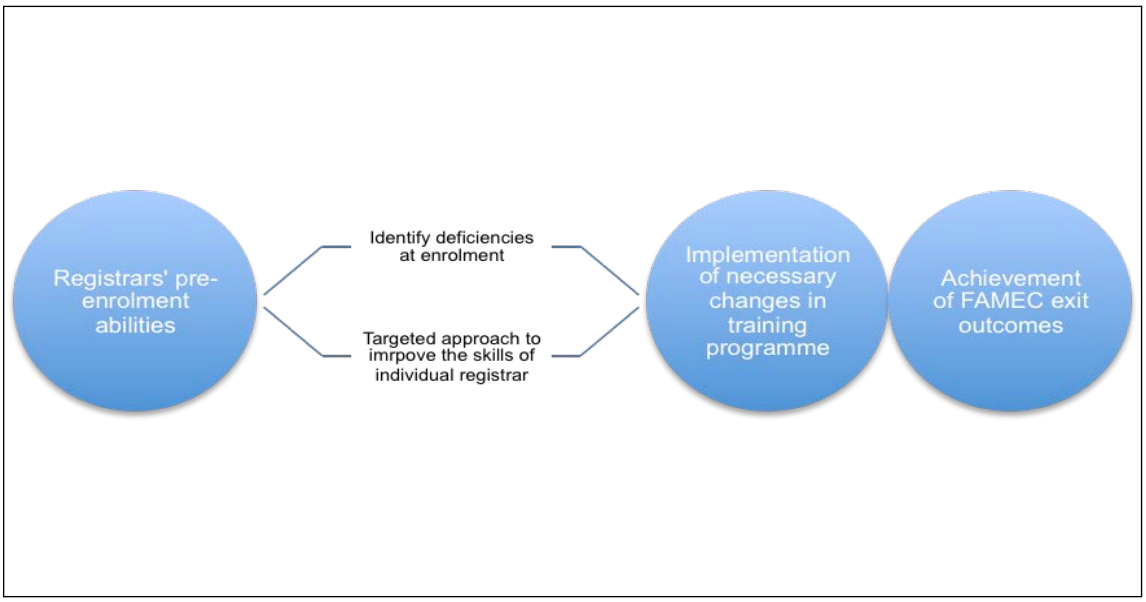

Figure 2.1: Processes required for the attainment of FAMEC exit outcomes.

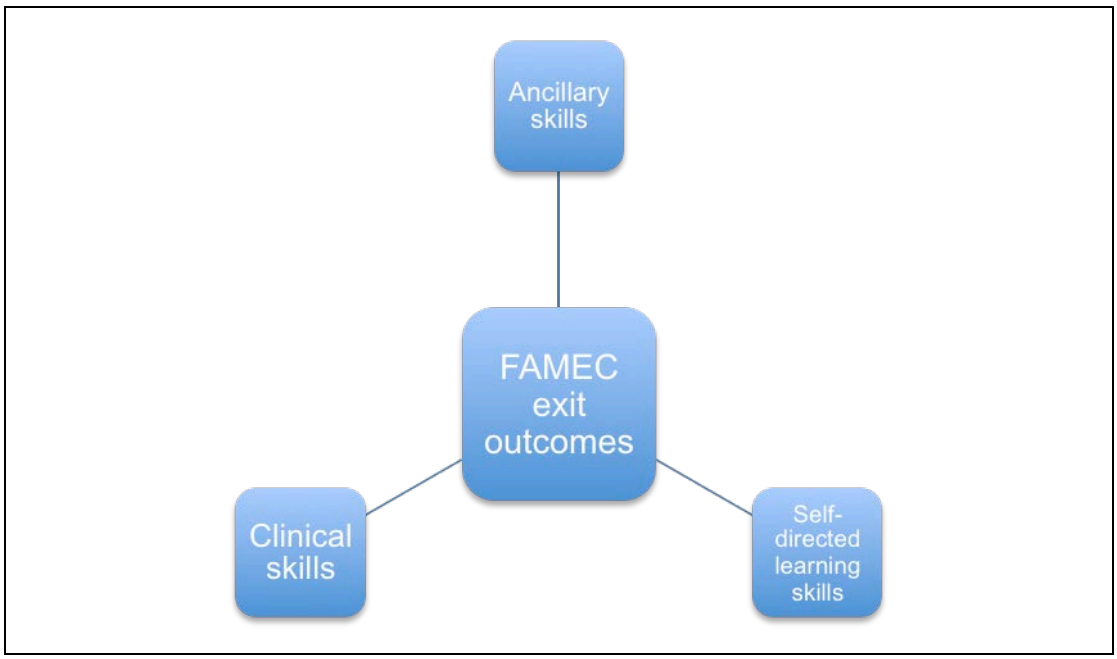

Figure 2.2: Interconnectivity between the core skills and the FAMEC exit outcomes.

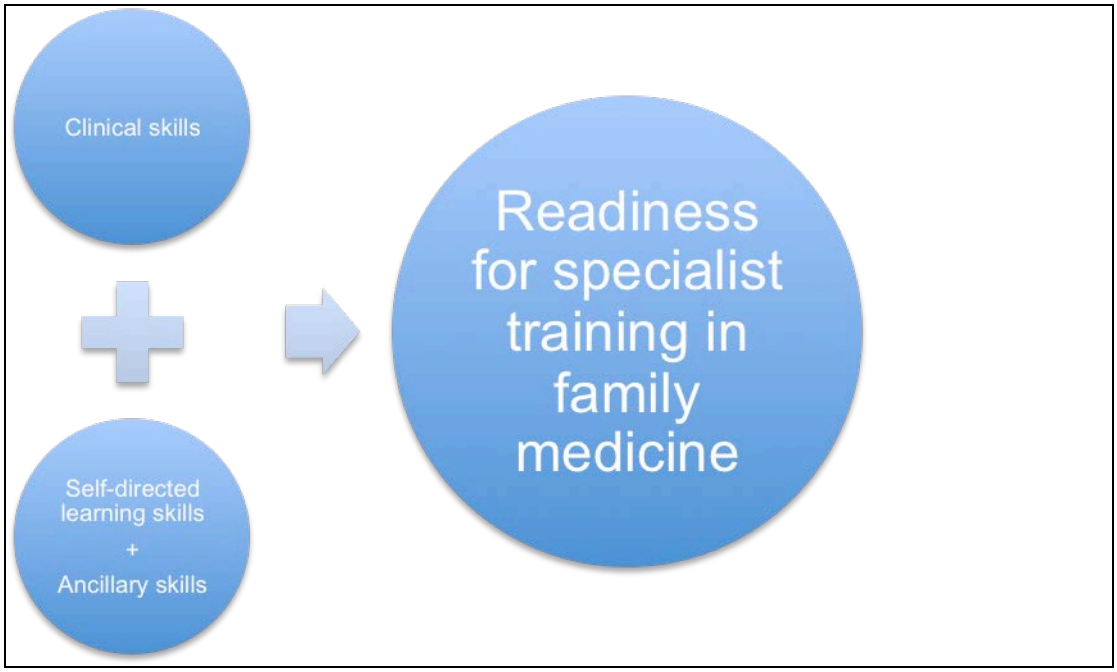

Figure 2.3: Link between the combination of the core skills and readiness for specialist training in family medicine.

CHAPTER 3 METHODS

3.1 Aim and objectives

AIM

To describe family medicine registrars' pre-training characteristics, the factors that influence their training and their perceived readiness for specialist training.

OBJECTIVES

(1) To describe the socio-demographic profile of registrars
(2) To describe the pre-training characteristics of registrars.
(3) To identify factors perceived by registrars to enhance and impede their training.
(4) To determine registrars' perceived readiness for specialist training in family medicine
(5) To explore associations between registrars' socio-demography, their pre-training characteristics, the perceived enhancers, and barriers and their perceived readiness for specialist training.

3.2 Study Design

Cross sectional survey of family medicine registrars in South Africa.

3.3 Site of Study

All the universities involved in the training of registrars in family medicine in South Africa were included in this study. The universities are as follows: (1) University of the Free State (UFS) (2) Walter Sisulu University (WSU) (3) University of KwaZulu-Natal (UKZN) (4) University of the Witwatersrand (Wits) (5) University of Cape Town (UCT) (6) University of Pretoria (UP) (7) University of Limpopo (MEDUNSA) (8) University of Stellenbosch (Stellenbosch).

3.4 Study population

The study population includes all the registrars in all the eight family medicine departments in South Africa. The sampling frame was all the registrars who have completed at least one year in the family medicine registrarship programme in all the eight family medicine departments in South Africa. The reason for considering the registrars who had completed at least one year in the training programme was to ensure that responses were obtained from registrars with reasonable measure of exposure to the training programme in family medicine. A total of 218 registrars were therefore eligible for the study. The lists of the registrars in the different universities were obtained from the Heads of Department in liaison with the coordinators of the Family medicine registrarship programmes.

3.4.1 Inclusion Criteria

- All registrars who had completed at least one year in the new family medicine registrarship programme, including those who have just recently finished their course work.

- All registrars that have registered as a full time trainee in the new family medicine program (i.e. from January 2008).

3.4.2 Exclusion Criteria

- Registrars who did not consent

3.5 Sampling and recruitment

Recruitment into the study was managed as follows: After obtaining approval from the Deans of student affairs, a list of all eligible registrars as well as their electronic mail (email) contact details was compiled by liaising with the academic coordinators of registrar programmes in all eight universities. Registrars were then invited by the researcher to participate in the study by email using free online survey software.[43] It was clearly stated in the email and the electronic prospective participant information leaflet, that clicking to enter into the secured web-based questionnaire would be regarded as consenting to participate in the research. However, it was also stated that they could voluntarily withdraw their participation at any point during the research process. Responses were anonymous and not linked to identifiable features of the registrars. Sampling of registrars continued until no additional response was received after three fortnightly reminders were sent.

3.6 Measuring Tool

An electronic questionnaire was designed in line with the objectives and outcomes of the research using FreeOnlineSurveys.com. This web-based questionnaire was developed with the assistance of an experienced web-based questionnaire designer and a senior academic in the Faculty of Health Sciences. The software that was used is available at http://www.freeonlinesurvey.com.[43] The questionnaire design was based on key factors found from literature and on research conducted in different settings outside South Africa. Adaptation was made to encompass pertinent aspects of the training programmes. The questionnaire collected information on registrars' socio-demographic characteristics, their pre-training educational characteristics, the factors that influence their training in family medicine and their perceived readiness for specialist training.

Each participant was asked to provide information on:

a) Socio-demographics: Age, sex, race, marital status, etc.

b) Pre-training educational characteristics: Basic medical qualification, language in which basic medical training was done, level of pre-registrarship clinical practice and reported levels of clinical knowledge and skills prior to joining the registrarship programme,

c) Registrarship training: training university, reason for joining the registrarship programme, their perceptions about their readiness for specialist qualification in family medicine and perceived barriers to, and enhancers of, academic progression.

Following ethics approval and permission from the Head of Psychiatry, a pilot study was conducted among ten registrars in the Department of Psychiatry, University of the Witwatersrand to pre-test the questionnaire. Amendments were made to improve the flow and order of the questions. See the final questionnaire in Appendix 1.

3.7 Data Collection

Emails with an electronic participant-information leaflet were sent to all eligible registrars through the survey website. This leaflet provided information on the nature of the study and the conditions of participation in the study. On receiving the invitational email to the study and after reading the information leaflet, each registrar was asked to click on a link in the email that directed the participants to the study questionnaire.

On completion of this questionnaire, the participants were thanked for their participation. A link was made available for participants who would like to give any other comments. Participants who wanted to have feedback on the major findings of the study were also asked to indicate so, on a page not linked to the questionnaire. Due to the risk of low response rate associated with online questionnaires, reminders were sent to the participants enrolled in the study in order to increase the response rate at monthly intervals after the initial invitation. Reminders were sent thrice at 2-weekly intervals.

3.8 Data analysis

Data obtained was entered into Microsoft excel sheet and exported into STATA version 12 (StataCorp, 4905 Lakeway Drive, College Station, Texas 77845 USA) for analysis.[44] Descriptive statistics was used to present the socio-demographic characteristics of the participants, their pre-registrarship characteristics, their perceived enhancers of, and barriers to, academic progression and their perceptions about their readiness for specialist training in family medicine. Numerical variables are depicted as means with their standard deviations while categorical variables are shown as proportions and percentages. Perceived readiness was assessed in 3 areas, namely: clinical skills and knowledge, ancillary skills and knowledge, and self-directed learning principle. The clinical disciplines considered for clinical skills include

(a) surgery (b) paediatrics (c) ambulatory general practice, (d) internal medicine, (e) obstetrics and gynaecology. The ancillary skills considered were (a) communication, (b) research, and (c) academic writing skills. The self-directed learning principles considered were as follows: (a) level of preparedness to manage own learning; (b) ability to set realistic targets for own learning; and (c) experience at self-management of own learning. To be deemed as being "ready": for clinical skills, a registrar must have a score of at least 3 in 3 or more clinical disciplines; for ancillary skills such as research skills, a registrar must have a score of at least 3 in 2 or more areas; and for self-directed learning, a registrar must score at least 3 in 2 or more areas. To be deemed ready for specialist training in family medicine (overall readiness), a registrar must meet the score requirements for readiness in all the three skills areas (i.e. Clinical, Ancillary and Self-directed learning skills) as explained above.

Group differences based on different variables such as sex, years of experience, etc. were examined with regards to perceived readiness for specialist training, barriers, enhancers of academic progression, as well as perceived level of skills prior to joining the programme, using chi square test for categorical variables and t-test. Univariate and multivariate logistic regression analyses were done to explore possible relationships between socio-demographic characteristics, pre-training status of registrars and the outcome variables. Statistical significance was set at $p<0.05$.

3.9 Ethics

Ethics approval was obtained from the Human Research Ethics Committee of the University of Witwatersrand. Permission from the Heads of Department of Family medicine as well as designated ethics committees of participating universities where required, was obtained. Permission was also obtained from Deans of student affairs as necessary. Completing the electronic questionnaire by the registrars was regarded as consent and this was clearly stated in the preceding prospective participants' information leaflets. The information obtained was handled without compromising confidentiality. The software used for data collection was configured in a way to ensure the anonymisation of responses. All study participants were assured that findings would be reported in aggregate or coded form, and the names and identities of individuals partaking in the study would not be disclosed to anybody including the staff of any of the universities involved in the training of registrars in family medicine. It was indicated that aggregate findings may however be published in a peer-reviewed journal or presented at a scientific conference. The computer used for data handling was password protected and access to the electronic questionnaire host software was closed immediately after the study. All student data from the study, including survey results were in the sole

possession and safe custody of the researcher and primary supervisor only. The data in electronic and paper files were stored in a safe lockbox, to which only the researcher and the primary supervisor had access. All data will be securely stored for a period of 5 years following the completion of the study, after which time the data may be destroyed.

3.10 Reliability and validity

Following ethics approvals, a pilot study was conducted among registrars in the Department of Psychiatry to pre-test the questionnaire and make necessary adjustments to ensure that the assessment measure match the aims and objectives of the research. The questions have also been simplified for easy understanding and to ensure that the questionnaire measured what it was expected to measure. Efforts were made to ensure questions asked were specific and appropriate options given in order to avoid non-specific answers that may compromise reliability and validity. Efforts were also made to ensure that the questionnaires were only made available to intended recipients. Inclusion and exclusion criteria were also clearly defined and adhered to.

CHAPTER 4 RESULTS

4.1 Response Rate

Of the 218 respondents who were emailed the electronic questionnaire, responses were received from 123, representing an overall response rate of 56.4% from all the eight Departments of Family Medicine in South Africa. Therefore, in this chapter, results of the analysis of responses of a sample size of 218 registrars are presented.

Table 4.1 Registrars' response rates to study questionnaire by department

Department of Family Medicine	Number of Responses expected	Number of responses received	Percentage response (%)
University of the Free State	12	6	50.0
Walter Sisulu University	9	6	66.7
University of KwaZulu-Natal	33	17	51.5
University of the Witwatersrand	34	26	76.5
University of Cape Town	19	14	73.7
University of Pretoria	25	11	44.0
University of Limpopo	30	16	53.3
University of Stellenbosch	56	27	48.2
Total	218	123	56.4

Table 4.1 indicates that the highest response rate (76.5%) was received from registrars in University of the Witwatersrand and the lowest response rate (48.2%) from University of Stellenbosch.

4.2 Socio-demographic profile of respondents

4.2.1 Gender and Age

The 123 respondents were composed of 97 (78.9%) males and 26 (21.1%) females.

Figure 4.1 shows the majority of the respondents were over the age of 35 years.

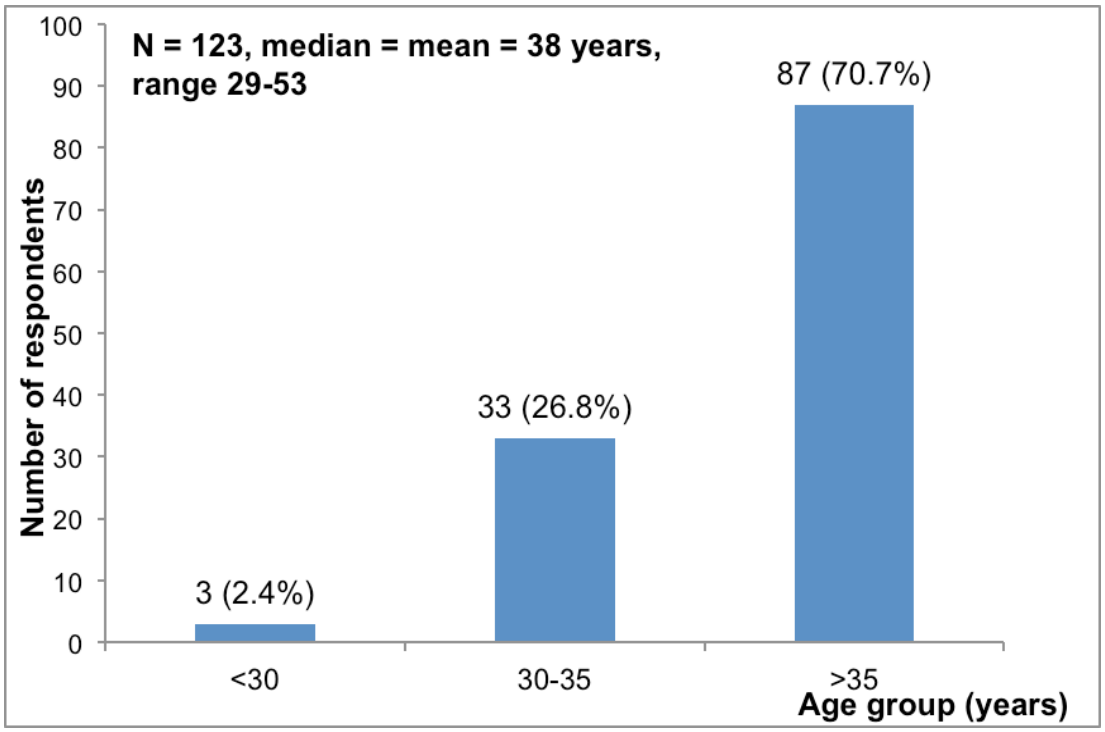

Figure 4.1 Age groups of respondents

All the respondents that were below the age of 30 years were all females. Male registrars were older than the female registrars by 4 years (mean age 38 versus 34 respectively, p > 0.001).

4.2.2 Marital Status

Marital status is shown in table 4.2 which shows that the majority (83.7%) of the registrars were married.

Table 4.2 Marital status of respondents

Marital status	Number of registrar	Percentage (%)
Single	14	11.4
Married	103	83.7
Separated	1	0.8
Divorced	2	1.6
Co-habiting	3	2.4
Total	123	100.0

4.2.3 Marital status and gender

Of the 103 married respondents, 88 (85.4%) were males and 15 (14.6%) were females. Of the 14 that were single, 8 (57.1%) were females and 6 (42.9%) were males. Overall, males were more likely to be married than females (p<0.001).

4.2.4 Number of children

Table 4.3 Categories of number of children of respondents

Group of number of children	Frequency	Percentage
None	20	16.3
1-2	71	57.7
3-4	32	26.0
Total	123	100.0

4.2.5 Nationality

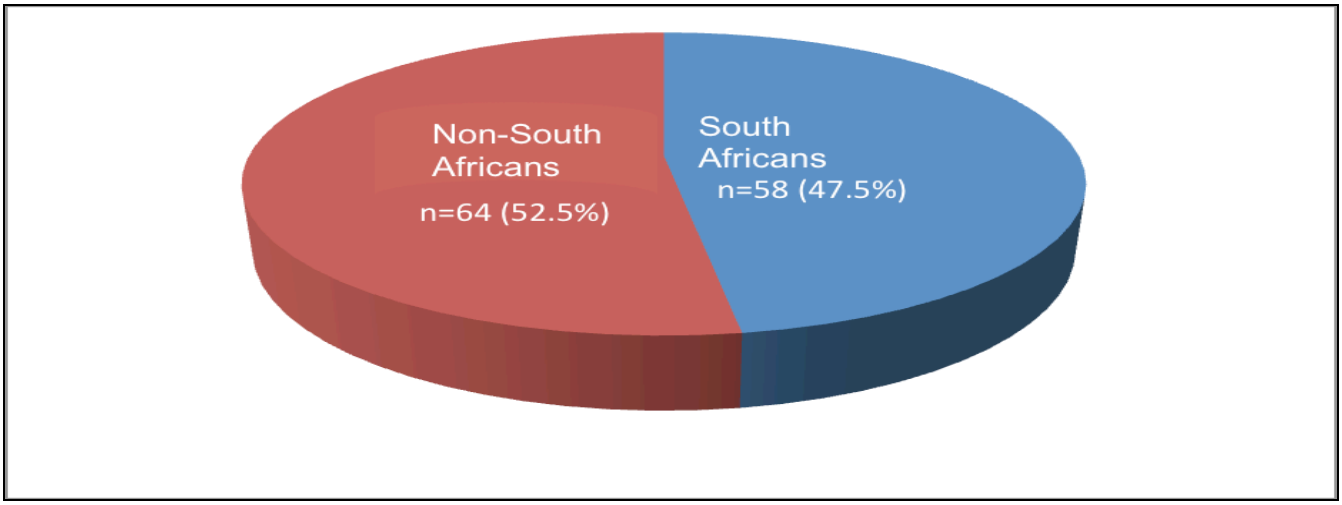

Figure 4.2 Nationality of registrars

Table 4.4 shows the countries of origin of the non-South African respondents that participated in the study. The majority (70.3%) were Nigerians.

Table 4.4 Country of origin of the non-South African Respondents

Country of origin	Number of Registrars	Percentage
Nigeria	45	70.3%
D R Congo	14	21.9%
Tanzania	3	4.7%
Kenya	1	1.6%
Palestine	1	1.6%
Total	64	100%

Table 4.5 shows majority (87.5%) of the respondents who were non-South Africans were above the age of 35 years. South African respondents were statistically younger than their non-South African counterparts (mean age 36 vs. 39 years, $\rho < 0.001$).

Table 4.5 Nationality by age group of respondents

Age group	South Africans	Non-South Africans	Total
< 30	3 (5.2%)	0 (0.0%)	3 (2.5%)
30 – 35	24 (41.4)	8 (12.5)	32 (26.8)
> 35	31 (53.5)	56 (87.5)	87 (70.7)
Total	58 (100.0)	64 (100.0)	122 (100.0)

Of the total number of registrars who are South Africans, 5.2% (n=3) were below 30 years of age, 41.4% (n=24) were in the 30 – 35 age group, and 53.5 %(n=31) were above the age of 35 years.

The majority of the registrars across all nationalities represented in the cohort were males. Most of the male registrars were from Nigeria while most of the female registrars were from South Africa.

4.2.6 Year of study

Table 4.6 Year of study of respondents

Year of Study	Frequency	Percentage
2nd	40	32.5
3rd	29	23.6
4th	48	43.9
Total	117	100.0

Table 4.6 shows registrars' year of study during the research. About 2/3 were in 3rd and 4th year of study.

4.3. Registrars' pre-training characteristics

4.3.1 Country of basic medical training

Just over half of the respondents obtained their basic medical degree from outside of South Africa, most being from Nigeria and Democratic Republic of Congo (DRC)

Table 4.7 Country of Basic Medical training of respondents

Country	Frequency	Percentage
South Africa	56	47.1
Nigeria	41	34.5
DRC	14	11.8
Others	8	6.7
Total	119	100.0

Others: Ukraine=1, Russia=1, Tanzania=3, United Kingdom=1, Ivory Coast=1, Kenya=1

4.3.2 Language of basic medical training

Table 4.8 shows the languages in which the respondents received their basic medical training prior to joining the registrarship programme in family medicine

Table 4.8 Language of Basic medical training of respondents

Language	Frequency	Percentage
English	102	83.6
French	15	12.3
Afrikaans	3	2.5
Russian	2	1.6
Total	122	100.0

4.3.3 Length of clinical practice in South Africa

The vast majority of respondents have practiced in South Africa for more than 5 years

Table 4.9 Respondents' length of clinical practice in South Africa

Length (Years)	Frequency	Percentage
<3	4	3.3
3 – 5	12	9.9
>5	105	86.8
Total	121	100

4.3.4 Postgraduate qualification prior to joining the family medicine registrarship programme

Of the 123 respondents, 35% (n=43) had acquired at least one postgraduate qualification prior to joining the registrarship programme while 65% (n=80) had no prior postgraduate qualification.

4.3.5 Types of postgraduate qualification

The table below shows the different types of postgraduate qualifications that the respondents had received prior to joining the registrarship programme in family medicine.

Table 4.10 Respondents types of postgraduate qualifications

Types of postgraduate Diploma	Frequency	Percentage
Diploma in Child Health	20	16.7
Masters degree	10	8.1
Diploma in Family Medicine	7	5.7
Diploma in Obstetrics and Gynaecology	5	4.1
Diploma in HIV Management	3	2.4
Diploma in Anaesthesia	3	2.4
Unspecified	2	1.6
Diploma in Mental Health	1	0.8

4.3.6 Last work setting prior to joining the family medicine training programme

Table 4.11 shows the majority of respondents had worked in primary health care settings (i.e. Primary Health Care to District Hospital) prior to joining the registrarship programme in family medicine.

Table 4.11 Respondents' prior work setting

Work setting	Frequency	Percentage
District Hospital	51	45.1
Primary Health Care	36	31.9
Regional Hospital	20	17.7
Tertiary Hospital	5	4.4
Not specified	1	0.88
Total	113	100

4.4 Perception of abilities in other areas of learning

The majority of respondents expressed more confidence in their abilities in ambulatory general practice and communication skills (Table 4.12). However, there was no clear distinction between the different broad categorisation of self-directed learning principles.

Table 4.12 Perception of registrars' abilities in different skills set

Area of learning	Very poor	Poor	Fair	Good	Excellent
CLINICAL SKILLS					
Surgery	4 (3.3%)	41 (33.3%)	58 (47.2%)	16 (13.0%)	4 (3.3%)
Paediatrics	1 (0.8%)	12 (9.8%)	64 (52.0%)	44 (35.8%)	2 (1.6%)
Ambulatory general practice	0 (0.0%)	3 (2.4%)	39 (31.2%)	75 (61.0%)	6 (4.9%)
Internal medicine	0 (0.0%)	8 (6.5%)	50 (40.7%)	59 (47.9%)	6 (4.9%)
Obstetrics and gynaecology	1 (0.8%)	19 (15.5%)	54 (43.9%)	41 (33.3%)	8 (6.5%)
ANCILLARY SKILLS					
Communication skills	1 (0.8%)	10 (8.1%)	55 (44.7%)	48 (39.0%)	9 (7.3%)
Research skills	27 (22.0%)	57 (46.3%)	31 (25.2%)	7 (5.7%)	1 (0.8%)
Academic writing skills	19 (15.5%)	58 (47.2%)	35 (28.5%)	11 (8.9%)	0 (0.0%)
SELF-DIRECTED LEARNING SKILLS					
Level of preparedness to manage own learning	1 (0.8%)	20 (16.3%)	58 (47.2%)	39 (31.2%)	5 (4.1%)
Ability to set realistic target for own learning	2 (1.6%)	22 (17.9%)	61 (49.6%)	32 (26.0%)	6 (4.9%)
Experience at self-management of own learning	2 (1.6%)	21 (17.1%)	58 (47.2%)	37 (30.1%)	5 (4.1%)

4.5 Registrars' perceived readiness for specialist training in family medicine

4.5.1 Perceived readiness in the three core areas

Table 4.13 Proportion of Respondents and perceptions of their readiness in the three core skill areas

Skill Area	Number of respondents	Percentage
clinical skills	120	97.6
ancillary skills	50	40.7
self-directed learning skills	99	80.5

Table 4.13 shows the proportion of respondents that perceived themselves to be ready in the three core skill areas based on set criteria (refer chapter 3, section 3.8).

4.5.2 Overall respondents' perceived readiness

The proportion of respondents that perceived themselves to be ready for specialist training in family medicine was 36.6% (n=45) based on the composite score of their readiness across all three skill areas.

4.6 Influence of prior experience on current learning

With regards to the influence of prior experience on learning, 91.1% (n=112) of the respondents were of the opinion that experience gained prior to joining the training programme made their current learning easier while 8.9% (n=11) were of contrary opinion.

4.6.1 Reported enablers of learning

The various responses to different enablers of learning are shown in the table below.

Over 90% of respondents perceived clinical experience post-basic medical qualification and last work setting as enablers of their learning as family medicine registrars.

Table 4.14 Respondents' perceived enablers of Learning

Enablers	Frequency	Percentage
Clinical experience post-basic medical qualification	102	99.0
Last work setting	101	95.0
Prior communication skills	61	64.2
Additional qualification	49	52.7
Prior research skills	20	21.7
Others: Home support, computer skills, management skills, home support, district hospital experience, and a well-grounded undergraduate training)	8	6.5

4.7 Reported barriers to learning

The table below (4.14) shows an aggregated response regarding factors that were perceived to be barriers to their current learning.

The two factors that the respondents mostly perceived to be barriers to their current learning as family medicine registrars were pressure of clinical work and assignment load.

Table 4.15 Respondents' perceived barriers to current learning

Factors	Barrier	No barrier
Pressure of Clinical work	104 (85.9%)	17 (14.1%)
Assignment Load	93 (75.6%)	30 (24.4%)
Research Requirements	82 (67.2%)	40 (32.8%)
The way the programme is designed	70 (56.9%)	53 (43.1%)
Training Setting	67 (55.3%)	54 (44.7%)
Adult-Based Learning System	66 (54.1%)	56 (45.9%)
Feedback on work done	66 (52.9%)	57 (46.4%)
Patterns of Clinical Rotation	64 (52.1%)	59 (47.9%)
Timeline for assignments	60 (48.8%)	63 (51.2%)
Other factors	11 (42.4%)	15 (55.7%)
Stressful family life	50 (41.3%)	71 (58.7%)
Understanding the coursework in the Mimed Programme	48 (39.1%)	75 (61.0%)
Language Barriers	18 (14.7%)	105 (85.4%)

4.8 Reasons for joining the family medicine training programme

Respondents' reasons for joining the registrarship programme in family medicine are shown in the table below.

The alignment of the general concept of family medicine to respondents' future aspirations and family medicine being the only available option were the main reasons for their joining the training programme.

Table 4.16 Respondents' reasons for joining the training programme

Reasons	Yes	No
General concept was aligned to future aspirations	93 (84.6%)	17 (15.5%)
Family medicine was the only available option	52 (56.5%)	
Family medicine will allow more time for their family	49 (52.1%)	45 (47.9%)
Other Reasons: the possibility of being a doctor with vast knowledge in different aspects of medicine; family medicine being a valid option for career progression, family medicine offers opportunity for increased earning potential; personal need to advance primary healthcare; limited registration making family medicine the only option; lack of rural/urban career-pathing in the hospital setting; lack of clarity of specialty option; and self-commitment aligned to family medicine	12 (9.8%)	
No specific reasons for joining	3 (4.6%)	

4.9 Association between registrars' socio-demography, pre-training characteristics, perceived enhancers, barriers and readiness for specialist training in family medicine

Possible associations between various factors and the main outcome variable (i.e. perceived readiness) are highlighted below. Registrars with postgraduate qualifications were found to be 2.6 times more likely to be ready for specialist training in family medicine than those without postgraduate qualifications ($\rho = 0.015$).

Table 4.17 Exploration of possible associations

Perceived Readiness by:	Chi square (χ^2)	ρ value
Gender	2.69	0.11
Age Group	3.04	0.22
Marital status	3.36	0.50
University of registrarship training	9.39	0.23
Nationality	0.81	0.37
Year of Qualification	0.35	0.55
Postgraduate Qualifications	6.06	0.01
Type of Diploma	11.03	0.05
Length of Clinical Practice in South Africa	4.60	0.10
Year of Study	4.42	0.11
Country of Basic Medical Qualification	1.99	0.16
Language of Basic Medical Qualification	2.23	0.52
Number of Children	5.21	0.07
Work set	3.67	0.45
Age group	3.04	0.21

In a sub-analysis, while there was no statistical association between registrars' type of postgraduate diploma and their perceived readiness for specialist training, none of the registrars with a postgraduate diploma in family medicine perceived themselves as being ready for specialist training in the same discipline. However, all 3 registrars with a postgraduate diploma in anaesthesia perceived themselves as being ready for specialist training in family medicine. Most of the registrars that perceived themselves as being ready for specialist training in family medicine had been engaged in clinical practice for more than 5 years.

CHAPTER 5 DISCUSSION

5.1 Socio-demographic profile of respondents

The mean age of respondents was 38 years and only a small proportion of respondents were below the age of 30 years. This can be viewed from two perspectives: either older doctors were more likely to respond in this study or in this sample; the family medicine training programme has not attracted young doctors. There are varying findings regarding the relationship between age and interest in family medicine career. Two studies [45,46] had found that older age was associated with interest in family medicine whereas other studies did not find that age was a predictor of the choice of family medicine as a career.[47,48]

The difference in the findings of these studies could be related to the abilities of the different training programme to attract young medical practitioners and/or the way that postgraduate medical education is organised in these settings. The insignificant proportion of registrars below the age of 30 years as shown in this study points to the need for an improved approach toward the marketing of family medicine as a speciality to undergraduates who are usually very young. However, it is unknown if a similar trend exists in the other specialty training programmes in South Africa. The above findings also indicate a need for further studies to identify the reasons for the apparent inability of the family medicine training programme to attract trainees who are under 30 years of age. Understanding the reasons for this trend could help to turn the tide.

In research conducted among graduates from London dental school, respondents identified potentials for professional development, the possibility of achieving work/life balance as well as remuneration, as some of the factors responsible for their choice of career but there were differences between males and females.[15] The main concern of the females has to do with their family life with many choosing family medicine based on their expectations that it would allow them more time for family and child care.[16] Other motivating factors include professional status within a social context, job security, and flexible working conditions as well as the influence of family and child care on the choice of female registrars.[15] However, this appears not to be the case in the South African Family medicine training context.

Anecdotally, family medicine training is mostly driven by foreign-qualified doctors but based on the findings of this research; South Africans are also embracing the new training in family medicine. It is also worth noting that the proportion of foreign-qualified participants varies across universities in South Africa. There was almost an equal divide between South Africans and participants of other nationalities. This finding seems to highlight a need for more efforts

on the part of the relevant stakeholders to ensure that the current training programme is more attractive to South Africans. It also calls for an acceptance and recognition of the roles of foreign nationals in the provision of primary health care in South Africa.

The majority of the respondents had been engaged in clinical practice for more than 5 years but there is no association between length of clinical practice in South Africa and registrars' perceived readiness. Almost 90% of respondents have been engaged in clinical practice in South Africa for more than 5 years. This shows that the respondents in this research have been exposed to the South African setting for a period that is possibly adequate enough to equip them with the requisite skills and experience to succeed in registrarship training. Yet the majority of respondents reported not being very good or excellent in the three areas used to assess registrars' readiness. The reality from this finding is that the practice environment prior to joining the registrarship programme in family medicine may not be robust enough to prepare medical practitioners for family medicine specialist training. This also highlights the need for family medicine educators to improve their programme with an awareness of the significant skills gap that those enrolling in the training programme have. If the intervention occurs at an early stage in the registrarship programme in family medicine, it could have significant impact on the academic outcomes of the trainees.

5.2 Respondents' pre-registrarship characteristics, perceived readiness and abilities

Very few respondents perceived themselves to be poor and by the same token, most did not perceive themselves to be excellent, in the core clinical disciplines. Overall readiness in this research, which was determined by a combination of the three core aspects, was found to be below 40%. This indicates that significant proportions of registrars were entering the training programme with major deficiencies and were probably looking up to the programme to address these. However, it is worth noting that the discordance in percentage of respondents who were determined to be ready may be due to the way readiness was constructed. The participants that perceived themselves as being fair, good, and excellent in all the key aspects measured were lumped together. If those who reported "fair" in the assessment of the three core areas were excluded, fewer people could have been assessed as being ready for specialist training in family medicine. The outcomes with regards to readiness for specialist training could be due to the current structure of internship training in South Africa, which focuses on these aspects of clinical practice among others. It is unknown if the circumstances under which the foreign-trained registrars did their internship are similar to that of their South African counterparts. The reality is that most medical practitioners are not exposed to training in ancillary skills and self-directed learning principles after graduating from medical school and this could be the reason

for the level of the inadequacies expressed. Registrars in training then possibly have to rely, to some extent, on the knowledge and skills received during undergraduate training as well as some exposure to ancillary and self-directed learning skills to navigate their path through a demanding postgraduate training programme.

However, the finding that only a minority of respondents were ready, also points to the need for the training programme in family medicine in South Africa to focus on addressing areas where that majority of the registrars perceived themselves to be inadequate. The gap in perceptions of readiness in the core areas of family medicine training programme could also be indicative of the failure by the registrars to understand how to incorporate these critical skills into their training or could also represent the inability of the training programme to enhance registrars' abilities to incorporate these key skills in the learning.
Though conducted in a setting outside South Africa, previous research indicated that self-reported preparedness might stem from the personal backgrounds and experiences of the registrars prior to joining the training programme.[25]

The very high percentage of perceived readiness in clinical disciplines could be attributed to the fact that the internship training in South Africa is focused on the reinforcement of training of doctors in the core clinical aspects of care. Lewis et al. assert that a reform in medical education that emphasizes early patient-care experiences and curriculum changes that extends beyond bio-medical science would contribute towards improving primary care.[6] It is believed that the creation of registrar posts in family medicine that entailed rotation and the mandatory rotation of medical interns through the department of family medicine would help elevate the status of family medicine specialty and contribute towards advancing the discipline in a positive manner.[12] Apart from the necessary continuous reinvigoration of the family medicine training programme, there is a need to ensure that family medicine as a discipline is attractive to medical students and newly-qualified doctors. Without addressing this issue which could be contributing to increased drop-out rate, newly enrolled registrars might struggle to cope during the early stages of the training programme. Anecdotally, clinical and ancillary skills as well as self-directed learning principles are considered to be major pre-requisites for a successful registrarship in family medicine. The curricula used in undergraduate training are also mainly biomedical, disease-oriented, and mostly delivered through didactic teaching method. Though the exact situations with regards to the curricula used in undergraduate training in all the countries that have contributed to the cohort of registrars that participated in the study are unknown, there is a possibility that there could be some similarities with the situation in South Africa.

Furthermore, Weissman et al. assert that training programmes that do not offer initial opportunities to registrars to learn the core skills early in their training may have expected that registrars learn these skills on the job or through ad hoc teaching that may occur in the course of their clinical experiences.[23] While this assertion may not be applicable in the South African training environment, it suggests the need for concerted efforts to support newly-enrolled registrars at an early stage in their training programme. Early stages of the training programme in family medicine should therefore focus on improving the skills of new registrars in these core areas in order to improve their chances of successfully completing their training.

Of importance is the association between having postgraduate qualifications and perceived readiness for specialist training in family medicine. Registrars with postgraduate qualifications were found to be 2.6 times more likely to be ready for specialist training in family medicine than those without postgraduate qualifications ($p = 0.015$). Though there was no association between the types of postgraduate qualification and perceived readiness for specialist training in family medicine, this finding shows that having some form of exposure to postgraduate training prior to joining the family medicine registrarship programme somehow prepared the registrars for future postgraduate training. This finding also suggests that more consideration should be given to those with postgraduate qualifications during enrolment of family medicine registrars.

Weissman et al. were also of the opinion that self-perceived preparedness may not predict future abilities, actual provision of care, or the quality of care provided.[23] The proportion of respondents that perceived themselves to be ready in obstetrics and gynaecology was 83.7%. However, the difference in the perceptions of the participants' prior abilities in surgery and obstetrics and gynaecology, (20.2%) could be due to the fact that medical practitioners in South Africa often have more exposure and opportunities to acquire obstetric and gynaecological skills than pure surgical skills. Though a significant proportion of participants perceived themselves as highly capable in ambulatory care, anecdotal evidence indicates that medical officers often fare poorly in the use of biopsychosocial approach to patient care. The biopsychosocial approach is the backbone upon which family medicine as a discipline ensures a holistic care for patients with different ailments.[49]

Research and academic writing skills are some of the areas that respondents perceived themselves to be most deficient at. A small number of respondents (21.7%) indicated that prior research skills have made their learning easier and this corroborates their perceptions regarding their abilities in research prior to joining the registrarship programme. This could either mean that only a few had some prior experience at research or the research skills

garnered prior to their enrolment as registrars were not adequate enough to fulfil the demands of their training as specialists in family medicine.

Registrars also indicated a high level of deficiency in communication and self-directed learning skills. The participants indicated that majority of them came into the training programme with significant deficiencies in communication skill and this should alert the trainers in family medicine on the need to focus on teaching communication skills at the foundation phase of the family medicine registrarship programme. Though a larger percentage of registrars did not perceive language as a major impediment to their learning, challenges regarding communication could be related to the language of basic medical training.

Only about one-third indicated significant degree of competence in self-directed learning principles suggesting difficulties in transition from the pedagogic approach of undergraduate education to the independent and self-directed methods of postgraduate studies. Self-directed learning skills have been identified to be essential for the development and maintenance of ongoing competence of physicians who work in the context of expanding scientific knowledge and continuously changing health systems.[21] The importance of self-directed learning as a tool for success in an academic environment is not in doubt. There is clearly a need to ascertain the degree of deficiencies of the newly enrolled trainees in family medicine in order to develop a curriculum that would be robust enough to address the inadequacies. The implication of the registrars' perceived inadequacies in self-directed learning is that there is a need for more focus on soft skills such as self-directed learning principles in order to improve the chances of success of the trainees in family medicine at postgraduate level. The fact that more than fifty percent of respondents perceived adult-based learning system as a barrier to their current learning indicates that this deficiency with which the registrars came into the programme is not being addressed. The reality is that residency programmes have incorporated self-directed learning into their curriculum but the effectiveness of this approach is often limited by weak program designs.[30]

Weissman et al. assert that the gap between perceptions of preparedness in the general sense and preparedness for specific situations could represent a failure by the registrars to incorporate these key concepts into their work during training.[23] Individual abilities to adapt to a new concept may vary and family medicine being a relatively new discipline compared to much older specialties, is not without its peculiar challenges. In essence, it is possible that certain registrars find it difficult to adapt to the new concepts in family medicine or have little or no desire to take advantage of these new concepts.

5.3 Barriers and Enhancers

About 85% of respondents joined the registrarship training programme in family medicine in South Africa because they believe that the general concept of the discipline is aligned to their future aspirations while about 15% indicated that they had no specific reason for joining the programme. This shows that there is a high chance that the respondents had some understanding of what the programme entails prior to joining and would have been presumed to be ready to an extent regarding their training. However, some might have come into the programme with the expectation that the training programme would address their deficiencies as they progressed. This is understandable judging from the fact that the essence of going into a training programme is the expectation that it will bridge a knowledge and/or skills gap. However, ensuring a training programme that is robust enough in terms of its design, contents, and the training environment, to meet the expectations of the trainees, is essential.

Registrars reported that pressure of clinical work, assignment load, and research requirements are the major barriers. Research requirements were identified as a major barrier to learning by respondents and this finding calls for a deeper look at the challenges of the respondents around this issue in order to proffer appropriate solutions. Some of the factors found to be associated with learning outcomes in settings outside South Africa include structural factors, inadequacies in the feedback mechanism, lack of clarity of written communication, inadequate research support, problems with finding suitable academic mentors, and inadequate supervision.[35] Some of these issues are similar to the findings of the current study. To address these concerns, it would be unhelpful to adopt a generic approach. It is essential to look deeper into the strengths and weaknesses of individual programmes with the aim of achieving a good measure of improvement for the benefit of all the stakeholders in the training programme.

Pattern of clinical rotation, programme design, feedback on work done, adult-based learning system, and training settings are some of the less significant barriers to learning by respondents that emanated from the current study. More than 50% of respondents perceived these factors as barriers to their learning. These are issues that speak to the role of the educators in the training programme. In the United States, a significant determinant of the quality of training in family medicine was found to be the structured availability of learning opportunities for residents.[6] Research has also revealed that general practice learners appreciate sensitive positive and negative feedback from their trainers.[33] Although these findings touch on the roles and responsibilities of the trainees and trainers, some of the issues seem to require more efforts on the part of the educators in family medicine. The findings

reveal a need for some improvement in the way training programmes in family medicine are designed and implemented. There is a possibility that the problems might lie with some of the educators in family medicine and it is worthwhile to consider some efforts that could help improve the performance of those involved in the training of the registrars as well. There is also a need to improve the training environment of registrars as well as a review of issues related to the provision of feedback to the trainees. It is necessary to state that, in order to substantially address these perceived barriers to the learning of the registrars, more specific responses that are university-based would be invaluable.

The future popularity of family medicine is likely to depend on addressing identified concerns and on the clarification of the future direction of the profession.[11] This cannot happen without engaging the registrars themselves on the best approach to address their challenges. This study shows that a good number of registrars already have other postgraduate qualifications prior to their enrolment as registrars. Postgraduate qualification was found to be associated with registrars' perceived readiness. This reveals that certain registrars have entered the programme with potentials that could be tapped into to further develop the programme. Registrars, as core resources of registrar teaching programmes are gifted with valuable wealth of information emanating from their own experiences and which can be used as bedrock in their quest to be more effective teachers.[5] Based on the inputs of registrars in family medicine at a training University, particularly those in their second year of training, a practical and robust intervention regarding registrars training programme was developed by utilizing an iterative process which involved juggling of learning theories with curricular targets, instructional options and local constraints.[21] These opinions expressed above based on different research findings outside the South African setting clearly show that to advance family medicine as a discipline in South Africa, there is a need to consider exploring the value that inputs from registrars in the training programme could contribute. In some settings, registrars have been incorporated into the teaching programme. The incorporation of registrars into the training of other registrars could be an opportunity for the educators to gain a deeper understanding of key issues from the perspectives of the registrars and consequently aid the educators' efforts towards achieving the objectives of the training programme in family medicine.

One of the findings of our research is the fact that about fifty-five percent of registrars perceived the settings in which they train as significant barriers to their current learning. This finding could be due to the structural issues at the training sites, the trainers that form part of the training site, operational issues or non-academic staff at the sites. In a multisite study conducted among family practice registrars in four separate training programmes in a setting

outside South Africa, hospital-based direct provision of care by family practice registrars under supervision of non-family practice specialist was the most common form of educational experience for the registrars in each of the three years of their training.[39] Although this research did not explore the details of the issues at the training sites, this finding calls for a deeper look at the pertinent issues affecting the training of registrars at the different training sites. Though it is essential to identify context-specific issues, it could be helpful to consider some key findings from other settings in order to have a more robust approach to a similar research in our setting.

Traditionally, the district health setting has never been a core training site for registrars in any discipline in South Africa. However, in the current registrarship training in family medicine, the district has been allocated a pivotal role to ensure the successful training of registrars. In order to actualize this main objective, it is clear that the district health services must be ready for a transformation from service providing entities to training establishments. The district management needs to be fully onboard and make necessary contributions towards the success of the training of registrars in family medicine. The reality from the perceptions of the registrars is that the current training climate poses significant challenge to their learning, hence the need for measures to remedy the situation. Training settings comprise both human and non-human resources and these two separate entities might have been factored into the perceptions given by participants of training settings.[7] While this may not be the explanation for the current perceptions of the registrars, it is necessary to explore the issues identified as barriers in detail, in order to provide context-specific solutions to the benefits of the trainees, educators, and the community as a whole.

Some of the identified challenges of family medicine in the South African context include the establishment of the role and value of the discipline in a country with a health system that is formed around a primary care service that is nurse-driven and the re-orientation of family medicine educators, trained in the biomedical paradigm to a more appropriate and desirable patient-centred approach.[36] Guidance is required from the educators to assist the trainees to stay focused and also to ensure that they have a clear understanding of this new discipline and its objectives. Since the educators may be considered to be an integral part of training setting, enhancing their performance through training and other required mechanisms, could improve the overall perceptions of registrars regarding their training sites.

Table 4.15 highlights the fact that language was the most insignificant barrier to learning by registrars in family medicine in South Africa. This is understandable based on the fact that majority of participants had received their basic medical qualification in English. However, a

good number of respondents who received their basic medical training in languages other than English also indicated that language was not a barrier to their learning. This finding shows the possibility that this cohort of registrars has been able to adapt to the South African setting where the main language of communication in academic settings is English.

The factors indicated by registrars as barriers to their learning are mainly issues relating to the structure and contents of the training programme. Due to the fact that registrars' readiness for specialist training can be affected by implicit training experiences[27], enhancers and barriers to learning in their current training programmes were also measured. The findings of this study only highlight the aspects that require attention and a deeper understanding of the barriers to learning could be obtained by future qualitative research methods. Some of the issues could also be site-specific and approaches to addressing to the issues would also depend on the peculiarities of the training sites.

There's a strong belief that in order to prepare the new generation of family physicians for the future which entails a different practice reality, the training of family physicians requires some adjustments and the employment of new approaches that transcend the traditional apprenticeships of residency training programmes.[31] The planning of the clinical rotations of the registrars should also be done taking into consideration existing skills in order to ensure the registrars maximally utilise their learning period to optimally shore their skills in their quest to metamorphose into highly-skilled family physicians. This is particularly true given that the respondents are of fundamentally different backgrounds that offer potential benefits for the family medicine training programme with regards to skills development and transfer.

5.4 Limitations

The 56% response rate which is relatively good for this kind of survey, could have introduced bias if those responding were different compared to non-respondents in terms of readiness and characteristics. For example, respondents' overall perceived readiness might be significantly better than the current 37% if the non-responders in this study perceived themselves to be ready for specialist training in family medicine. A profile of non-responders would have helped to detect responder bias. The overrepresentation of respondents from a particular university could also have skewed the results of this study. These may affect the generalizability of the findings of this research.

Cross-sectional study being a snapshot collection of data within a specified period of time and the same study conducted at a different period in time could yield entirely different results from those of the current cohort. There is a possibility that if this study is conducted at a different point in time, the responses and the respondents could be entirely different from what have been revealed in the current study. In addition, given the cross sectional design, a cause and effect relationship cannot be inferred regarding any significant association.

For some questions, there was also limitation in the richness of the data obtained because quantitative research method was employed. Such questions could have yielded richer data had qualitative research method been employed.

A potentially more significant limitation is the reliance of this study on self-assessment of registrars' readiness and skills levels. Similarly, the findings of this research are based on self-reports that are prone to the influence of differences in perceptions and opinions. Apart from the fact that self-reports of abilities do not confirm actual abilities either now or in the future, lack of a standardized criteria for assessing registrars' readiness in family medicine represents a significant drawback of this study. Other criteria might be used in another study and the findings could be completely different from the current one.

The limitation of the equation used to determine readiness is acknowledged but there is no available validated material to determine readiness in family medicine. The survey and the readiness score could have been enhanced with inputs from experts in the field of family medicine. This entire research project should be viewed as a template for future research in family medicine.

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

This study concludes that:

- The majority of registrars in the new family medicine training programs in South Africa reported not having adequate clinical, ancillary and self-directed learning attributes that ensures their readiness for specialist training. Clinical experience, academic achievements and non-specialist contexts of practice prior to enrolment in the program appear to enhance learning but clinical and academic requirements inherent in the way programs are designed, constitute barriers to academic progression in the new Family medicine registrarship training program in South Africa.

- It would be worthwhile to explore the possibility of considering certain attributes as pre-requisites for enrolment in the family medicine registrarship programme.

- Another potential benefit of ascertaining the pre-registrarship characteristics of trainees in family medicine is that educators could utilise certain useful skills of the registrars to support the teaching of others in the same programme in order to achieve pre-determined academic outcomes.

- Implementing reforms that take into account registrars' pre-training attributes, the reported enhancers and barriers to learning, is crucial to addressing gaps in registrars' knowledge, skills and program design.

- Findings from this study suggest the possibilities of the need for a registrar-guided participatory curriculum development process for the current training programmes to be more effective and efficient in turning out well-grounded family physicians.

- However, one is conscious of the fact that some of the findings of this research might be used as templates for further in-depth research endeavours in order to gain better understanding of the issues.

6.2 Recommendations

1. Individual Departments of family medicine should look into the aspects of training that registrars have reported as barriers and enhancers of their learning in order to make necessary context-specific adjustments to bridge the gap in skills and knowledge and, ultimately, improve the outputs of their programmes.

2. Based on the findings of this research, individual departments of family medicine should ensure that there is an objective approach to measuring registrars' abilities prior to enrolment in order to strengthen efforts to deal with specific challenges. There is a need for a review of the current pre-enrolment assessment of family medicine registrars in order to measure the specific deficiencies that exist in the cohorts of would-be registrars.

3. The current Diploma in family medicine programme should be reviewed given that majority of respondents with the postgraduate degree expressed lack of readiness for registrarship training in the same discipline.

4. Given the limitations of this study, further better-designed quantitative and qualitative studies (e. focused groups and interview methods) are needed to explore the reasons for the perceived lack of readiness for specialist training in family medicine and how the enrolled registrars think the situation could be remedied from their own perspective. This approach could potentially yield rich data that may assist in gaining a deeper understanding of issues related to registrar training in family medicine.

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APPENDICES

Appendix 1. Questionnaire

QUESTIONNAIRE

REGISTRARS' PROFILE AND THEIR PERCEIVED READINESS FOR SPECIALIST TRAINING IN THE NEW FAMILY MEDICINE REGISTRARSHIP PROGRAMME IN SOUTH AFRICA.

(A) Demography

1. What is your sex? ☐ Male ☐ Female

2. What is your age group (in years)? (Please tick the appropriate answer)

(a) < 25

(b) 25-29

(c) 30-34

(d) 35-39

(e) 40-44

(f) 45-49

(g) >49

3. What is your marital Status? (Please tick the appropriate answer):

(a) Single ☐

(b) Married ☐

(c) Separated ☐

(d) Divorced ☐

(e) Widowed ☐

(f) Living as Married/Co-Habiting ☐

4 How many children do you have?

(a) None ☐

(b) 1-2 ☐

(c) 3-4 ☐

(d) 5 or more ☐

5 What is your nationality? (Please tick appropriate answer):

(a) South African ☐

(b) Others ☐

If other, please specify …….

6. What is year of study? (Please tick appropriate answer):

(a) 1st ☐

(b) 2nd ☐

(c) 3rd ☐

(d) 4th ☐

(e) 5th ☐

7. In what country did you obtain your basic medical qualification? (Please tick appropriate answer):

(a) South African ☐

(b) Others ☐

If other, please specify …….

8. In what language did you obtain your Basic Medical Qualification? (Please tick appropriate answer):

(a) Afrikaans ☐

(b) English ☐

(c) French ☐

(d) Other ☐

If other, please specify ……

9. In which University are you registered as a Family medicine registrar? (Please tick the correct institution).

(a) University of Free State ☐

(b) Walter Sisulu University ☐

(c) University of KwaZulu-Natal (UKZN) ☐

(d) University of the Witwatersrand ☐

(e) University of Cape Town (UCT) ☐

(f) University of Pretoria (UP) ☐

(g) University of Limpopo (MEDUNSA) ☐

(h) University of Stellenbosch (Stellenbosch) ☐

(B) PRE-TRAINING CHARACTERISTICS

10. When did you receive your Basic Medical Qualification (Please state the year)…….

11. For how many years have you being engaged in clinical practice in South Africa? (Please tick the appropriate answer):

(a) < 1 ☐

(b) Between 1and 3 ☐

(c) Between 3 and 5 ☐

(d) > 5 ☐

12. Do you have any other Qualifications? Yes ☐ No ☐

If Yes, which one

(a) Postgraduate Diploma ☐

Specify ……

(b) Masters Degree ☐

Specify ……

(c) Others ☐

Specify ……

13. Which of the following best describes your last work setting immediately before joining the family medicine registrarship program (Tick the appropriate box)?

(a) Clinic ☐

(b) Community Health Centre ☐

(c) District Hospital ☐
(Please specify department)

(d) Regional Hospital ☐
(Please specify department)

(e) Tertiary Hospital ☐
(Please specify department) ☐

14. A certain level of knowledge and skills is valuable for a family medicine registrar in the following disciplines and areas before joining the family medicine program.

On a scale of 1 – 5 (5 = Excellent, 4 = Very Good, 3 = Fair, 2 = Poor, 1 = Very Poor Please rate how you perceive your ability in the areas/disciplines stated below prior to joining the training programme in Family medicine:

	RATING (1 – 5)
CLINICAL SKILLS AND KNOWLEDGE	
(a) Surgery	
(b) Paediatrics	
(c) Ambulatory General Practice	
(d) Internal medicine	
(e) Obstetrics and Gynaecology	
ANCILLARY SKILLS	
(f) Communication skills	
(h) Research skills	
(i) Academic writing skills	
SELF-DIRECTED LEARNING PRINCIPLE	
(j) My level of preparedness to manage my own learning was?	
(k) My ability to set realistic targets for my learning was?	
(l) My experience at self-management of my learning was?	

15. Do you consider the experience you have gathered before joining the registraship programme has made your learning easier (i.e. after obtaining your basic medical degree (MBBCh etc.) as registrar in family medicine? Yes ☐ No ☐

16. If you answered "Yes" to question (16) above, indicate which of the following characteristic (s) has made your learning in your current training easier?

		Yes	**No**
(a)	Having additional medical qualification		
(b)	Last work setting before joining registrars training		
(c)	Your clinical experience after obtaining your basic medical degree (MBBCh etc.) and before starting your current studies		
(d)	Research skills		
(e)	Communication skills		
(f)	Other (please state)……		

(C) CURRENT TRAINING IN FAMILY MEDICINE

17. Which of the following best describes what informed your joining the family medicine registrarship programme? Please tick your reason (s). You may choose more than one option.

(a) The general concept is aligned to my future life aspirations ☐

(b) Family medicine speciality will allow me more time for my family in future ☐

(c) No specific reason ☐

(d) It was the only option available for me. ☐

(e) Others: Please specify
……
……

18. Certain factors have been found to act as barriers to learning in academic programmes. On a scale of 1 – 5 (5 = Definite Barrier, 4 = Significant Barrier, 3 = Barrier, 2 = Minimal Barrier, 1 = Not a Barrier), Please rate the level at which the following is/has been a barrier to your learning in the registrarship training?

	RATING (1-5)
(a) Pressure of clinical work	
(b**)** Assignment load	

(c**)** Adult-based learning system	
(d**)** Research requirements	
(e**)** Understanding the coursework in your Mimed programme	
(f**)** The way the program is designed	
(g**)** Stressful family life	
(h**)** Time lines for assignments	
(l**)** Language barrier	
(j**)** Pattern of clinical rotation	
(k) Feedback obtained on work done	
(l) Training setting	
Others (Please specify and rate**)**	

Appendix 2: Participant's information leaflet

PARTICIPANT'S INFORMATION DOCUMENT

HREC Protocol Approval Number:

REGISTRARS' PROFILE AND THEIR PERCEIVED READINESS FOR SPECIALIST TRAINING IN THE NEW FAMILY MEDICINE REGISTRARSHIP PROGRAMME IN SOUTH AFRICA.

Good day,

I am Dr. Olusegun Akinsanya, a registrar in the Department of Family Medicine, University of the Witwatersrand. I am undertaking a study to determine the registrars' perceptions of their readiness for specialist training in family medicine in South Africa. I am conducting this study as part of the requirements for obtaining the MMed (Family Medicine) degree.

I am conducting this research on all the registrars that have completed at least one year of training in the new family medicine training programme in South Africa. In this study, I want to learn if there are certain key pre-training characteristics that are associated with registrars perceived readiness for training in the new training programme. The main motivation for doing this research is to have some understanding of relevant attributes of the current registrars in the new training programme. The findings of this research could provide some guidance for the selection of candidates that have the most chance of succeeding in the training programme prior to enrolment.

I would therefore invite you to take part in this research study because of your current enrolment as registrar in the new family medicine training programme. The survey is anonymous and confidential, on a secured web server host. If you choose to participate in this study, you would be required to answer questions outlined in the online questionnaire. These questions will include those relating to your socio-demography and pre-training characteristics, your current training, and your perceived readiness for specialist training in family medicine.

You are assured that findings from the study will be reported in aggregate form, and the names and identities of individuals partaking in the study would not be disclosed to the staff of any of the universities involved. The completion time of the survey is not expected to exceed 30 minutes.

Your participation is voluntary and your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time. **Clicking to enter into the secured web-based questionnaire would be regarded as consenting to participate in the research.** As this is an academic study, there is no reimbursement that participants may be eligible for. You can contact the researcher for a copy of the results and the study in its entirety, as well as for details of location of publication, if any.

If you are unhappy, or if there is a problem, please feel free to let me know by contacting the researcher (details below) and effort would be made to help:
Dr Olusegun Akinsanya

Email: segunakinsanya@gmail.com
Cell: 0794944530

COMPLAINTS:

The Human Research Ethics Committee (Medical) of the University of the Witwatersrand has approved this study. Ref No M130530. If you have any concerns or complaints about the conduct of this study, please contact the Wits Research Office at 011 717 1234.

Appendix 3: Wits Ethics Approval

M130530

R14/49 Dr Olusegun Akinsanya

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M130530

NAME: (Principal Investigator)	Dr Olusegun Akinsanya
DEPARTMENT:	Department of Family Medicine Medical School
PROJECT TITLE:	Registrars' Profiles and Their Perceived Readiness for Specialist Training in the New Family Medicine Registrarship Programme in South Africa
DATE CONSIDERED:	31/05/2013
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Dr OB Omole
APPROVED BY:	Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 14/06/2013

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.**

Principal Investigator Signature Date 26/6/2013

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 4: Medunsa ethics approval

University of Limpopo
Medunsa Research Ethics Committee (MREC)
Prof GA Ogunbanjo: Chairperson MREC
P.O Box 163, Medunsa, 0204, South Africa
Tel: +27 12 521 5617/3359 Fax: +27 12 521 3749, Email: lorato.phiri@ul.ac.za

Dr OS Akinsanya
Department of Family Medicine
University of the Witwatersrand
Johannesburg

Dear Dr Akinsanya

RE: DR OLUSEGUN AKINSANYA –REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN FAMILY MEDICINE DEPARTMENT

Researcher:	Dr Olusegun Akinsanya
University:	University of the Witwatersrand
Department:	Family Medicine, Medical School
Qualification	MMed – Family Medicine
Supervisor:	Dr OB Omole
Clearance Certificate:	M130530
Approval date:	14 June 2013

Title: Registrars' profiles and their perceived readiness for specialist training in the new family medicine registrarship programme in South Africa

MREC **NOTED** your letter dated 06 May 2013 requesting approval and permission to conduct study in the department of Family Medicine at Medunsa Campus.

MREC **APPROVED** and **GRANTED** you a permission to conduct the research at the Medunsa Campus.

Yours Sincerely,

PROF GA OGUNBANJO
CHAIRPERSON MREC

01 August 2013

UNIVERSITY OF LIMPOPO
Medunsa Campus
2013 -08- 01
MEDUNSA RESEARCH ETHICS COMMITTEE
MREC CHAIRPERSON

Finding solutions for Africa

Appendix 5: UCT Ethics approval

	RESEARCH ACCESS TO STUDENTS	DSA 100

NOTES

1. This form must be **FULLY** completed by applicants that want to access UCT students for the purpose of research.
2. Return the fully completed **(a) DSA 100** application form **by email**, in **the same word format**, together with **your: (b) research proposal inclusive of your survey, (c) copy of your ethics approval letter / proof (d) informed consent letter** to: Moonira.Khan@uct.ac.za. You application will be attended to by the Executive Director, Department of Student Affairs (DSA), UCT.
3. The turnaround time for a reply is **approximately 10 working days**.
4. NB: It is the responsibility of the researcher/s to apply for and to obtain **ethics approval and to comply with amendments that may be requested;** as well as **to obtain** approval to access UCT staff and/or UCT students, from the following, respectively: (a) **Ethics**: Chairperson, Faculty Research Ethics Committee' (FREC) for ethics approval, (b) **Staff access:** Executive Director: HR for approval to access UCT staff, and (c) **Student access:** Executive Director: Student Affairs for approval to access UCT students.
5. **Note:** UCT Senate Research Protocols requires compliance to the above, even if prior approval has been obtained **from any other institution/agency. UCT's research protocol requirements applies to *all* persons, institutions and agencies from UCT and external to UCT who want to conduct research for academic, marketing or service related reasons at UCT.**

SECTION A: RESEARCH APPLICANT/S DETAILS

Position	Staff / Student No	Title and Name	Contact Details (Email / Cell / land line)
A.1 Student Number	522253 (WITS)	Dr Olusegun S Akinsanya	segunakinsanya@gmail.com 079 4944 530
A.2 Academic / PASS Staff No.	A020700 (WITS)		
A.3 Visitor/ Researcher ID No.	7602186048183		
A.4 University at which a student or employee	University of the Witwatersrand, Johannesburg	Address if *not* UCT: 10th Floor, Medical Scholl, York Road, Parktown, 2193, South Africa	
A.5 Faculty/ Department/School			

A.6 APPLICANTS DETAILS If different from above	Title and Name	Tel.	Email

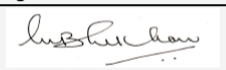
SECTION B: RESEARCHER/S SUPERVISOR/S DETAILS

Position	Title and Name	Tel.	Email
B.1 Supervisor	Dr OB Omole	076 4721 289	alagbaomole@gmail.com
B.2 Co-Supervisor/s	Prof ID Couper	011 717 2089	Ian.Couper@wits.ac.za

SECTION C: APPLICANT'S RESEARCH STUDY FIELD AND APPROVAL STATUS

C.1 Degree (if a student)	MMed (Family Medicine)
C.2 Research Project Title	Registrars' Profiles and their Perceived Readiness for Specialised Training in the new Family Medicine Registrarship programme in South Africa
C.3 Research Proposal	Attached: Yes ■ No ☐
C.4 Target population	All registrars who have completed at least 1 year in the Family Medicine registrarship programme in all the 8 Family Medicine departments in South Africa
C.5 Lead Researcher details	If different from applicant:
C6. Will use research assistant/s	Yes ☐ No ■
C.7 Research Methodology and Informed consent:	**Research methodology**: Cross-sectional study **Informed consent:** Obtained from all participating registrars, then electronic questionnaire would be circulated through a link in the email addresses of the registrar.
C.8 Ethics clearance status from UCT's Faculty Ethics Research Committee (FREC)	Approved by the FREC Yes ■ With amendments: Yes / No ☐ (a) Attach copy of your ethics approval. Attached: Yes / No (b) State date and reference no. of ethics approval: Date: 14/06/2013 WITS HREC Clearance Certificate No.: M130530 / Date: 15/08/2013 UCT HREC: 490/2013

SECTION D: APPLICANT/S APPROVAL STATUS FOR ACCESS TO STUDENTS FOR RESEARCH PURPOSE
(To be completed by the ED, DSA or Nominee)

	Approved / With Terms / Not	* Conditional approval with terms	Applicant/s Ref. No.:	
D.1 APPROVAL STATUS	*Yes* ■	(a) Access to students for this research study must only be undertaken after written ethics approval has been obtained. (b) In event any ethics conditions are attached, these must be complied with before access to students.	522253/A020700/Dr Olusegun S Akinsanya	
D.2 APPROVED BY:	Designation	Name	Signature	Date
	Executive Director Department of Student Affairs	*Dr Moonira Khan*		*20 September 2013*