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Family Medicine and Primary Health Care: The role of undergraduate training on current practices and future considerations of junior doctors in South Africa

Research Report For

Masters of Public Health

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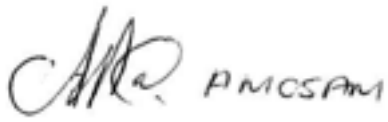
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Declaration

I, Dr Atiya Mosam, declare that this research report is my own personal work. It has not been submitted previously at this or any other University. This thesis is being submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg. This report has been submitted in partial fulfillment of the requirements for the degree, Master of Public Health in the field of Health Systems and Policy.

Signed
Dr A Mosam



15 October 2015

Dedication and Acknowledgements

I dedicate this work to my parents for their unending support of all my endeavours. Without your guidance, assistance and love, I would not be where I am today and for that, I will always be grateful.

I would like to acknowledge my supervisors, Dr Shabir Moosa and Ms Leane Ramsoomar for their relentless efforts in ensuring that I completed this to the best of my abilities.

To Dr Shabir Moosa, thank you for allowing me to pursue this research within the Human Resources For African Primary Health Care (HURAPRIM) research project and for your support of my development from a young community service doctor to my pursuit of a Masters in Public Health.

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Abstract

Introduction: The South African government recently began the implementation of the new National Health Insurance (NHI) and Re-engineering of Primary Health Care (PHC) policy proposals (green paper) in order to achieve universal health coverage and health equity. One of the vital aspects of these policy proposals is the recruitment and retention of doctors within PHC in the public sector. This study therefore aims to examine the training, current practices and future intentions of doctors completing community service in 2010, 2011 and 2012 in order to ascertain which factors may be associated with employment in PHC.

Methodology: The study was designed as a cross sectional study with an analytical component. Doctors in the cohorts of interest were contacted via email and requested to fill in an anonymous self-administered online survey. Univariate analysis was done to describe socio-demographic characteristics, current employment status and future intentions. Bivariate analysis was done to examine any associations between exposure to family medicine and PHC during undergraduate training, internship and community service, and employment in PHC.

Results: The database yielded a sample of 350 doctors, of which 61 responded. Of the respondents, 35.59% worked as a private general practitioner whilst 11.86% work in public PHC. The study showed no statistically significant association between exposure to family medicine and PHC and employment in PHC but female gender was the socio-demographic variable found to be associated with PHC employment ($p=0.02$). Factors that deterred doctors from pursuing a specialization in family medicine were related to employment conditions such as poor resources and under staffing and not to factors related to the specialty itself such as an unchallenging scope of work or poor professional perception of the specialty.

Conclusion: Whilst the study showed no association between exposure to family medicine and PHC and career choices in that field, it has highlighted that the conditions within the public service are the biggest deterrent to doctors. Thus whilst medical school admissions should aim to increase the number of students with characteristics positively associated with PHC employment such as female gender, it is important that the Department of Health in South Africa aims to

ensure that the conditions within the public service are optimized in order to recruit and retain as many doctors as possible in light of the human resource requirements of the new policy.

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Nomenclature

1. Junior Doctors: Refers to doctors who have completed internship and community service and are licensed to practice independently, but have not yet specialized.
2. Brain Drain: When large numbers of educated and very skilled people leave their own country to live and work in another one where pay and conditions are better. [Sourced from Cambridge dictionaries online. http://dictionary.cambridge.org/dictionary/british/brain-drain]
3. Rural Area: An area where agriculture and other primary activities (such as mining, forestry, hunting and gathering, fishing etc.) account for a significant amount of the land use, employment, income and economic output and where population densities are distinctly lower than those of large cities in the same country [1].
4. Deep Rural Area: An area with very low population densities, distant from major cities, where almost every household has at least one member employed in agriculture or other primary activities (such as mining, forestry, hunting and gathering, fishing etc.) [1].

Chapter One: Introduction, Literature Review, Aims and Objectives

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1.1 Introduction

The Alma Ata Declaration of 1978 highlighted the principles of primary health care (PHC) and its role as a key component of the health system [2]. The concept of accessible, acceptable and comprehensive care that is facilitated by the community and intersectoral stakeholders is reinforced within the Alma Ata. Similarly, family medicine, as a medical specialty, is grounded in these elements and values. However the practical interpretation of the discipline of family medicine has been varied in Sub Saharan Africa, as compared to the international arena, with some countries recognizing the value of the comprehensive approach of family medicine whilst others still focus on vertical, hospicentric care [3,4].

Despite this variability, a statement of consensus was issued in 2009 regarding family medicine in Africa. The statement, which followed the 2nd African Regional WONCA (World Organization Of Family Doctors) Conference, recognized family medicine as a "core contributor to primary health care." Hence it is widely accepted that family medicine and PHC overlap significantly and should be considered as related entities where family medicine forms the academic discipline of generalist care whilst PHC serves as the context in which such care is delivered. Therefore, the remainder of this document will address family medicine and PHC as explained above [5].

Family medicine was established in South Africa (SA) as a formal specialist discipline in 2008 and has been registered with the Health Professions Council of South Africa (HPCSA). With this formalization, a master's degree in family medicine was offered at all medical schools in SA and registrars specializing in this discipline began their studies with rotations through the district health service (DHS) and PHC settings. Concurrently, the implementation of the compulsory two-year internship for newly qualified medical doctors in 2007 includes a 4-month rotation through family medicine in the DHS [3].

Two other areas whereby junior doctors may be exposed to family medicine and PHC include undergraduate (before internship) and community service years (after internship). Regarding undergraduate training, whilst most medical faculties endeavor to include family medicine in their training, little information is available on the extent and usefulness of this training.

Furthermore, whilst community service is aimed at deploying doctors to PHC in rural and district health services, the translation of this policy has been problematic [6], due to the lack of clear guidelines on the role of community service doctors as well as the capacity of managers to effectively utilize these doctors. Therefore it is important to examine the manner in which different managers may interpret the policies to expose junior doctors to family medicine and PHC during both internship and community service.

Finally, it is important to highlight that SA has recently began implementing a new policy of National Health Insurance and the Re-engineering of Primary Health Care, which aims to provide universal health coverage to all South Africans. Within this policy is a recognized need to strengthen primary health care as the foundation for a well functioning health system. This new strategy proposes the formulation of district specialist teams, of which family medicine specialists form a part, as well as improved primary health care service delivery. Thus, it is essential that human resource constraints and opportunities in these areas are carefully considered [7].

1.2 Problem Statement

In SA, family medicine is a relatively new discipline that has not generated interest akin to those of other specialties. Conflicting bodies of international research exist that aim to explain whether decisions to pursue family medicine as a career choice are related to exposure to the discipline, perceived attributes of the discipline, or to qualities inherent in a person. However, research specific to the South African context is sparse. In addition, with the recognition of family medicine and PHC as a vital component to the overall health of a country, it is important that the factors

determining doctors' perceptions and decisions regarding uptake of this specialty be understood. Therefore a study in this area will be of great value.

1.3 Study Justification

Information on junior doctors perceptions' and intentions to work in family medicine and primary health care would be useful to academics and policy makers in reviewing medical school curricula and health policies in a bid to increase interest in family medicine and primary health care as possible career choices. A view of this critical yet under researched area may also prove vital to the current policy of PHC Re-engineering and the imminent implementation of the National Health Insurance as it will inform the human resource planning required for the success of this new undertaking by the South African Department of Health.

1.4 Literature Review

In 2008, at the First Global Forum on Human Resources For Health in Uganda, the reciprocal impact of the global burden of disease on health systems and workforces was highlighted. The Kampala Declaration was subsequently made to tailor and coordinate efforts in all countries in order to strengthen human resources for health and thereby promote equity. Though human resources are not specifically addressed in the Millennium Development Goals of 2000, the Kampala Declaration recognizes that unaddressed human resource needs would ultimately hamper the progression and achievement of these goals [8].

These sentiments are not unique or new. The World Health Report of 2006 was centered on the global health workforce and reinforced the need to provide health systems with both quality and quantity in their workforces as these indicators are associated with improved maternal and child survival rates as well as enhanced PHC services [9].

In quantifying the global health workforce, the 2011 World Health Statistics report determined that Africa had 2.3 physicians per 10 000 population as opposed to the world average of 14 [10]. These estimates are alarming when the burden of disease is

considered. Africa contributes 24% towards the global disease burden yet houses only 3% of the global health workers. This shortage is exacerbated by the continuing "brain drain" of skilled professionals [9].

South Africa, in comparison, fared better than Africa on the whole with 7.7 physicians per 10 000 population, although this is still half of the global average [10]. However, the Human Resources for Health Strategy (HRH) for SA 2012/2013 - 2016/2017 states that 23.1% of community service level doctors in 2009 intended emigrating [11]. This clearly indicates that the "brain drain" of professionals from the country is ongoing.

Almost 43 million of SA's approximately 53 million population (81%) are dependent on the public service for health care. The remaining 18% are attended to by approximately one third of the medical practitioners in SA. Additionally, 73% of the uninsured population access PHC facilities whilst 10% access public hospitals [12]. Given the above statistics, it is clear that strategies to retain doctors both within the country and within the public sector are both necessary and more importantly, retention of doctors in PHC is needed to attend to the vast majority of patients that access this service.

Regarding PHC, whilst the Alma Ata Declaration of 1978 and its views on the importance of PHC are well known and widely accepted [2], the translation of this declaration into practice has arguably not been as effective. The World Health Report 2008, with its focus on the importance of PHC, listed a few reasons for this poor implementation; namely inadequate resource mobilization towards PHC, specialist driven and vertical systems, and a trend towards expensive commercial care. It is therefore appropriate that the 2008 World Health Report recommends PHC reform that is aligned with the principles of the Alma Ata and in keeping with this recommendation SA recently embarked on the Re-engineering of Primary Health Care [13].

The 2008 World Health Report views the health workforce as central to this reform. Consequently, initiatives to reform PHC service delivery would have to address several issues concomitantly with regards to doctors:

- Medical school and in-service training should reinforce the principles and skills required for effective PHC;
- Family medicine and PHC should be supported by health systems in a way that they become attractive to doctors; and
- Incentives and career advancement opportunities should be optimized such that these areas of work are seen as viable career options [13].

The South African HRH strategy highlights the need for increased output of doctors from medical schools [11]. While this may increase overall medical practitioner numbers, the amount of doctors that eventually pursue family medicine and PHC practice may remain largely unaffected. This is evidenced globally by the steady decline in the number of doctors entering general practice [14]. In SA, two recent studies were conducted which examined graduates' socio-demographic characteristics and careers choices as well as the reasons for their choice of employment. The studies showed that a very small percentage of final year students and graduates considered family medicine and primary health care as possible career choices [15, 16]. This however may be due to a lack of knowledge and exposure to this discipline, which was not addressed in these studies. A Spanish study showed that the number of students who considered family medicine as a career choice increased after students completed a four-month PHC course. However, it was noted that there was no increase in the number of students that considered family medicine as their first choice [17].

Other studies have examined the relationship between undergraduate pedagogy and the perceptions of family medicine. A study by Rodriguez and colleagues comparing the United Kingdom, Spain, France and Canada, found that students of medical schools that ensured early and frequent exposure to family medicine as well as positive family medicine role models held family medicine in high esteem [18]. On a similar note, a study in the United States of America highlighted the hidden curriculum of medicine – the idea that a large part of what is learnt in medicine is not taught via formal teaching channels. By extension, the authors noted that scholars attending schools where "badmouthing" or negative attitudes to primary care were prominent were less likely to pursue family medicine [19]. This is compounded by the

pressure from specialists in other disciplines for students to pursue their chosen specialties [18].

Another finding relates to perceptions amongst students and faculty that family medicine is a non-competitive discipline, characterized by many posts for which very few people apply. Therefore it is perceived that students can use family medicine as a contingency plan should they fail to be accepted into other specialties. The lack of prestige extends beyond the medical community to the general population and students either find it difficult to justify their choice or choose to hide their interest from their peers or family [18]. Another study, however, found that medical education may not fully explain the lack of attractiveness of family medicine and postulates that the poor organization and working conditions of general practice may be more of a deterrent than lack of prestige [20].

Other factors that may impact a student's choice of specialty are the value systems and qualities inherent in a person. A German study examining career choices has shown that factors such as patient orientation and work-life balance were more important to those interested in family medicine than career advancements and monetary remuneration. The study also concluded that as students were likely to associate family medicine with low remuneration, those that ascribe high value to monetary aspects of a career were more likely to choose other specialties [21]. Conversely, students that showed altruistic characteristics and valued social justice were more likely to pursue family medicine and these criteria should be carefully considered in medical school admission procedures [18].

Demographic factors such as older age and being female as well as volunteer work and rural (or small-town) background are also correlated with choices to pursue family medicine [22, 23]. However, it appears that medical school has a moderating effect on these factors, which may ultimately hamper the choice to pursue family medicine [22]. In relation to socio demographic factors, it was also found that students of a lower socioeconomic class with higher levels of debt were less likely to pursue primary care, presumably due to the low financial remuneration associated with the discipline [24].

Based on the above, studies have postulated that medical schools should aim to review admissions criteria to include those that are more likely to pursue family medicine and primary care. Additionally, medical curricula should increase the exposure of and change academic attitudes towards family medicine if they wish to increase the amount of students choosing to pursue family medicine and PHC [24, 25].

Besides undergraduate training, internship (or post graduate training) could provide a useful platform for recruitment. SA recently introduced the two-year internship programme that includes rotation into family medicine and PHC. While this has not yet been evaluated, a review of similar training in Britain has found that this period is important in influencing career decisions. It is therefore vital that positive exposure to family medicine and PHC be included in this period of postgraduate training [25, 26]. Additionally, internship in rural areas increases the likelihood of choices in family medicine and PHC. This is presumably a result of the remoteness of location leading to these doctors having to treat a wider and more severe range of illnesses than they might have in an urban setting where referrals are not as challenging. However, this training in rural areas requires adequate and appropriate social and professional support in order to bolster confidence and ability [27].

Similar sentiments have been expressed regarding community service. In SA, the aim of community service is, as cited in an article by Reid, "to ensure improved provision of health services to all the citizens of our country. In the process this also provides our young professionals with an opportunity to develop skills, acquire knowledge, behaviour patterns and critical thinking that will help them in their professional development" [6, page 1]. With an average of 1165 new community service doctors deployed each year, this may prove to be a major boost to the public sector and it has been noted, in areas such as Gauteng, that the commitment to deploy these doctors to PHC facilities has made an evident impact in terms of human resource capacity and quality of patient care [6, 28, 29].

Despite reports by community service doctors of positive experiences that resulted in better skills and increased confidence, many doctors are not absorbed into the public sector post community service for various reasons e.g. equipment shortages, lack of

medical officer posts , lack of personal growth etc., leading to a retention gap of 62.4%. This results in government expenditure with no long-term benefits to the public health sector [11, 30]. As most of the community service doctors are placed in PHC facilities, a lack of absorption translates into losses for family medicine and PHC. It has been recommended that, similarly to internship, by improving supervision and mentorship as well as providing attractive working environments, the number of community service doctors retained may be increased [30].

It is evident that many recommendations have been made and strategies have been implemented to attract doctors to family medicine and PHC. However, very little evidence of the perceptions of doctors and the success of these strategies with regards to family medicine and PHC exist. This study therefore seeks to explore these areas, as they may be essential to the Department of Health plan for the Re-Engineering of Primary Health Care.

1.5 Research Question

What is the influence of exposure to family medicine and PHC during undergraduate training, internship and community service on current practices and future considerations of junior doctors in South Africa to work in family medicine and PHC?

1.6 Aim

To determine whether exposure to family medicine and PHC during undergraduate training, internship and community service is associated with a junior doctor's decision to work in family medicine and PHC in the 5 years following their completion of community service.

1.7 Main Hypothesis

Increased exposure (in months) to family medicine and PHC during undergraduate training, internship and community service will result in increased numbers of junior doctors employed or interested in family medicine and PHC.

1.8 Objectives

a. To establish the current employment and future intentions of doctors that completed their community service in SA in 2010, 2011 and 2012.
b. To examine occupation related factors (e.g. remuneration, working conditions, patient orientation etc.) that may influence the attractiveness of family medicine as a career choice for junior doctors.
c. To determine the exposure in time and perceived usefulness of undergraduate training, internship and community service in family medicine and PHC care received by junior doctors that completed their community service in SA in 2010, 2011 and 2012.
d. To examine the association between socio-demographic factors and career choice in family medicine and PHC within 5 years of completing community service.
e. To examine the association between exposure to family medicine and PHC in undergraduate training, internship and community service and career choice in family medicine and PHC within 5 years of completing community service.

Chapter Two: Methodology

This chapter will address the methodology and tools employed in the execution of this study.

2.1 Study Design

The design chosen for this study is a descriptive cross sectional study with an analytical component. This choice is supported by the need to assess several exposure and outcome relationships simultaneously to inform resource allocations in health care, which is especially important in the context of SA's continued human resource limitations.

2.2 Study Population and Sampling

The study targeted all doctors that have completed community service in SA in 2010, 2011 and 2012 and who are now registered to practice as independent medical practitioners with the Health Professions Council of South Africa (HPCSA). According to the South African Health and Related Indicators 2012 report [31] the total number of doctors completing community service during the period of interest is 3439. For a population of this size, a sample size of 296 was needed, using a confidence level of 95% and a power of 80%. Given that no similar research has been done in SA with respect to family medicine, as it is a relatively new specialty, the expected frequency in the unexposed group was assumed to be 50% with an Odds Ratio of two.

The HPCSA was approached to provide a comprehensive database of all doctors that completed community service in the years of interest. The relevant department at the HPCSA acknowledged the request but attempts by the department to obtain permission from the HPCSA committee responsible were unsuccessful. Therefore, a database of doctors was obtained from the Board of Health Care Funders (BHF) along

with relevant permission to undertake the research using this database. The Board of Health Care Funders is an independent body in SA that represents medical aid schemes, medical scheme administrators and managed care organisations.

The database from BHF, however, contained details of all doctors that had registered for private practice between the years 2010-2012. Therefore in order to refine the study sample, a database of doctors completing community service from 2010-2012 (without contact details) was obtained from the HPCSA. This database was cross-referenced with the BHF database to extract contact details of doctors that fell into the study sample. Once this was done, a total list of 350 doctors was obtained.

From this study sample, no further sampling strategy was used. The reasons for this include:

a. The questionnaire was a self-administered online questionnaire that was emailed to all the doctors. Response rates for these types of surveys may vary from 10-25% [32], thereby requiring that the survey be sent to as many potential respondents as possible to achieve a desirable response rate.
b. The researcher hoped to draw comparisons based on undergraduate training received by various universities as well as exposures to certain sectors and specialties in internship and community service. Therefore, in order to do this, a wide range of respondents is needed.

Despite the lack of a sampling strategy, all participants were considered with regards to the following inclusion and exclusion criteria:

Inclusion Criteria

1) All doctors that have completed their community service in 2010, 2011 and 2012.
2) Doctors registered with the HPCSA.

Exclusion Criteria

1) No email or mobile phone number available for the doctor in question.
2) Doctors that have not obtained their undergraduate degree in SA. The justification for this includes the aforementioned variability in the interpretation of family medicine in Africa, which may impact the exposure to

family medicine. In addition, the researcher sought to understand the extent of the exposure to family medicine and PHC offered by various universities within SA.

2.3 Data Collection

Once the database was finalized, all potential respondents were sent a short message service (SMS) to update their email address via a customer relations manager. In this way, email addresses were verified and potential respondent numbers optimized. A detailed information sheet (see Appendix A) was sent via email to respondents requesting their participation in the study. The email contained a link to the anonymous self-administered online questionnaire. The questionnaire was developed using the Survey Monkey™ online survey tool (www.surveymonkey.com). Strategies to buffer the low response rate typical of these data collection efforts included the formation of a simple, short questionnaire with skip logic to minimize time spent on answering the questionnaire. In addition, the questionnaire was also available on a mobile phone platform. The researcher also followed up with possible respondents via weekly reminder emails for a period of one month. In total the survey was open to respondents for a period of one month from 6 November 2014 until 5 December 2014.

The researcher developed the questionnaire (see Appendix B), with reviews by experts involved in the Human Resources For African Primary Health Care (HURAPRIM) project of which this research forms a part. No pilot study was done to ascertain whether the tool was understandable and amenable to self-administration.

2.4 Measurement

The questionnaire contained 41 quantitative questions in 5 subsections:

1) Demographics
2) Current Employment
3) Career Plans
4) Emigration
5) Undergraduate Training, Internship and Community Service

The questions collected quantitative data consisting mostly of categorical variables. In addition there was one open-ended qualitative question. Tabulated summaries of relevant variables are below.

Objective (a): To establish the current employment and future intentions of doctors that completed their community service in SA in 2010, 2011 and 2012.			
Related Question	***Variable***	***Type Of Variable***	***Statistical Tests***
Public vs. Private Sector	Sector Of Employment	Categorical (Dichotomous)	1) Frequency Analysis
Type of specialty employed in	Specialty	Categorical (Nominal)	1) Frequency Analysis
PHC employment	District Health Service Employment	Categorical (Nominal)	1) Frequency Analysis
	Private General Practitioner Employment	Categorical (Nominal)	1) Frequency Analysis

Objective (a) cont.: To establish the current employment and future intentions of doctors that completed their community service in SA in 2010, 2011 and 2012.			
Related Question	***Variable***	***Type Of Variable***	***Statistical Tests***
Future career choices	Intention To Specialize	Categorical (Dichotomous)	1) Frequency Analysis
Type of specialization considered	Specialty	Categorical (Nominal)	1) Frequency Analysis

Objective (a) cont.: To establish the current employment and future intentions of doctors that completed their community service in SA in 2010, 2011 and 2012.			
Related Question	***Variable***	***Type Of Variable***	***Statistical Tests***
Emigration intention	Intention To Emigrate	Categorical (Ordinal)	1) Frequency Analysis
Country of choice for emigration	Country	Categorical (Nominal)	1) Frequency Analysis
Reasons for not emigrating	Stick Factors (each weighed on a 11 point rating scale)	Categorical (Nominal)	1) Frequency Analysis

Objective (b): To examine occupation related factors (e.g. remuneration, working conditions, patient orientation etc.) that may influence the attractiveness of family medicine as a career choice for junior doctors.			
Related Question	***Variable***	***Type Of Variable***	***Statistical Tests***
Attractiveness of family medicine	Attractive Factors (each weighed on a 11 point rating scale)	Categorical (Nominal)	1) Frequency Analysis
	Deterrent Factors (each weighed on a 11 point rating scale)	Categorical (Nominal)	1) Frequency Analysis

Objective (c): To determine the exposure in time and perceived usefulness of undergraduate training, internship and community service in family medicine and PHC received by junior doctors that completed their community service in SA in 2010, 2011 and 2012.			
Related Question	***Variable***	***Type Of Variable***	***Statistical Tests***
Exposure to family medicine and PHC at undergraduate level	Time Spent (in months)	Continuous	1) Frequency Analysis
Perceived usefulness of exposure to family medicine and PHC at undergraduate level	Usefulness (6 point rating scale)	Categorical (Ordinal)	1) Frequency Analysis
Exposure to family medicine and PHC during internship	Time Spent (in months)	Continuous	1) Frequency Analysis
Perceived usefulness of exposure to family medicine and PHC during internship	Usefulness (6 point rating scale)	Categorical (Ordinal)	1) Frequency Analysis
Exposure to family medicine and PHC during community service	Time Spent (in months)	Continuous	1) Frequency Analysis
Perceived usefulness of exposure to family medicine and PHC during community service	Usefulness (6 point rating scale)	Categorical (Ordinal)	1) Frequency Analysis

Objective (d): To examine the association between socio-demographic factors and career choice in family medicine and PHC within 5 years of completing community service.				
Related Question	***Exposure Variable***	***Outcome Variable***	***Type Of Variable***	***Statistical Tests***
Association between gender and employment in PHC	Gender	Employment in PHC	**Exposure –** Categorical **Outcome –** Categorical (Dichotomous)	1) Cross Tabulations 2) Chi Square
Association between background and employment in PHC	Birthplace Area	Employment in PHC	**Exposure –** Categorical **Outcome –** Categorical	1) Cross Tabulations 2) Chi Square
Association between graduate university and employment in PHC	Graduate University	Employment in PHC	**Exposure –** Categorical **Outcome –** Categorical	1) Cross Tabulations 2) Chi Square

Objective (e): To examine the association between exposure to family medicine and PHC in undergraduate training, internship and community service and career choice in family medicine and PHC within 5 years of completing community service.				
Related Question	***Exposure Variable***	***Outcome Variable***	***Type Of Variable***	***Statistical Tests***
Exposure to family medicine and PHC at undergraduate level related to current employment	Time Spent (in months)	Employment in PHC	**Exposure –** Continuous **Outcome –** Categorical (Dichotomous)	1) Cross Tabulations 2) Chi Square
Exposure to family medicine and PHC at undergraduate level related to attractiveness of family medicine	Time Spent (in months)	Family Medicine Considered (5 point rating scale)	**Exposure –** Continuous **Outcome –** Categorical (Ordinal)	1) Cross Tabulations 2) Chi Square

Objective (e) cont.: To examine the association between exposure to family medicine and PHC in undergraduate training, internship and community service and career choice in family medicine and PHC within 5 years of completing community service.				
Related Question	***Exposure Variable***	***Outcome Variable***	***Type Of Variable***	***Statistical Tests***
Exposure to family medicine and PHC during internship related to current employment	Time Spent (in months)	Employment in PHC	**Exposure –** Continuous **Outcome –** Categorical (Dichotomous)	1) Cross Tabulations 2) Chi Square
Exposure to family medicine and PHC during internship related to attractiveness of family medicine	Time Spent (in months)	Family Medicine Considered (5 point rating scale)	**Exposure –** Continuous **Outcome –** Categorical (Ordinal)	1) Cross Tabulations 2) Chi Square

Objective (e) cont.: To examine the association between exposure to family medicine and primary health care in undergraduate training, internship and community service and career choice in family medicine and primary health care within 5 years of completing community service.				
Related Question	***Exposure Variable***	***Outcome Variable***	***Type Of Variable***	***Statistical Tests***
Exposure to family medicine and PHC during community service related to current employment	Time Spent (in months)	Employment in PHC	**Exposure –** Continuous **Outcome –** Categorical (Dichotomous)	1) Cross Tabulations 2) Chi Square
Exposure to family medicine and PHC during community service related to attractiveness of family medicine	Time Spent (in months)	Family Medicine Considered (5 point rating scale)	**Exposure –** Continuous **Outcome –** Categorical (Ordinal)	1) Cross Tabulations 2) Chi Square

2.5 Data Analysis

Quantitative data elicited from the survey was downloaded into an Excel spreadsheet. Before analysis, the data were cleaned and variables renamed as appropriate for analysis. Data were entered into STATA (StataCorp LP, College Station, USA) for analysis. Some of the variables (such as attraction/deterrent factors and inclination to

family medicine) were recoded and new variables generated in order to facilitate analysis.
Descriptive analysis was conducted using summary measures of central tendency and dispersion. Inferential analysis using chi square and Fischer's Exact were computed as appropriate and measures of statistical significance (P values) were derived (also see tables above).

2.6 Ethics

Permission to obtain the contact details of the selected doctors was obtained from BHF. Once permission was granted and contact details were ascertained, participants were sent an email detailing the study and the link to the online survey. The first page of the survey asked participants to consent to participate by clicking "Yes" or "No". Participants that clicked "No" were sent to another page that thanked them for their interest and time. Participants were not coerced into completing the questionnaire and responses were completely anonymous as no identifying information was requested. However, information on year of completion of community service was requested in order to verify inclusion criteria.

No monetary or other compensation was offered to any respondents. The research protocol and questionnaire was approved by the Human Research (Medical) Ethics Committee of the University of Witwatersrand (Clearance Certificate No M121118.) (See Appendix C).

Chapter Three: Results

This chapter will highlight the univariate descriptive, results of this study following by the bivariate associations that emerged from the analysis. The results will first be discussed using a broad overview of the responses and thereafter results related to specific objectives of the study will be considered.

3.1 Response Rate

As stated in the methodology, the database yielded a total of 350 potential participants. Of this population, 68 respondents (19.42%) followed the survey link from the email. Six participants did not fulfill the eligibility criteria and therefore did not complete the survey whilst one person did not complete the survey except for demographic data. This resulted in a final sample of 61 respondents (17.43%).

The University of Pretoria yielded the largest number of respondents, with 17 responses. The other South African universities were represented equally in the sample (respondent numbers ranging from 6-8). Finally, in terms of graduation and community service completion, 30 respondents (50.00%) graduated in 2008. All groups showed a natural progression towards community service with 80.00% (n=8), 73.33% (n=22) and 94.73% (n=18) of the 2007, 2008 and 2009 cohorts respectively completing their community service as expected.

3.2 Socio-demographic Profile

With respect to demographic information, 49 (80.33%) respondents were between the ages of 28-32, with the average age being 31 years. This is consistent with expected ages of the doctors in the study population, who have completed 6 years of undergraduate study, two years of internship and one year of community service. The sample contained 35 (59.32%) females and 24 (40,68%) males. A large number of respondents (n=36, 59.02%) were born in, and completed high school (n=37, 60.66%) in urban areas, with the most frequent provinces being Gauteng and Kwa Zulu Natal.

In contrast only 4 (6.56%) and 2 (3.28%) respondents were born or completed high school in a deep rural area respectively.

Table 3.1a: Socio-demographic profile of respondents
(N=61, unless otherwise stipulated)

Category		
1. Age	**Mean**	**Standard Deviation**
	31	3.07
2. Gender (N=59)	**n**	**%**
Male	24	40.68
Female	35	59.32
3. Birthplace Area Type	**n**	**%**
Urban	36	59.02
Peri Urban	12	19.67
Rural	9	14.75
Deep Rural	4	6.56
4. High school Area Type	**n**	**%**
Urban	37	60.66
Peri Urban	12	19.67
Rural	10	16.39
Deep Rural	2	3.28

Table 3.1b: Socio-demographic profile of respondents
(N=61, unless otherwise stipulated)

Category		
5. Graduation University	**n**	**%**
University Of Cape Town	7	11.48
University Of Kwa-Zulu Natal	7	11.48
University Of Limpopo	8	13.11
University Of The Free State	6	9.84
University Of Pretoria	17	27.87
University Of Stellenbosch	3	4.92
University Of The Witwatersrand	7	11.48
Walter Sisulu University	6	9.84
6. Graduation Year (N=60)	**n**	**%**
2007	10	16.67
2008	30	50.00
2009	20	33.33

3.3 Employment Status

With regards to the current employment status of the cohort, 96.61% (n=57) were employed whilst 3.39% (n=2) were not. Most respondents were employed in Kwa Zulu Natal, Gauteng and Western Cape respectively (see Table 3.2a) with a scattering of doctors within other provinces. Northern Cape was not represented in the responses to this question. In terms of geo-locality of employment, 53 respondents (89.83%) worked in areas considered to be urban or peri-urban whilst only 6 (1.69%) worked in deep rural areas. Regarding the employment sector, 23 (38.98%) stated public sector employment whilst 19 (32.20%) worked in the private sector. Respondents that were working in both sectors formed 28.81% (n=17) of the sample.

If graduate university is used in comparison with sector of employment, the results show that most of the respondents from the University of Cape Town were working in the public sector (n=5, 83.33%) whilst most of the respondents from the University of the Pretoria were working in the private sector (n=9, 52.94%). However, of those working in the public sector, the largest group (n=7, 30.43%) was graduates of the University of Pretoria. The chi squared result for the association between graduate university and employment yielded a value of *(p=0.02*), showing a statistically significant association between the two variables.

On examining the type of work engaged in, 35.59% (n=21) of respondents worked as a full time general practitioner in private health care whilst 22.03% (n=13) worked part time in the private sector (see Table 3.2b). A small number of respondents worked in PHC in the public sector, with 11.86% (n=7) working full time and 10.17% (n=6) working part time. Of those working in tertiary care, 24.14% (n=14) were working as a medical officer with Anaesthetics, Family Medicine, Surgery and Psychiatry being equally represented (see Figure 3.1). Similarly, 23.91% (n=11) were working as registrars in tertiary care with Anaesthetics being the most popular followed by Surgery, Radiology and Surgical Specialties (ENT etc.) (see Figure 3.2).

Table 3.2a: Current Employment Status

(N=59, unless otherwise stipulated)

Category	**n**	**%**
1. Employment		
Yes	57	96.61
No	2	3.39
2. Employment Province		
Eastern Cape	3	5.08
Free State	3	5.08
Gauteng	22	37.29
Kwa-zulu Natal	12	20.34
Limpopo	5	8.47
Mpumalanga	4	6.78
Northwest	1	1.69
Northern Cape	0	0
Western Cape	9	15.25
3. Employment Area Type		
Urban	35	59.32
Peri Urban	18	30.51
Rural	5	8.47
Deep Rural	1	1.69

Table 3.2b: Current Employment Status

(N=59, unless otherwise stipulated)

Category		**n**	**%**
4. Employment Sector			
Public Sector		23	38.98
Private Sector		19	32.20
Public And Private Sector		17	28.81
5. Type Of Work			
Private GP	Yes – Full Time	21	35.59
	Yes – Part Time	13	22.03
	No	25	42.37
Public Sector	Yes – Full Time	7	11.86
	Yes – Part Time	6	10.17
	No	46	77.97
Medical Officer In A Specialty Field (N=48)	Yes – Full Time	14	24.14
	Yes – Part Time	2	3.45
	No	42	72.41
Registrar In A Specialty Field (N=46)	Yes – Full Time	11	23.91
	Yes – Part Time	0	0
	No	35	76.09

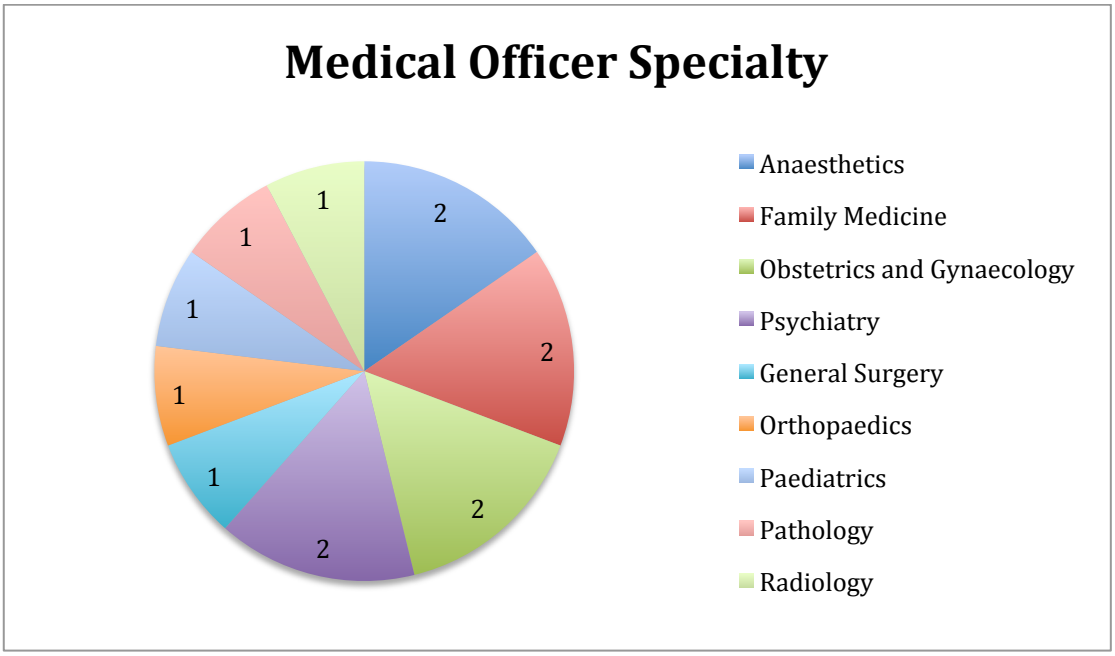


Figure 3.1: Specialties where respondents are employed as medical officers (n=13)

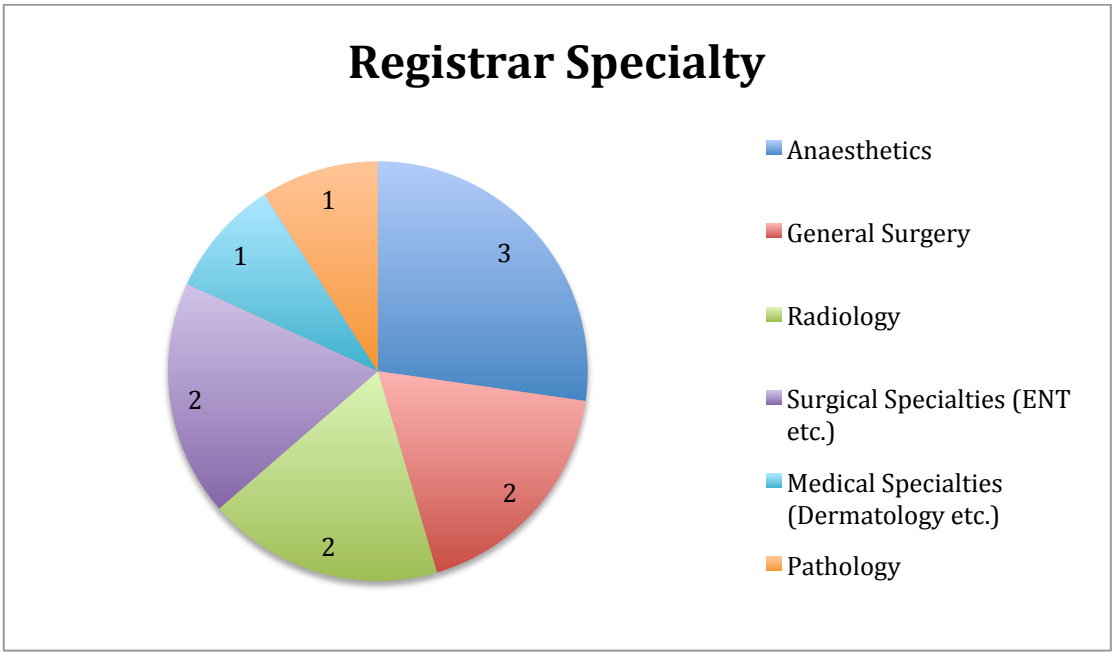


Figure 3.2: Specialties where respondents are employed as registrars (n=11)

3.4 Intentions to Specialize

When asked about their intentions to specialize only 17 respondents (36.17%) of those not specializing yet (and 27.41% of the total sample) intended to specialize in the next five years. This means half of the sample does not intend specializing in the near future, as 30 of the 61 respondents reported that they were not currently specializing nor did they express intentions to specialize within the next five years.

The range of specialties that were of interest were slightly different with Internal Medicine, Pathology and Anaesthesia ranking highly (see Figure 3.3). Among those who do not intend to specialize, 82.76% (n=24) intended to pursue primary health care work. In this group intentions to work as private general practitioners outweighed public sector primary care employment heavily with a ratio of 5:1.

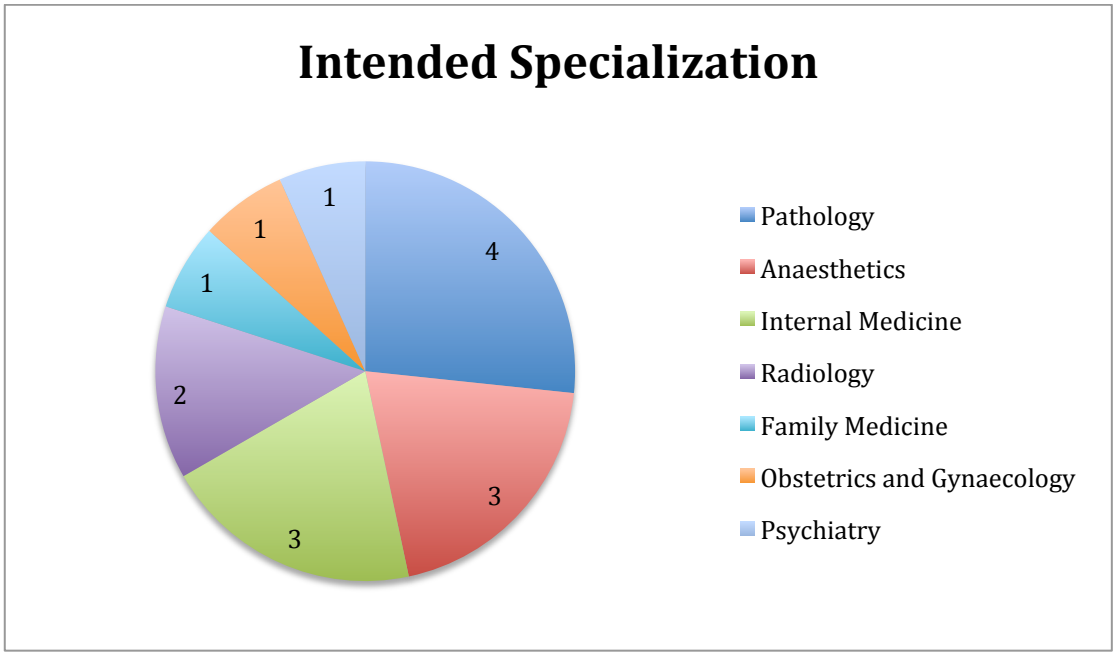


Figure 3.3: Specialties in which respondents aim to specialize (n=15)

3.5 Intentions to Emigrate

Most respondents did not have plans to emigrate in the next five years but that figure decreased when asked about intention to emigrate in the next ten years (see Figure 3.4).

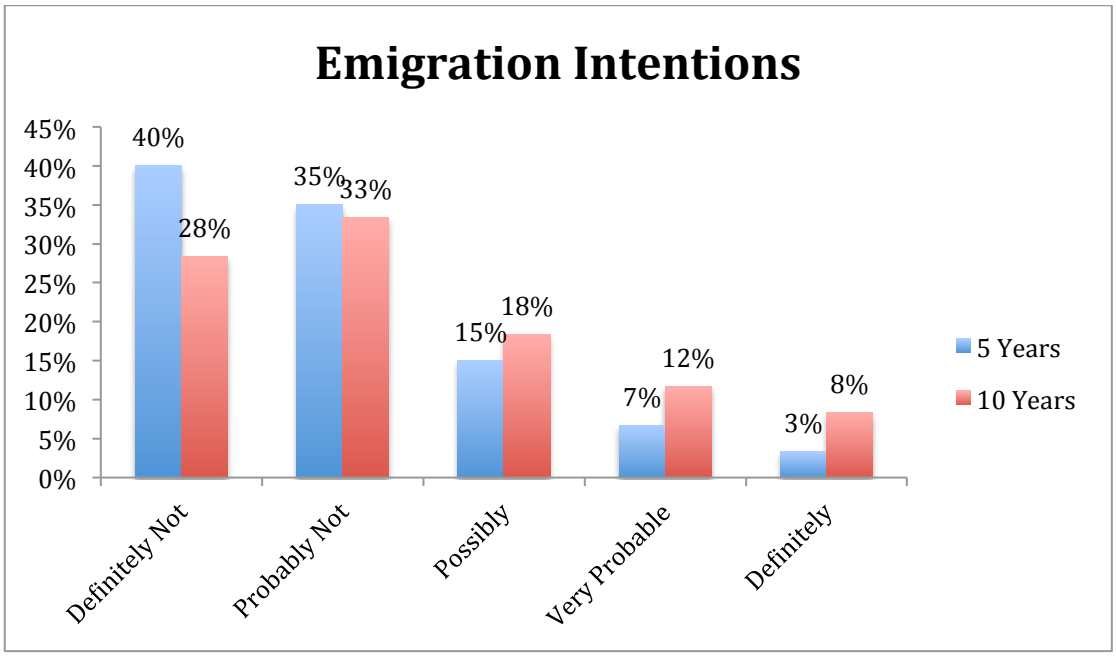


Figure 3.4: Emigration intention in 5 and 10 years (n=60)

The countries that were deemed most desirable for emigration were Australia, the United Kingdom and Canada, which already have a history of high emigration from SA [11]. A few African countries were reflected in the responses namely Botswana, Namibia and Malawi.

With regard to emigration, respondents were asked to rate factors that would motivate them to remain in SA on a scale of 0 to 10, with 0 being unlikely to motivate them and 10 being highly likely to motivate them. Due to the skewed distribution of the results, the medians were reported and from the graph below it can be seen that factors such as financial incentive, training and career pathing are rated as less of a motivation than the others i.e. better work environment (e.g. support, supervision,

attitudes), better working conditions (e.g. equipment, staffing) and personal safety (see Figure 3.5).

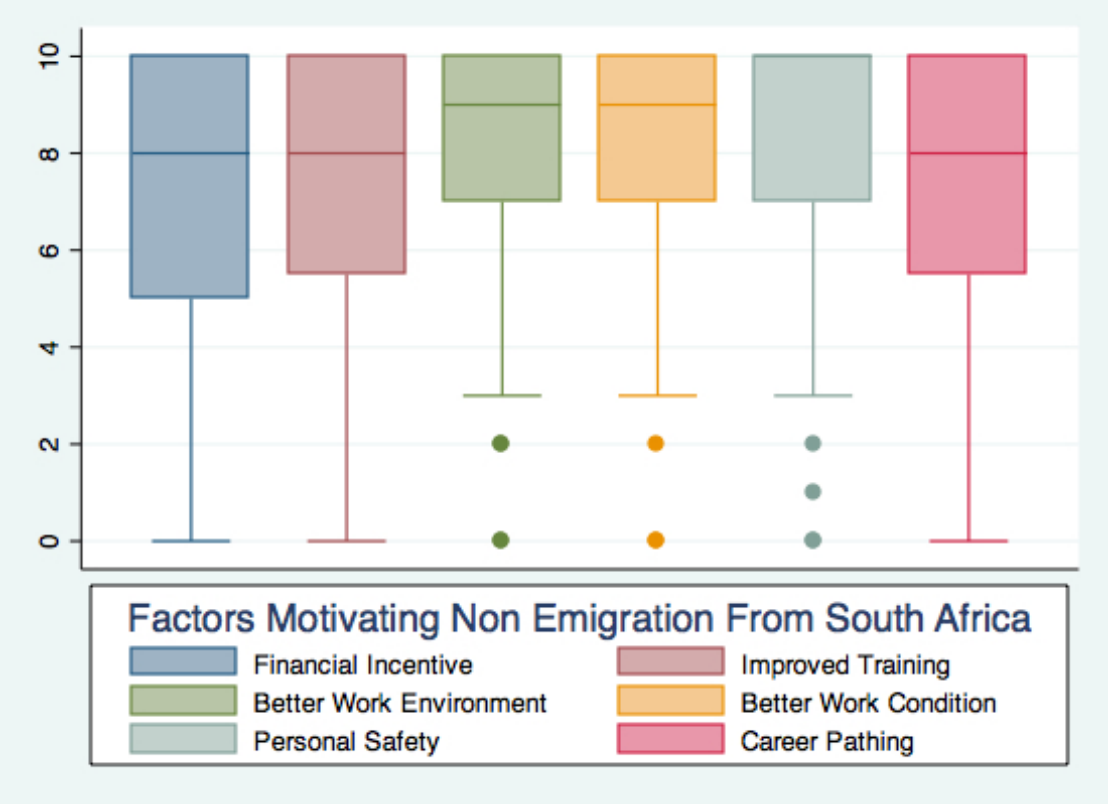


Figure 3.5: Factors Motivating Non Emigration From South Africa (n=60)

3.6 Attractiveness of Family Medicine

When asked about their inclination towards Family Medicine as a specialty, very few respondents showed any inclination with 3.39% (n=2) stating they were definitely inclined towards the specialty and 6.78% (n=4) stating probable inclination. These figures rose to 8.33% (n=5) and 23.33% (n=14) respectively when respondents were asked if they would be more inclined towards the specialty if they were allowed to start their training within their community service year.

Respondents were also asked to rate attraction and deterrent factors on a scale of 0 to 10 [21], with higher ratings signifying factors that would attract or deter them from pursuing family medicine. On examination of the responses to attraction factors, work life balance was rated the most attractive with high income being rated the least (see

Figure 3.6). Conversely however, low income potential was rated as the factor that would deter respondents the most from pursuing family medicine. Family medicine being too unchallenging was rated the least likely to deter respondents (see Figure 3.7).

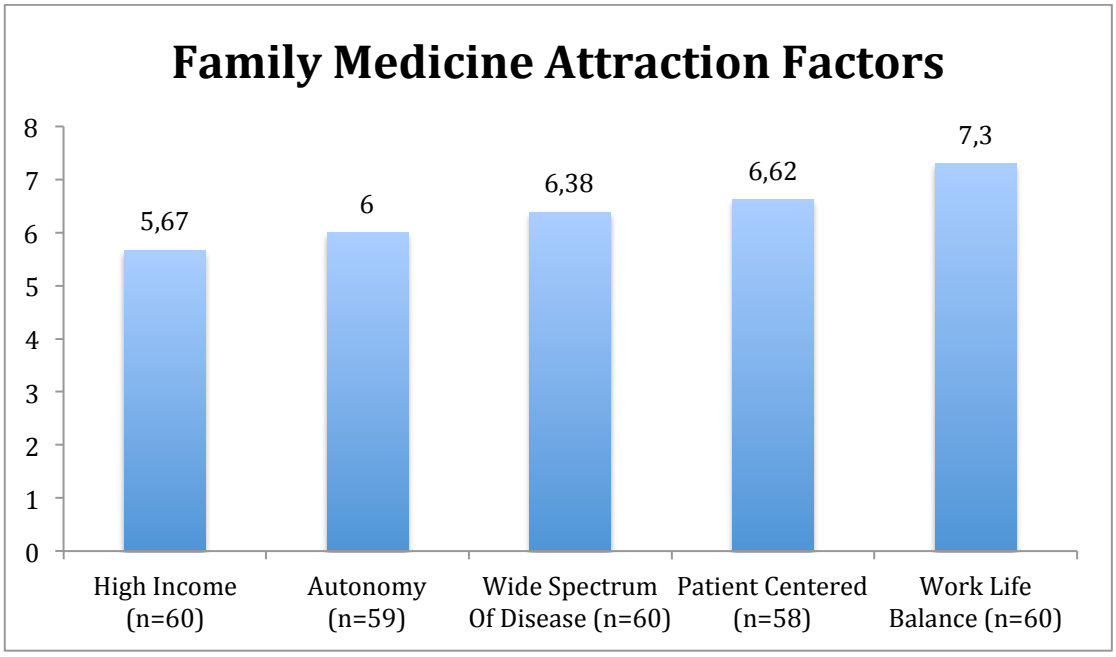


Figure 3.6: Factors attracting doctors toward family medicine

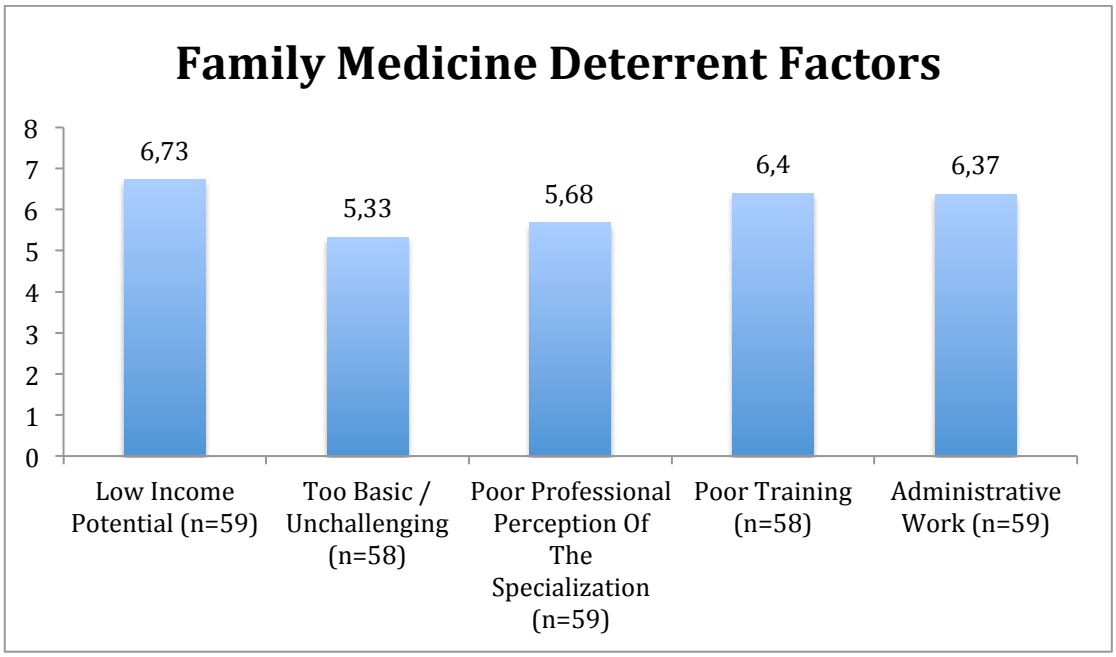


Figure 3.7: Factors deterring doctors from family medicine

3.7 Exposure to and Usefulness of Family Medicine and PHC at Different Levels of Training

With regard to exposure to family medicine, respondents were asked to report on the time spent in family medicine during undergraduate training, internship and community service individually, as these would differ across universities and health facilities. In terms of undergraduate training, 96.49% (n=55) of respondents reported having training in family medicine and primary health care whilst 3.51% (n=2) reported no exposure at undergraduate level. The mean for exposure (expressed in months) was 4.68 months with a standard deviation of 3.40. The minimum exposure reported was 1 month and the maximum was 13 months. In order to examine the relationship between exposure and perceived usefulness, respondents were asked to rate the usefulness of their time in family medicine on a scale from 1 to 6. In this usefulness was rated with a median of 4.70 (IQR: 4 to 5). The Fischer's exact test for this relationship yielded a *(p=0.83),* showing no statistically significant relationship between exposure to family medicine and perceived usefulness.

Exposure during internship was calculated by adding the amount of time spent at clinics, community health centres and district hospitals. The mean amount of total time spent was 2.47 months (standard deviation of 1.87). Usefulness was once again rated from 1 to 6, with categories 1-3 indicating varied levels of uselessness and categories 4-6 indicating varied levels of usefulness. The median for usefulness was calculated to be 5 (IQR: 4 to 5) indicating that more respondents found the exposure useful. Once again, the Fischer's exact test found no statistically significant relationship between internship exposure to family medicine and perceived usefulness of the rotation *(p=0.97)*.

Related to usefulness, respondents were also asked to rate the organization of their family medicine/primary care rotation in internship. From a scale of 0 to 10, the mean response given was 3 (IQR: 3 to 3). A chi square test yielded a p-value of less than 0.05 *(p=0.00)* which showed that there was a statistically significant correlation between the organization of the rotation and how useful it was perceived to be.

Exposure during community service was calculated in the same manner as exposure during internship. The mean for total exposure in months during community service was 5.32 (standard deviation of 5.04). The mean rating for usefulness was 4.5 (IQR: 3 to 5) and the chi square showed a marginally significant relationship once again between exposure and usefulness *(p=0.07)*.

The mean rating for organization of the community service rotation was similar to that of internship at 2.46 (standard deviation of 0.91). Once again, the chi square showed a statistically significant relationship between organization and usefulness with (p=0.00).

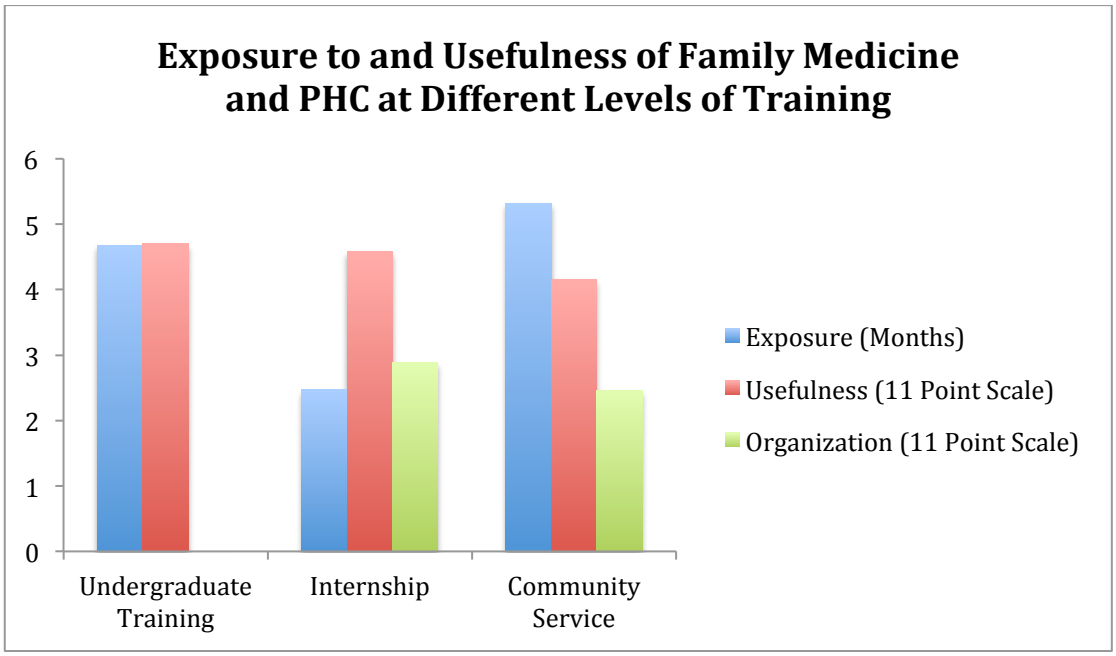


Figure 3.8: Comparison between exposure, usefulness and organization at different levels of training

3.8 Socio-demographic Factors and Career Choice in Family Medicine and PHC

Socio-demographic factors such as gender and background were examined to ascertain if there was any significant association between these factors and employment in family medicine and PHC. Respondents were categorized into those that were currently employed in PHC (public or private sector) or intended to pursue

employment in PHC and those who were not working and had no intention of working in PHC. Of all the respondents, 62.30% indicated that they were either currently working or planning on working in PHC in the next five years. Of these respondents 29.73% were male and 70.27% were female and the chi square yielded a *(p=0.02),* indicating a statistically significant association between gender and employment in PHC, with females being more likely to be employed in PHC than their male counterparts. However, no statistically significant relationship was found between gender and public sector PHC employment with a chi square of (p=0.31).

With respect to background, respondent birthplaces were categorized into rural/urban classification of urban, peri-urban, rural and deep rural areas. Of those working in or intending to work in PHC, 52.63% were born in urban areas and only 7.89% were born in rural areas. The chi square test for the association between birthplace and employment in PHC was not statistically significant at *(p=0.58).*

Finally, a cross tabulation was done to examine the relationship between graduate university and employment in PHC. Of those currently employed or intending to work in PHC, most of the respondents had graduated from University of Pretoria (31.58%). The university that yielded the least interest in PHC employment was University of Cape Town at 5.26%. In addition, the University of Cape Town was the only university that had more respondents not interested in PHC employment than those interested. Despite this, the chi square did not show a statistically significant relationship between graduate university and employment in PHC.

Table 3.3: Associations between socio-demographic factors and employment in PHC

Socio-demographic Variable	Employment		Test of Association	P Value
	Working or Intending Working in PHC	Not Working or Not Intending Working in PHC		
Gender n (%)				
Male	11 (29.73)	13 (59.09)	Chi Square	0.02
Female	26 (70.27)	9 (40.91)		
Geo- Location n (%)				
Urban	20 (52.63)	16 (69.57)		
Peri-Urban	8 (21.05)	4 (17.39)	Chi Square	0.58
Rural	7 (18.42)	2 (8.70)		
Deep Rural	3 (7.89)	1 (4.35)		
Graduate University n (%)				
University Of Cape Town	2 (5.26)	5 (21.74)		
University Of Kwa-Zulu Natal	5 (13.16)	2 (8.70)		
University Of Limpopo	5 (13.16)	3 (13.04)		
University Of The Free State	3 (7.89)	3 (13.04)	Chi Square	0.57
University Of Pretoria	12 (31.58)	5 (21.74)		
University Of Stellenbosch	2 (5.26)	1 (4.35)		
University Of The Witwatersrand	4 (10.53)	3 (13.04)		
Walter Sisulu University	5 (13.16)	1 (4.35)		

3.9 Association between Exposure to Family Medicine and PHC and Career Choice

In examining the association between exposure to family medicine and PHC and career choice in PHC within 5 years of completing community service, associations were examined at three different levels - undergraduate training, internship and community service. Career choice was examined in terms of both current employment in PHC (private general practice and public service) as well as inclination to family medicine. The exposure (in months) was transformed from a continuous variable into a categorical variable with four categories: 0-3 months, 4-6 months and 7-9 months and 10-12 months. Inclination toward family medicine was recoded from a 5 point rating scale into a dichotomous categorical variable indicating those inclined toward family medicine and those not inclined.

With regard to undergraduate training, of all the respondents currently employed in PHC, those that received an average of four months of undergraduate training formed the largest group at 29.17%. However, there were no clear patterns in terms of months of exposure to family medicine and inclination toward family medicine. The chi square tests for these exposure outcome relationships showed no statistical significance between either reported exposure in months and employment in PHC *(p=0.34)* or reported exposure in months and inclination towards family medicine as a specialty *(p=0.44)*.

In contrast to undergraduate training, internship showed no noteworthy results in terms of reported average exposure in months with respect to current employment but 26.32% of those inclined to family medicine had two months of reported exposure at this level. Similarly to above, no statistical significance was found for either outcome with *(p=0.37)* for employment in PHC and *(p=0.59)* for inclination towards family medicine as a specialty.

The results for community service showed that of those employed in PHC, the largest group had reported no exposure to PHC at community service level, whilst of those inclined to family medicine, the largest group of respondents had reported one year of exposure to PHC. No statistically significant relationship was found between either

reported exposure in months and employment in PHC (*p=0.97*) or reported exposure in months and inclination towards family medicine as a specialty (*p=0.19*).

Table 3.4: Association between exposure to family medicine and PHC and career choice

Exposure Variable	**Employment**		**Inclination Towards Family Medicine**		**Test of Association and P-Value**
Exposure to Family Medicine and PHC (in months)	**Working in PHC**	**Not Working in PHC**	**Inclined Toward Family Medicine**	**Not Inclined Toward Family Medicine**	
Undergraduate Training n (%)					
0-3 months	8 (33.33)	19 (57.58)	9 (45.00)	17 (47.22)	Chi Square:
4-6 months	10 (41.67)	9 (27.27)	8 (40.00)	11 (30.56)	P- Value
7-9 months	2 (8.33)	2 (6.06)	0 (0.00)	4 (11.11)	0.34 for employment
10-12 months	4 (16.67)	3 (9.09)	3 (5.00)	4 (11.11)	0.44 for inclination
Internship n (%)					
0-3 months	15 (62.50)	25 (73.53)	12 (63.16)	26 (70.27)	Chi Square:
4-6 months	9 (37.5)	9 (26.47)	7 (36.84)	11 (29.73)	P- Value
7-9 months	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.37 for employment
10-12 months	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.59 for inclination
Community Service n (%)					
0-3 months	11 (50.00)	14 (45.16)	5 (31.25)	19 (54.29)	Chi Square:
4-6 months	3 (13.64)	5 (16.13)	5 (31.25)	3 (8.57)	P- Value
7-9 months	1 (4.55)	1 (3.23)	0 (0.00)	2 (5.71)	0.97 for employment
10-12 months	7 (31.82)	11 (35.48)	6 (37.50)	11 (31.43)	0.19 for inclination

Chapter Four: Discussion, Conclusion, Recommendations and Limitations

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4.1 Discussion

The aim of this study was to describe previous training, current practices and future considerations of junior doctors, in addition to examining associations between exposure to family medicine and PHC in undergraduate and postgraduate training and decisions to work in these areas. This section will systematically discuss the relevant findings from the study in light of existing literature and will aim to draw conclusions from its findings that may contribute to policy and further research.

With regard to respondents' current practices, at the time of the survey, respondents would have been working for approximately two to five years as independent practitioners.[3] The majority of the cohort was working, of which 89.83% were employed in urban or peri urban areas. Whilst community service is aimed at redistributing doctors to peripheral health services, especially underserved rural areas, most doctors return to urban areas in order to continue their studies [6, 15, 33]. The figure reflected above could therefore be a result of most doctors pursuing specialization post community service, which would necessitate them being in areas that have academic institutions. However, it is important to note that other factors such as lifestyle and access to schools etc. may also contribute toward the urban/rural distribution of doctors

Similarly the relatively higher numbers employed in the public sector, as opposed to the private sector, could be a result of doctors pursuing specialization. In South Africa, all medical universities undertake practical training only in public facilities and therefore any doctor pursuing a specialist degree would only be employed within the public sector. Although the responses showed a statistically significant relationship between graduate universities and employment sector, this may also be due to certain universities encouraging specialization, leading to higher initial public

sector employment that slowly tapers off as people complete their specialization and pursue employment in private practice [15].

As mentioned, South Africa has recently embarked on a re-engineering process of its health system through the introduction of the National Health Insurance and the Re-engineering of Primary Care. The implementation of both these processes is currently in the pilot phase. The South African Human Resources for Health Strategy acknowledges that in order to accomplish the goals of these policies, human resource implications need to be addressed at different levels within primary care. First the number of medical practitioners will need to be improved by post-creation and recruitment of doctors into primary care or district health services as well as contracting with private general practitioners considering the gap of 4294 medical practitioners in 2011. Second, in order to provide the district specialist teams (and other roles in PHC) central to the PHC reform, an increase in family physicians is needed, considering the gap of 853 family physicians in 2011 [11].

On examining the level of PHC employment in our study, almost 50% of the respondents were working in PHC, although private general practice outweighed employment in public PHC at a ratio of 3:1. This is presumably a result of the better working conditions, lower patient load and higher remuneration within the private sector. This finding suggests that medical practitioners are not averse to primary care but rather to the context in which primary care is delivered in the public sector. This is supported by a study by Rodrigues and colleagues which showed that family medicine was viewed more favourably when students receive training for family medicine and PHC in a context that is supportive of the discipline [18]. Therefore since exposure to family medicine and PHC in the South African setting is through the understaffed, under-resourced and overburdened public sector, this exposure may encourage doctors interested in PHC to pursue private general practice rather than employment in public PHC.

On the other hand, of those not working in PHC, only 45% were either specializing or intended specializing. This is notable given South Africa's specialist driven system where patients bypass general practitioners and PHC facilities to access the more expensive specialist tertiary care [11]. However, it is important to recognize that these

statistics of PHC employment and non specialization may be a reflection of the female majority representation in the sample as the literature has shown that females are more likely to pursue PHC work due to the work life balance it allows [15, 23, 34, 35]. In addition, there may be possible response bias in that doctors more likely to be interested in primary health care would respond to the survey.

Also important to the human resource strategy for SA is the attrition and emigration of doctors from the country. The continued "Brain Drain"[2] to first world countries costs SA in terms of both training costs as well as human resources. The HRH Strategy estimates the attrition rate of health care professionals at 25%. Similarly, our study showed that 25% of respondents considered emigrating in the next five years, including 3% that stated they would definitely emigrate. These figures rose to 38% and 8% respectively when asked about ten year intentions to emigrate. This may be a result of intentions to emigrate only after specialist training was completed, which again highlights the high costs associated with training doctors who ultimately may not contribute towards the skill set of the country.

With respect to push factors specific to the South African context, the findings in our study mirror those stated in other studies in that factors related to the work environment and conditions in the public sector were regarded a greater deterrent than personal factors such as remuneration and career pathing [11]. This has important consequences for the Re-Engineering of Primary Care as it implies that increasing staff numbers extends far beyond increasing the budget for posts and remuneration. The health sector will have to put a substantial effort into areas such as resource allocation, facility management and workplace safety in order to ensure that the environment in the public sector is attractive to doctors.

As with most specialties, family medicine can be practiced in both the private and public sectors. Therefore, it is important to review factors specifically related to family medicine that may attract or deter doctors from pursuing the specialty, regardless of sector specific factors such as work environment that was detailed above. From the responses received, only 10.17% showed any inclination to family medicine. This finding is in keeping with a 2010 study showing that only 9% of

students intended pursuing family medicine, a figure that is too low considering the current policies of the South African Department of Health [16].

Interestingly, inclination rose three fold to 31.66% when respondents were asked if they would be more interested in pursuing it as a specialty if they were allowed to begin their training within their community service year. This could possibly be the result of a desire for expedited training periods, which would be attractive to females with families that are aiming to strike a work life balance as well as those from lower socioeconomic backgrounds or with higher levels of debt as it would assist them in achieving financial stability earlier [36]. However, this may be unlikely given the perceptions from respondents that family medicine has a poor income potential. In addition, since doctors post community service are allowed to work as general practitioners without further family medicine training, many doctors may not see any value in pursuing the specialization and therefore a expedited training period may entice doctors to enhance their credentials in this area.

In aiming to understand factors that play a role in choice of specialty, many studies have been done in different countries and examining different specialties. Given that family medicine is a relatively new specialty in SA, studies in this area are sparse but very important to informing policy. When rating the factors that would attract or deter them from family medicine, respondents rated patient centeredness and wide spectrum of disease highly and didn't seem to think that family medicine was unchallenging. This also correlates with the finding that more respondents rated exposure to family medicine as useful than those that didn't find it useful. These findings may indicate that doctors are in favour of the content and role of family medicine within the medical spectrum. This suggests that doctors may be deterred from the specialization by other factors such as poor training, which was rated highly as a deterrent factor. Since family medicine is a relatively new specialization, it stands to reason that universities may be experiencing teething problems in refining their curriculum and teaching methods and if doctors would compare the training of family medicine with other long standing specialties, family medicine training would indeed appear lacking.

However, given the above, it is important to note that whilst respondents did not rate high income as enough of a reason to pursue family medicine, they did view the specialty as having a low income potential. Therefore, all things being equal, if respondents were to choose between specialties, the low perceived income potential relative to other specialties would be an important factor. This is especially critical to recruitment in that research has shown that when considering a specialty, those doctors with higher debt levels were more likely to pursue specialties with high income potential [37]. In relation to this, previous research also states that students from rural backgrounds are more likely to pursue PHC employment but are also more likely to have high debt, which is found to be a deterrent to PHC employment [38, 39]. This inhibits entry into PHC in other countries and may be a factor in recruitment of doctors to PHC in South Africa, which needs to be further explored.

Another aspect to consider regarding factors specific to family medicine is the perception of family medicine and PHC by the medical community. The subtle sentiment that someone is "just" a general practitioner is a commonly repeated one and studies have alluded to both the subtle and overt bad mouthing of general practice and family medicine [25]. However, a previous study in SA showed that a student's interest in a particular specialty was rated the most important factor in their subsequent career choice [40]. Therefore, since our study found that poor professional perception was not rated as highly a deterrent factor as other factors, we speculate that this indicates that a doctor's personal interest in family medicine and PHC would outweigh the professional stigma that other clinicians assign to it.

Regarding exposure to family medicine at an undergraduate level, two respondents reported having no exposure to PHC facilities or district hospitals but reported having 10 and 4 months exposure to family medicine and PHC, respectively. Further analysis showed that the classmate of the respondent that reported no rotation in PHC/district facilities and 10 months of PHC training reported having rotated in such facilities but only had two months of undergraduate training. This raises the question of what aspects of training and which facilities constitute exposure to family medicine and PHC as this discrepancy clearly shows a difference in perceptions given that medical school curricula are quite prescriptive in the rotations and facilities that students are exposed to.

Variability was also seen with the months of undergraduate reported exposure with a mean of 4.68 months but a range of 1 to 13 months. This was evident once again in responses between classmates of the same university as well as between different universities. Doctors reporting one month of exposure were from urban institutes such as University of Pretoria and University of the Witwatersrand and those reporting 13 months were from more rurally situated universities such as Walter Sisulu University. This may imply that curricula of academic institutions may very well be impacted by their geo-locality and recognised need for PHC, as historically rural areas are more heavily reliant on PHC skills and facilities.

Internship showed a more consistent pattern due to the exposures to different specialties being prescribed by the HPCSA. Some respondents however reported no exposure, which is cause for concern as internship is meant to give junior doctors a chance to hone their skills in all areas of medicine.

Conversely, community service exposure is heavily dependant on the geographical area and facility that a doctor is assigned to [6, 30]. In addition, some doctors use this year to get a head start on their chosen specialty, therefore limiting exposure to other areas. Despite this the mean for reported exposure to family medicine and PHC during community service was higher than expected at 5.32 months. This however could be a direct result of the community service policy that aims to ensure that rural areas and district hospitals are supplied with doctors in order to rectify human resource shortages in those areas.

One of the objectives of the study was to determine whether exposure to family medicine and PHC would impact on a doctor's perception of this field. Whilst the mean for usefulness of family medicine and PHC in all three areas of training (ie. undergraduate training, internship and community service) were relatively high, thereby indicating that junior doctors saw some value in family medicine and PHC, there was no correlation between months of exposure to family medicine and PHC and usefulness. Undergraduate training was found to be the most useful, possibly due to the prescriptive nature of the training. Community service exposure was found to be the least useful and the least well organized. Given that the community service

curriculum is not heavily regulated and open to interpretation by managers of facilities, this may lead to doctors working in sub-optimal conditions with little opportunity for learning and may thus explain our finding that there is statistically significant link between organization of a rotation and perceived usefulness [6, 30].

Finally in addressing the main objectives of the study, socio-demographic variables and exposure to family medicine and PHC were compared to PHC employment (both public and private), statistics in order to ascertain whether there was any association. Unsurprisingly, being female was, as shown in other studies, once again associated with PHC employment showing that family medicine and PHC are still a more appealing choice for women aiming to achieve a work life balance. This finding is important to consider in light of the recruitment endeavours of the new PHC Re-Engineering strategy but also needs to be carefully considered from the perspective that women face more interruptions to their work and have been shown to spend less of their available working years in practice than men, due to their roles in society [15], and ultimately against the South African Constitutional laws of non-discrimination.

Despite evidence from other studies that students of a rural background are more likely to pursue family medicine and PHC, the findings in our study did not corroborate this. This may be a result of the small sample size and the meager representation of rurally born doctors in the sample. Similarly, whilst one would expect universities by virtue of their curricula to have some impact on decisions to pursue PHC, our study showed no significant relationship in that regard. However, it is notable, that certain universities yielded a greater number of respondents either employed in or not employed in PHC. Whilst studies have shown a correlation between institutional attitudes towards family medicine and careers within this field, it is difficult to ascertain from this study whether this inclination to or away from PHC, is due to the culture prevalent in the universities represented in this study [18, 19].

In evaluating the exposure outcome relationship between exposure to certain areas of study and ultimately the decision to work in a related field, it should be noted that current studies on the topic are tailored to specific fields and also show varied

outcomes. A study by Minjares showed that extensive exposure to primary care was associated with a higher number of doctors entering the field of family medicine [17]. On the other hand, studies into emergency medicine and family medicine showed no increase in uptake of these fields after students were exposed to a predefined rotation in these specialties [17, 41]. Taking these conflicting findings into account, it is possible that an exposure – outcome relationship is optimally facilitated through sustained exposure to a given field as the effects of a brief exposure, especially during earlier years of study, may be negated by other factors during training [20].

Given the above, it was therefore important for this study to understand the specific relationship between family medicine and PHC, and ultimately the decision to work in said field within the South African context. This was done by measuring both inclination towards family medicine as well as current employment in PHC. Whilst the results disproved our stated hypothesis in that there seemed to be no association between months of exposure and consequent inclination to family medicine or PHC employment, a few interesting findings emerged.

Of those that are currently employed in primary health care, most respondents (29%) had received four months of undergraduate training. Whether four months is the optimal length of exposure to family medicine and PHC and a true reflection of an outcome – exposure relationship can only be properly determined by a cohort study that seeks to examine different medical school cadres and their curricula. Lastly, the findings indicate that longer exposure to family medicine may attract more doctors towards family medicine whilst shorter exposure to PHC may attract doctors towards PHC employment. As previously discussed, this may again be a result of the context of PHC delivery and conditions being a deterrent whilst personal interest and factors specific to family medicine, such as wide disease spectrum, may enhance interest in the field.

4.2 Conclusion

In conclusion, whilst our study did not prove the hypothesis it was set to prove, it has highlighted some important areas of consideration for the South African Department of Health in light of the new Re-Engineering of Primary Care policy as well as for

medical schools seeking to understand factors that potentially impact junior doctors career choices in family medicine and PHC.

In consideration of university recruitment, whilst it would seem that exposure to family medicine and PHC is not related to eventual employment in the field, it is still important to recognize that medical pedagogy and academic culture play an important role in junior doctors perceptions of medical specialties and the health system as a whole.

However, possibly the most important finding in this study is that junior doctors do understand the value of family medicine and PHC within the wider health context, as evidenced by their rating of their family medicine and PHC as useful, and are not dismissive of the challenging aspects of the field such as the wide spectrum of disease and patient orientated approach. However, the conditions of training and employment conditions within the public sector serve as a major deterrent to junior doctors and as a result those with a personal interest in the field would much rather work in private primary care. This trend is evident in the HPCSA online database that shows 588 registered family medicine specialists, of which only 15% are providing services in the public sector.

However, the South African HRH strategy stipulates that 66% of family medicine specialists are based within the public sector. In light of the country's drive to toward PHC re-engineering, is important that this discrepancy in public/private sector service provision be unpacked for following reasons:
Firstly, the new policy on PHC makes provision for one family medicine specialist in each of the 52 district health teams (aside from district based family physicians) as well as for increased numbers of primary care doctors. In relation to this, the HRH strategy estimates a gap of 888 family physicians and 4 145 medical practitioners. Whilst the HRH strategy does not specify the public sector vacancies for family physicians, it does indicate that there are 10 860 public sector vacancies for medical practitioners, thereby highlighting that posts are available to recruit the 4 145 doctors required into the public sector [11].

Similarly to the above, public sector conditions were also an important reason for emigration from the country. Therefore despite the availability of public sector positions, without a massive overhaul of the public sector working environment in order to encourage doctors to enter and remain within the public sector and the country, the South African government will continue to face losses in both human resources numbers as well as the cost implications of training yet not retaining health professionals. Indeed one respondent captured the above succinctly with the following words:

> *"I am a proud and patriotic South African who would love to serve the poor of this country in the public service. However I no longer want to continue in the public service due to the poor working conditions as a result of widespread corruption and incompetence of its management who are solely appointed due to political affiliation and cronyism. Cry the beloved country."*

4.3 Recommendations

Recommendations from this study will be focused on three areas: undergraduate studies, postgraduate training and the health system itself.

Undergraduate Studies

With regard to undergraduate studies, it would be useful to ensure that admission criteria are tailored to accept greater numbers of students that are likely to pursue family medicine and PHC, such as females. Whilst this study did not show any association between rural background/students with a pre-admission interest in the field and PHC employment, this association has been found in other studies and should be explored using a cohort study to further inform undergraduate selection processes in South Africa.

Finally, as stated above, medical school pedagogy should ensure that students receive sustained, good quality training to family medicine and PHC within a context that supports the discipline and by tutors that are able to convey a positive perception of the discipline.

In Service Training

Once again internship and community service provide a valuable time in which to enhance a junior doctor's interest in primary health care. Whilst internship is to an extent regulated with respect to duration of rotations and approved health facilities, there are still organizational problems that lead to varied exposure (in terms of quality of learning experience and supervision) and thereby differences in the perceived usefulness of family medicine and PHC. District health services and family physicians should therefore take necessary measures to ensure that rotations in these services are well supervised, clinically interesting and provide opportunities for further growth into the field instead of using these junior doctors to simply push the queues. This could possibly be undertaken by the family medicine specialists in the new district family physician role as these interns and rotations may greatly contribute toward the quality of district health services, the delivery of which is overseen by the district family physician.

Health Services

There is no doubt that the public service in South Africa is a major deterrent to doctors. High patient loads in the face of understaffed, under-resourced conditions detract from a doctor's ability to perform his/her duties to the best of his/her ability [11]. This constant battle for good clinical care as sworn in the Hippocratic Oath may slowly erode the motivation of even the most socially conscious doctor. It is for this reason that the Department of Health will have to take a three-pronged approach towards its goal of increasing the staff complement in the public service:

1) First, the management and resources of facilities will need to be addressed in order to optimize the working conditions for doctors
2) Second, issues of staff levels and tasks should be addressed so that doctors are able to lead holistic PHC teams and focus on patients and areas where their expertise is needed, instead of simply pushing queues of patients that ideally could be seen by lower level health workers; and
3) Third, whilst monetary remuneration was not enough of an attractive factor, doctors should at least be remunerated on a competitive level with what could be expected from private practice in order to retain them in the public sector where they may practice their science without the administrative hassle of owning their own practice.

4.4 Limitations

The findings of this study should be considered in the light of a few limitations, the first of which is the study population from which the sample was drawn. Due to difficulties is obtaining permission to use the HPCSA database, a database from the Board of Health Care Funders was obtained. This database contains doctors that have registered for private practice work with the BHF, which is a regulatory body for private medical schemes. As a result, the sample may contain a larger proportion of doctors inclined towards private sector care. In addition, as the BHF database is limited to optional registration, it only contained 350 of the 3439 doctors in the cohort of interest. This led to a smaller sample size, which may have been optimized had the study gained access to the HPCSA or the National Department of Health database.

Another limitation is the low response rate due to the use of an online self-administered questionnaire. With the advancement of technology, people are bombarded by requests for participation in different activities and easily ignore those from unknown sources. This may have led to a low response rate and the responses that were received may have been from those already employed or interested in this discipline, thereby skewing the results in favour of family medicine and PHC.

Lastly, the responses may not be a true representation of the actual exposure to family medicine and PHC as they may be subject to the recall bias that exists when asking participants to retrospectively report on their experiences. In addition the responses may not represent the actual career choices that the respondents will eventually make as the study is designed as a cross sectional study. A retrospective cohort at the end of the five-year period may further inform this study or a prospective cohort study across different medical schools with predefined exposures may better inform the hypothesis of this study.

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Appendices

APPENDIX A

Information Sheet

Family Medicine and Primary Health Care: The role of undergraduate training on current practices and career intentions of junior doctors in South Africa

Good Day

My name is Atiya Mosam and I am a doctor pursuing my Masters in Public Health at the University of Witwatersrand.

I would like to invite you to participate in a research project that seeks to understand the role of training on the career decisions of junior doctors. This project forms part of my masters coursework and is also part of a larger body of research that is examining Human Resources in African Primary Care (HURAPRIM)

Your participation in this study is entirely voluntary. The survey is completely anonymous. Your name cannot be linked to your answers and you will not be identified in the final research report. If you do not wish to participate in the survey, you will not be victimized in any way.

By clicking on the link in this email, you will be taken straight to the survey page, where this information will be displayed once again on the first page of the survey with a button titled, “I Agree To Participate In This Survey”. Clicking on this button will constitute informed consent and you will be allowed to proceed with the survey. If you do not wish agree to participate, you may close the survey page without fear of any consequence.

The survey is focused on your medical training and career plans. It will only take 10 minutes of your time and can be answered using your mobile phone. If you do not wish to answer any specific questions, you may skip those. You may also end the survey at any time, should you not wish to continue.

Permission to conduct this research study has been given by the relevant authorities (HPCSA/National Department of Health) as well as the School of Public Health, University of the Witwatersrand. Ethics permission has been granted by the Human Research Ethics Committee of the University of the Witwatersrand.

Should you have any questions, you may contact the following people:

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Secretary to the University of Witwatersrand Human Research Ethics Committee Ms. Anisa Keshav
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Thank you for taking the time to assist me in my research.

Yours Sincerely
Dr A Mosam

APPENDIX B

Questionnaire

Family Medicine and Primary Health Care: The role of undergraduate training on current practices and career intentions of junior doctors in South Africa

(Please note that this is a reproduction of the online questionnaire)

Section 1: Demographics

1. How old are you?
- ❍ 20
- ❍ 21
- ❍ 22
- ❍ 23
- ❍ 24
- ❍ 25
- ❍ 26
- ❍ 27
- ❍ 28
- ❍ 29
- ❍ 30
- ❍ 31
- ❍ 32
- ❍ 33
- ❍ 34
- ❍ 35
- ❍ 36
- ❍ 37
- ❍ 38
- ❍ 39
- ❍ 40

2. What is your gender?
- ❍ Male
- ❍ Female

3. Where were you born?
- ❍ Eastern Cape
- ❍ Free State
- ❍ Gauteng
- ❍ Kwa-zulu Natal
- ❍ Limpopo
- ❍ Mpumalanga
- ❍ Northern Cape
- ❍ Northwest
- ❍ Western Cape

4. What type of area do you consider your place of birth to be?
- ❍ Urban
- ❍ Peri Urban
- ❍ Rural
- ❍ Deep Rural

5. Where did you complete high school?
- ❍ Eastern Cape
- ❍ Free State
- ❍ Gauteng
- ❍ Kwa-zulu Natal
- ❍ Limpopo
- ❍ Mpumalanga
- ❍ Northern Cape
- ❍ Northwest
- ❍ Western Cape

6. What type of area do you consider the place you completed high school to be?
- ❍ Urban
- ❍ Peri Urban
- ❍ Rural
- ❍ Deep Rural

7. Which university did you graduate from?
- ❍ University Of Cape Town
- ❍ University Of Kwa-Zulu Natal
- ❍ University Of Limpopo
- ❍ University Of The Free State
- ❍ University Of Pretoria
- ❍ University Of Stellenbosch
- ❍ University Of The Witwatersrand
- ❍ Walter Sisulu University

8. What year did you graduate from university?
- ❍ 2007
- ❍ 2008
- ❍ 2009
- ❍ Other - Please specify _____

9. What year did you complete community service?
- ❍ 2010
- ❍ 2011
- ❍ 2012
- ❍ Other - Please specify _____

Section 2: Current Employment

10. Are you employed?
- ❍ Yes
- ❍ No

11. Which province are you currently employed in?
- ❍ Eastern Cape
- ❍ Free State
- ❍ Gauteng
- ❍ Kwa-zulu Natal
- ❍ Limpopo
- ❍ Mpumalanga
- ❍ Northern Cape
- ❍ Northwest
- ❍ Western Cape=

12. What type of area do you consider your area of employment to be?
- ❍ Urban
- ❍ Peri Urban
- ❍ Rural
- ❍ Deep Rural

13. Are you currently working in the public or private sector?
- ❍ Public Sector
- ❍ Private Sector
- ❍ Both Private and Public Sector

14. Are you working as a general practitioner in private?
- ❍ Yes - Full Time
- ❍ Yes - Part Time
- ❍ No

15. Are you working for the District Health Services (in Primary Health Care)?
- ❍ Yes - Full Time
- ❍ Yes - Part Time
- ❍ No

16. Are you working in a specialty as a medical officer?
- ❍ Yes - Full Time
- ❍ Yes - Part Time
- ❍ No

17. If yes, what specialty are you working in?
- ❍ Anaesthetics
- ❍ Family Medicine
- ❍ General Surgery
- ❍ Internal Medicine
- ❍ Medical Specialties (Dermatology etc.)
- ❍ Obstetrics and Gynaecology
- ❍ Orthopaedics
- ❍ Paediatrics
- ❍ Pathology
- ❍ Psychiatry
- ❍ Radiology
- ❍ Surgical Specialties (ENT etc.)
- ❍ Other - Please Specify _____

18. Are you working in a specialty as a registrar?
- ❍ Yes - Full Time
- ❍ Yes - Part Time
- ❍ No

19. If yes, what specialty are you working in?
- ❍ Anaesthetics
- ❍ Family Medicine
- ❍ General Surgery
- ❍ Internal Medicine
- ❍ Medical Specialties (Dermatology etc.)
- ❍ Obstetrics and Gynaecology
- ❍ Orthopaedics
- ❍ Paediatrics
- ❍ Pathology
- ❍ Psychiatry
- ❍ Radiology
- ❍ Surgical Specialties (ENT etc.)
- ❍ Other - Please Specify _____

20. If you are working in any other field, please specify?

Section 3: Career Plans

21. If you are not already in a registrar post, do you intend to specialize in the next 5 years?
- ❍ Yes
- ❍ No

22. If yes, what specialization would you like to pursue?
- ❍ Anaesthetics
- ❍ Family Medicine
- ❍ General Surgery
- ❍ Internal Medicine
- ❍ Medical Specialties (Dermatology etc.)
- ❍ Obstetrics and Gynaecology
- ❍ Orthopaedics
- ❍ Paediatrics
- ❍ Pathology
- ❍ Psychiatry
- ❍ Radiology
- ❍ Surgical Specialties (ENT etc.)
- ❍ Other - Please Specify _____

23. If no, what are your future plans?
- ❍ Research
- ❍ Masters Degree
- ❍ Non Medical Pursuits
- ❍ Private General Practitioner
- ❍ Public Primary Health Care
- ❍ Other - Please Specify _____

24. On a scale of one to five, how inclined are you to choose Family Medicine as a possible specialization?
- ❍ 1= Definitely Not Inclined
- ❍ 2=Probably Not Inclined
- ❍ 3=Possibly Inclined
- ❍ 4=Very Probably Inclined
- ❍ 5= Definitely Inclined

25. On a scale of zero to ten, how much would these factors attract you towards specialization in Family Medicine? (0 = wouldn't attract, 10 = would attract)

	0	1	2	3	4	5	6	7	8	9	10
High Income Potential	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Autonomy	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Wide Spectrum Of Diseases	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Patient Centered	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Work Life Balance	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

26. On a scale of zero to ten, how much would these factors deter you from specialization in Family Medicine? (0 = wouldn't deter, 10 = would deter)

	0	1	2	3	4	5	6	7	8	9	10
Low Income Potential	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Too Basic/Unchallenging	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Poor Professional Perception Of The Specialization	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Poor Training	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Administrative Work	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

27. If the government allowed you to start a registrarship in Family Medicine during your community service year, on a scale of one to five how inclined would you be to choose Family Medicine as a possible specialization?

❍ 1= Definitely Not Inclined
❍ 2=Probably Not Inclined
❍ 3=Possibly Inclined
❍ 4=Very Probably Inclined
❍ 5= Definitely Inclined

Section 4: Emigration

28. In the next five years, are you planning on emigrating to another country?
- ❍ 1= Definitely Not
- ❍ 2=Probably Not
- ❍ 3=Possibly
- ❍ 4=Very Probably
- ❍ 5= Definitely

29. In the next ten years, are you planning on emigrating to another country?
- ❍ 1= Definitely Not
- ❍ 2=Probably Not
- ❍ 3=Possibly
- ❍ 4=Very Probably
- ❍ 5= Definitely

30. If you were to emigrate, which country would you be likely to choose?
- ❍ Austria
- ❍ Australia
- ❍ Belgium
- ❍ Canada
- ❍ New Zealand
- ❍ United Arab Emirates
- ❍ United Kingdom
- ❍ United States Of America
- ❍ Other - Please Specify _____

31. On a scale of zero to ten, how much would the following factors motivate you to remain in South Africa?

	0	1	2	3	4	5	6	7	8	9	10
Financial Incentive	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Improved Training	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Better Working Environment (eg. support, supervision, attitudes)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Better Working Conditions (eg equipment, staffing)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Personal Safety At Work	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Career Pathing	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Section 5: Undergraduate Training, Internship And Community Service

32. As an undergraduate, did you rotate in a district hospital or primary health care clinic (Family Medicine and Primary Health Care rotation)?

- ❍ Yes
- ❍ No

33. As an undergraduate, what is the total amount of clinical time that you spent in Family Medicine and Primary Health Care (in months)?

- ❍ None
- ❍ Less than one month
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10
- ❍ 11
- ❍ 12
- ❍ More than 12 months

34. Do you feel that your undergraduate training in Family Medicine and Primary Health Care was adequate as compared to other specialties?

- ❍ Yes
- ❍ No

35. How useful did you find your undergraduate training in Family Medicine and Primary Health Care?

- ❍ Very Useless
- ❍ Useless
- ❍ Somewhat Useless
- ❍ Somewhat Useful
- ❍ Useful
- ❍ Very Useful

36. As an intern, how much time (in months) did you spend in each of these areas during your Family Medicine rotation?

	None	Less Than One Month	1 Month	2 Months	3 Months	4 Months	More Than 4 Months
Clinic	❍	❍	❍	❍	❍	❍	❍
Community Health Centre	❍	❍	❍	❍	❍	❍	❍
District Hospital	❍	❍	❍	❍	❍	❍	❍
Secondary Or Higher Facility	❍	❍	❍	❍	❍	❍	❍
Psychiatry	❍	❍	❍	❍	❍	❍	❍
HIV Services	❍	❍	❍	❍	❍	❍	❍

37. As an intern, how useful did you find your rotation in Family Medicine?
- ❍ Very Useless
- ❍ Useless
- ❍ Somewhat Useless
- ❍ Somewhat Useful
- ❍ Useful
- ❍ Very Useful

38. How well was your Family Medicine rotation in internship organized?
- ❍ Very poorly organized
- ❍ Poorly organized
- ❍ Well organized
- ❍ Very well organized

39. As a community service doctor, how much time (in months) did you spend in a clinic, community health centre or district hospital?

	NONE	< 1 MONTH	1 MONTH	2 MONTHS	3 MONTHS	4 MONTHS	5 MONTHS	6 MONTHS	7 MONTHS	8 MONTHS	9 MONTHS	10 MONTHS	11 MONTHS	12 MONTHS
Clinic	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
Community Health Centre	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
District Hospital	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

40. How useful did you find your rotation in the clinic, community health centre or district hospital?

❍ Very Useless
❍ Useless
❍ Somewhat Useless
❍ Somewhat Useful
❍ Useful
❍ Very Useful

41. How well was your rotation in the clinic, community health centre or district hospital organized?

❍ Very poorly organized
❍ Poorly organized
❍ Well organized
❍ Very well organized

Additional Comments

42. If there is there anything that you would like to add before concluding this questionnaire, please do so in the text box below.

APPENDIX C

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Atiya Mosam

CLEARANCE CERTIFICATE	**M121118**
PROJECT	Family Medicine and Primary Health Care: The Role of Undergraduate Training on Current Practices and Career Intentions of Junior Doctors in South Africa
INVESTIGATORS	Dr Atiya Mosam.
DEPARTMENT	School of Public Health
DATE CONSIDERED	30/11/2012
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 04/11/2013 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr Shabir Moosa

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...