Training satisfaction and career plans of Maxillofacial and Oral Surgery registrars and consultants in South Africa.

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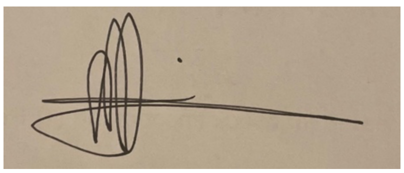
Declaration

I, Brent Marlan Haines declare that this research report is my own, unaided work. It is being submitted for the Masters in Dentistry at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.



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(Signature of candidate)

25th day of August 2022 in Parktown

Dedication

I dedicate this piece of work to my late mother-in-law (Valencia Ann Scholtz); to my lovely wife (Hayleigh Haines) and my beautiful children (Madison and Micah Haines).

Abstract

Purpose

The purpose of the study was to determine the level of satisfaction of registrars and consultants with the Maxillofacial and Oral Surgery (MFOS) programme, and to determine areas of interest in subspecialisation.

Materials and Methods

A cross sectional study was conducted to determine satisfaction of registrars and consultants with the MFOS programme. An anonymous questionnaire link was sent to 90 participants from institutions which granted permission. The survey explored the level of satisfaction in areas such as academic clinical and procedural exposure. These included registrars currently in the programme and consultants in the institutions or previously linked to the institutions.

Results

There were 43 respondents who completed the questionnaire which resulted in a response rate of 47.8%. Of the respondents 22 (51.1%) were registrars and 21 (48.9%) were consultants, 12 (27.4%) female and 29 (67.4%) males. Both registrars and consultants were very satisfied with academic, clinical and procedural exposure in the fields of oral pathology (81.4%, 90.7% and 90.7%), dentoalveolar surgery (93%, 95.3% and 95.3%) and traumatology (95.3%, 97.7% and 100%). Consultants were more satisfied in orthognathic surgery than registrars, whereas TMJ surgery showed higher satisfaction levels among registrars than consultants. The greatest interest for subspecialisation was in the fields of cleft lip and palate surgery (32.6%), orthognathic surgery and oncologic surgery (20.9%).

Conclusion

Registrars and consultants were satisfied in the areas of 'expertise' across the academic, clinical and procedural exposures in Oral pathology, dentoalveolar surgery and traumatology. There were differing responses amongst consultants and registrars in the areas of competence in TMJ and orthognathic surgery. The participants were dissatisfied in the area's 'familiarity' across

academic, clinical and procedural exposure in oncological, craniofacial and cosmetic surgery fields. The greatest interest for subspecialisation was in the fields of cleft lip and palate surgery, orthognathic surgery and oncologic surgery.

Acknowledgments

I want to extend a sincere word of gratitude to the Head of Dept. (Maxillo-Facial and oral Surgery), Prof RE Rikhotso, thank you for your unwavering support.

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To my parents, Dr FL and Mrs MMC Haines, and my siblings thank you for your support, encouragement and prayers.

My friends who supported me on this journey-thank you so much.

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ATLS	- Advanced Trauma Life Support
BAOMS	- British Association of Maxillofacial and Oral Surgeons
ENT	- Ear Nose and Throat
HOD	- Head of Department
MD	- Doctor of Medicine
MFOS	- Maxillofacial and Oral Surgery
SA	- South Africa
SMU	- Sefako Makgatho Health Science University
TMJ	- Temporomandibular Joint
UK	- United Kingdom
UP	- University of Pretoria
USA	- United States of America
UWC	- University of the Western Cape
WITS	- University of the Witwatersrand

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Chapter 1

1.1 Introduction

Maxillofacial and Oral Surgery (MFOS) is a speciality that combines surgical training with dental expertise to correct a wide spectrum of diseases, injuries, tumours, defects and deformities in the mouth, head, neck, face, jaws and the hard and soft tissues of the oral and maxillofacial region[1]. Satisfaction according to the Oxford definition is described as “Fulfilment of one's wishes, expectations, or needs, or the pleasure derived from this”[2]. (Satisfaction, Oxford English Dictionary online, (2019), Training satisfaction for the purposes of the current study refers to “The fulfilment of the participants’ wishes, needs and expectations with the MFOS training programme[2].

The MFOS speciality is composed of the following three main areas: areas of expertise, areas of competence and areas of familiarity on disease conditions/defects in the oral and maxillofacial region[3]. Firstly, the area of expertise for the incumbents are required to have expert knowledge in the following fields: oral pathology, oral medicine, dentoalveolar surgery, preprosthetic surgery (implantology), and maxillofacial traumatology. Secondly, in relation to competence, the incumbents are required to be competent in orthognathic surgery, tempro-mandibular joint surgery and local reconstructive surgery. Lastly, the incumbents should be familiar with cleft lip and palate surgery, regional reconstructive surgery, oncologic surgery, craniofacial surgery and cosmetic surgery[3,4,5]. Maxillo-facial surgeons work as part of the multidisciplinary team alongside other specialties including Ear Nose and Throat (ENT) surgeons, plastic and reconstructive surgeons, neurosurgeons, ophthalmologists, orthodontists, clinical oncologists, radiotherapists, radiation oncologists and pain consultants[4].

MFOS is regarded as a speciality of dentistry in many parts of the world, and dentistry is the only academic requirement for entry into the speciality[6]. The nature of procedures performed in the MFOS speciality has necessitated extensive general surgical training. The entry requirements for training in the MFOS speciality are generally diverse around the world. These requirements include only a dental degree in countries such as Indian Subcontinent, South-East Asia, East

Asia, Nordic countries, Turkey and North America[6]. While in other countries such as UK, Australia and New Zealand both dental and medical degree (dual qualification) are a minimum academic requirement for entering the speciality[7]. In Europe, the prerequisite for dual qualification has been on the rise, to comply with European union [3,8,9]. The outliers in the entry requirements are France where entry requirements are a medical degree, while in Spain the entry requirements are either medicine or dentistry degree. Lastly, China requires a qualification based on Stomatology, a study of combination of dental and medical education but not degree based (Stomatology)[3,4,6]. Some countries like the USA have incorporated extended training programmes with integrated medical teaching, leading into a qualification as a Doctor of Medicine (MD)-integrated MFOS, which in a survey 78% of registrars indicated they would have preferred to be enrolled with this programme[6,9].

In Africa, not much has been published with regards to entry requirements and training pathways in MFOS. In Sudan a dental degree is prerequisite followed by a four-year programme to qualify as a specialist[6]. In South Africa (SA), MFOS is at least a four-year programme for candidates who have a dental degree and or a medical degree and passed the Advanced Trauma Life Support course (ATLS)[6]. These differences in entry requirements are more likely to have led to different experiences that would impact on satisfaction of the specialists in the field.

Controversies have erupted with regards to dual qualification, with proponents of dual qualification reporting that the medical degree has a wider scope of practice particularly in areas that overlap with other specialties such as plastic and reconstructive surgery[8]. Some clinicians/authors that advocate for a single qualification reported no beneficial advantage of the medical degree. These clinicians/authors indicated that a dental degree should remain a prerequisite for training in MFOS and that medical training instead of a medical degree is an essential factor [3,8]. Although the scope varies among different countries, MFOS is recognized as dental based speciality in most parts of the world[5].

1.2 Satisfaction

Satisfaction in the workplace has been extensively researched by many organisations, to ensure they retain employees and keep them motivated[10]. Much of interest in job satisfaction was thought to arise from assumption of job satisfaction related to job performance[11]. The most important concern to educators is retaining trainees and understanding why they may choose to exit the programme[12].

There are academic and non-academic factors which have been found to be significant predictors for student satisfaction with the educational programme. Academic factors such as the quality of teaching, skills and knowledge acquired and the curriculum itself are the most significant factors that affect the overall satisfaction of students[12]. Some predictors have been cited to cause a decrease in satisfaction which included inadequate supervision in operating rooms, consultants being too busy to discuss patients and consultants being in a rush to complete ward rounds[13]. Non-academic factors that may also influence the satisfaction of the students include, feeling of belonging and the perception of the institutions responsiveness and desire to contribute to the overall satisfaction[12].

1.3 Career plans

Given the requirement of dual qualification in Europe and other countries, specialists may be reluctant to pursue fellowship or research degrees in MFOS[14]. There are already reports of difficulty in recruiting candidates into the academic setting[15].

General information about career plans and information and guidance for areas of development and for workforce planning is beneficial to trainers and trainees[14]. It will also assist with future planning of specialist dental care and training of adequate number of specialists. This information can assist to encourage specialist into one career path or another, ensuring that the national system has expertise in all disciplines within the scope of practice[15]. The career plans will help future projections for adequate specialists within the public system and if the specialist will be willing to have sessions within the public sector. With the potential of inequalities in care, there is potential to have a balance between the public and private sectors to ensure that all patients might receive treatment as required[15].

Postgraduate training of MFOS specialists is crucial to ensure that there is continuation of the profession. The involvement in the academic environment is of utmost importance in the training of the undergraduate programmes as well.

Chapter 2: Literature Review

2.1 Historical background

The practice of medicine which included dental treatment began in Greece under the leadership of Hippocrates. Hippocrates and Aristrole wrote about various dental topics, which include treatment of decayed teeth, gum disease, extraction of teeth and the use of wire for treatment of loose teeth and fractured jaws[16]. The earliest mention of what is now included in the scope of practice occurred in Egypt by Edwin Smith Papyrus (2700 BC). This document included the treatment of mandibular fractures, and oral diseases dating back to 1200 BC[16].

At the beginning of the 18th century, treatment of diseased teeth was extractions, and was performed by barber surgeons, surgeons, empiricists and travelling mountebanks. The Guild of barbers was created in France, and they were split into two groups, one group for the simpler procedures and one for the more complex procedures[16]. The 14th to mid 17th century era saw further expansion of the scope of what is now considered MFOS. In the 1800s there was a small group of physicians with dental training who practiced oral surgery as a branch of surgery[16]. America (USA) was the first country to recognize Oral Surgery as a speciality, with the strong dental origin. Prior to World War I. Oral Surgery professors in America were mostly dually qualified post World War 1. The dual qualified surgeons distanced themselves from those with single qualification.[8]. Like other surgical specialties, MFOS was developed from the experiences acquired in the world wars. In 1921 those with only a dental degree organized themselves into American Society of Oral Surgeons and Exodontists, this body was to ensure that the training remained through dentistry. The need to incorporate adequate medical training was recognized, and the duration of the programme was duly increased[16,17].

Post-World War II, several dental schools established master's degree post-doctoral didactic programmes. Candidates were eligible for board exams after two years of training, one which was didactic and one clinical. Some hospital programmes incorporated their own didactic teaching; this type of training was considered disjointed[17]. Colleges in the American Society of Oral surgeons were critical of this system[16]. In 1968 the minimum duration of the training increased from 1 to 2 years, in 1972 from 2 to 3 years and to 4 years in 1988[5,18]. Some programmes were removed by ruling because of deficiencies. Training institutions incorporated their own teaching component in conjunction with the clinical training the quality programmes were standardized and improved[16]. In 1988 the programme was then extended to 4 years[8,18]. The extension in duration was due to a broader scope of practice in the field of MFOS[7]. Surgeons were treating patients with increasingly complex conditions; MFOS programmes have paralleled the structure with medical specialists[18]. The increase in years of training was to ensure that registrars were exposed to all disciplines within MFOS. The standardization of programmes ensured that all candidates were exposed to the same type of training leading to improved programmes across the nations[16].

Despite progress of the programme, there was a concern with the medical educational deficit of dental school graduates who were becoming surgical residents[17]. In response to the deficit in medical education, Walter Guralnick began a dual programme in 1971 in Boston, MA, USA. Guralnick proposed the inclusion of the MD degree in 1973, citing that the programmes at this time did not compensate for the lack of general surgical experience. Goldberg had commented on long; frustrating and expensive path of double degree programme[18]. A study conducted in India by Kumar 2017, acknowledged the need for MFOS to be trained in Dentistry and Medicine. However, the findings indicated that the economic impact and the status of the country be considered before a decision of extended training is recommended [6]. The dual degree approach would take 12-15 years to complete. This is a significant amount of time and may not be feasible for some potential candidates[8]. In the 1970s and early 1980s, momentum was building towards a dual degree (Medicine and dentistry). However, Goldberg suggested an alternative of offering the registrars a basic year of surgical training, which has evolved to the current universal four-year programme[18].

After the Boston programme, the British Association of Maxillofacial and Oral Surgeons (BAOMS), in 1985 decided that for candidates to qualify to enter the programme they had to be qualified in both medicine and dentistry[19]. In the 1980s, in UK, dual qualification became mandatory as it was thought that the large range of pathological conditions of the face required extensive surgical training. The speciality, while retaining its dental base was formally established as one of nine dental specialties in 1994[8].

2.2 Perceptions regarding the MFOS training programme

A study conducted among two groups of graduates in New Zealand and Australia to ascertain the difference in years of training and included two groups of those who spent less than 3 years and another more than 3 years in training. The findings indicated that although the scope of the training programme was similar between the two groups, the range of major procedures was significantly less in the group with shorter period of training. The group in training for more than 3 years had a wider scope of practice, in orthognathic and grafting procedures but a narrow scope in trauma. It was found that the length of training did correlate with the scope of practice[5].

A study was conducted by Aziz et al. (2013), in USA, with the aim of determining the level of satisfaction and career plans of MFOS registrars. This study revealed that registrars were satisfied with the clinical component of the programme, but these registrars indicated that they did not receive adequate training in practice management[13]. Driscoll et al. (2003), reported that registrars valued continued assessments by consultants which allowed for regular feedback with regard to their progress[20]. Gigliotti et al. (2015), reported that in Canada registrars were satisfied with surgical education particularly in areas considered to be conventional scope and were least satisfied with areas such as cleft and craniofacial surgery; facial cosmetic surgery and free tissue transfers[8].

In general, registrars were satisfied in countries such Canada, Turkey New Zealand and Australia where satisfaction survey were conducted[5]. New Zealand and Australia follow a programme where a dual degree is the entry requirement, and a full year of surgery should be completed[6]. Canada follows a four-year programme of MFOS post dental qualification; however, a six-year MD integrated option is also available[8]. Registrars were satisfied with the programme and cited narrow spectrum of exposure to procedures as an area of dissatisfaction. The dissatisfaction of registrars was due to the desire of registrars wanting to be trained in the broadest scope of the speciality[9]. Evaluation of the programme is an important tool in the process of learning;

however, it has been viewed with skepticism, due to external summative assessment (pass/ fail)[5]. For registrars to optimize their training, they should have an idea of the final achievement required. A registrar must be able to compare the difference between the desired and actual performance[8].

The basic requirement in Germany was to be dually qualified in medicine and dentistry. The duration to be fully qualified as MFOS ranges between 13 and 16 years. This includes 8 – 11 years for medical and dental school followed by 5 years for training in MFOS. This was based on the concepts of the programme provided which were preferred by the residents. Zeller et al (2020), 52.7% of participants preferred a surgical training concept (related to frequency and type of intervention) corresponding to the level of education within the programme and the rotational concept was proffered by 37.8%of participants. In a recent study conducted by Pabst et al. (2019), the results show that 53% of German residents evaluated the current training programme as moderate, 22% as very good and 13% as inadequate[21].

Another study was conducted in Germany by Zeller et al. (2020), with 75 participants. The overall training programme was rated as moderate by 49.3% of the participants while 26.7% indicated the programme to be very good and 21,92% reported as bad, which corelates with the absence of identifiable concept of the training programme[22]. Most of the participants indicated that dual qualification was necessary. Regular performance interviews were conducted where participants felt that they did not contribute to these interviews which attributed to a lower level of satisfaction with training programme[22]. Zeller et al. (2020), also reported that plastic and aesthetic was top choice of interest followed by dentoalveolar surgery and traumatology respectively. In this study participants were questioned about interest before they entered the programme and again once in the programme. Plastic and aesthetic surgery showed an increase from 44.95% to 60%, deantoalveolar surgery 33.78% to 44.29% while trauma showed a decrease from 44.29% to 40% but remained one of the highest interests. Participants also indicated that surgical training was very important[22].

von Websy et al. (2012), conducted a survey on trainee satisfaction of surgery residents. With a response rate of 23%; 69% of respondents were satisfied with the working conditions. Factors which influenced the satisfaction of trainees, included increasing working hours, the presence of one teaching modality (bedside teaching rounds or morbidity and mortality conferences)[23]. The authors hypothesized that assessing trainee satisfaction might be an effective way to enhance the attractiveness and quality of surgery education. Such evaluations and monitoring may lead to less dropouts, easier recruitments, less training costs and a better quality of care. The interest in dentoalveolar surgery increased by the years of training completed in Germany[21].

A review of surgical training by Fritz et al. (2019), showed that registrars were not satisfied with the amount of teaching that they received during the programme. The teaching alluded to by registrars was the preoperative teaching. In the same review the consultants provided better feedback on performance as a registrar[24]. McKenndy et al. (2017), indicated that implementation of a structured teaching approach improved the feedback from operating room. Another method was perioperative and postoperative feedback which would allow consultants to address problems immediately and residents to communicate the amount and quality of teaching provided by consultants[5]. The introduction of structured programmes with the use of logbooks and curricular, makes it possible to complete residency within the specified time limit[25].

Marti et al. (2017), found a significant difference in satisfaction between male and female MFOS residents. The satisfaction scores were lower in females when compared to male counterparts and the females were less satisfied with MFOS training[26]. In a survey conducted by Rostami et al. (2010), 29% of female registrars claimed sexual harassment during their registrarship. Female registrars had to outperform their male counter parts to get the same respect[27]. Shaming of registrars has been considered as part of an educational tool in the MFOS programmes. This has shown that registrars who were shamed more often had a higher burnout rate, depersonalization and a lack of personal achievement as compared to those registrars who were not shamed[28]. This can affect the perception that registrar may have with the programme. The development of depersonalisation has detrimental outcomes as it directly affects patient care[28]. Takahashi et al. (2009), found that the residents' overall satisfaction with their residency programme was significantly associated with their participation in scholarly activity [21, 29].

After having identified factors that have influenced the satisfaction of trainees/ registrars across the globe, these factors were identified as: failure to establish a well-structured training programme, lack of availability of part-time work and a lack of transparency in surgical procedures. There was also a negative association between working hours and satisfaction[23].

Those consultants who are satisfied with their job will be able to pass on this satisfaction within their job and motivate their students[25]. The residents described an effective teacher as one who was calm and in control[24]. Overcoming barriers has educational benefits for residents and improves the patient care that is carried out[29]. Success of MFOS programme leads to clinical; educational; scholarly and financial success of faculty and the residents[30]. It is the responsibility of the training institution to ensure that the full scope of practice is taught to residents[31]. The full scope of practice should include the areas of expertise, areas of competence and areas of familiarity.

2.3 Career plans

Research conducted by Pabst et al. (2019), found that most residents in Germany, 76% focused on specialisation in the field of plastic facial surgery on completion of training. Postdoctoral scientific career was favoured by 30% and 27% had chosen private practice or self-employment after completing their residency. It was established that with an increase in the years of training completed, there was an increase in the interest of dentoalveolar surgery[21].

Gigliotti et al. (2015), found that 75% of residents indicate that they were interested in a combination of private and public practice, and 71% of these residents who had taken part in the questionnaire indicated they would be interested in fellowship training. Of the 71%, 39% were undecided, 17.4% were interested in Maxillofacial Oncology and Reconstructive Surgery and a further 17.4% were interested in Cleft and Craniofacial Surgery and 13% Facial Cosmetic Surgery[8].

Rostami et al. (2010), reported that 20% of 60 registrars indicated an interest in fellowship post qualification. The majority were interested in facial cosmetics followed by craniofacial surgery; head and neck oncology and academics[27].

2.4 Rationale:

Job satisfaction is defined differently by different authors. It can be described as a combination of psychological; physiological and environmental circumstances that causes a person to be truly satisfied with their job. It represents a combination of negative and positive feelings that workers have towards their work. Job satisfaction is a worker's sense of achievement and success in the workplace.[31] Job satisfaction can influence employee productivity loyalty as well as absenteeism. A high level of satisfaction within the MFOS training could be an instrument for registrar's motivation and therefore work performance and increased quality in patient care. Educational institutions should strive to achieve a high level of satisfaction, which could also aid in the prevention of work-related illnesses such as anxiety disorder or burn out syndrome[21].

There have been many changes over the years concerning the training programme of MFOS. The standardization of the programme has been the key matter at hand. This has been helpful in ensuring that all registrars are exposed to the greatest scope of the profession. The controversy regarding the dual degree has also been reviewed, with surgical experience identified as a shortfall. Not all countries are able to adopt this strategy to achieve MFOS degree. The inclusion of surgical rotations was included in the programme to ensure promotion of the standardization of the programme, and to cover the surgical shortfall identified[18].

Registrars outside South Africa cited many different aspects of the training programme which contributed to the programme having positive and negative impacts on them. The lack of a structured, documented programme and registrars desire to be trained in the broadest scope of practice, are the factors which affected the satisfaction of the programme[8,23]. Studies have been done in many first world countries such as Germany; Canada; Australia and New Zealand, to determine the satisfaction of registrars and consultants with Maxillofacial and Oral Surgery programme, which they have completed. To the best of our knowledge, no such study has been conducted in South Africa or Africa as a whole.

Against this background, this study was conceived to provide insight into the perceptions and levels of satisfaction within the programme and area of interest in South Africa. It is envisaged that the findings of this study may be used to enhance the South African Maxillofacial and Oral Surgery programme.

2.5 Aim:

To assess the level of satisfaction of MFOS registrars and consultants with regards to the MFOS programme and to analyse their interest in sub-specialisation.

2.6 Objectives:

1. To determine the demographic profile of registrars and consultants in MFOS programme within South Africa.
2. To assess the satisfaction levels of registrars with the scope of training in MFOS programme.
3. To assess the satisfaction levels of consultants with the scope of training in MFOS programme.
4. To investigate the areas of interests of sub-specialisation of participants.
5. To determine the associations between the level of satisfaction and the intended field of sub-specialisation.

Chapter 3:

3.1 Research Methodology

This chapter focuses on the research methodology as well as the assessment tools used to perform the study. Permission to conduct the study was granted by the four institutions and consent was granted by all the participants prior to the collection of data. The process of conducting the study is elaborated thoroughly: study design, study setting, study population, sampling, inclusion and exclusion criteria, data collection, data analysis and ethical considerations.

3.2 Study design

The study is a prospective cross-sectional analytical study.

3.3 Study setting

The study setting was the four training institutions responsible for training MFOS registrars in South Africa. These institutions were: Universities of the Witwatersrand (WITS) located in Johannesburg, Gauteng, Sefako Makgatho Health Science University (SMU) located in Pretoria, Gauteng, University of Pretoria (UP) located in Pretoria, Gauteng and the University of the Western Cape (UWC) located in Bellville, Western Cape.

3.4 Study population

All South African trained MFOS registrars and MFOS surgeons were eligible to participate in the survey irrespective of the year of study and of graduation and the institution they were trained in.

3.5 Study sample size and sampling

The study sample included all age groups, all genders, registered MFOS registrars at universities, MFOS consultants with active registration with HPCSA. Convenience sampling was undertaken. All 90 registrars and consultants who were and are still involved with the mentioned institutions, were recruited to participate in the study.

3.6 Data collection and Recruitment

Registrars of institutions which granted permission to conduct study were approached and all the consultants affiliated to institutions and private practitioners were recruited to participate in the study via telephonic consultation and email. Participation in the study was voluntary and all the participants were requested to consent to participate in the study. Questionnaires were sent to all the Head of Departments (HODs) at universities where permission was granted to approach registrars to complete questionnaire.

The information sheet (Annexure A) and questionnaire (Annexure B) were handed out to registrars and consultants in WITS after the participants provided informed consent (Annexure C). The same questionnaire link was emailed to registrars and consultants at other two universities which granted permission using google forms, (UP and SMU). Consultants and registrars were free to participate and free to stop participation without giving any reasons anytime if they felt uncomfortable.

3.7 Inclusion/Exclusion Criteria

Inclusion criteria:

The following inclusion criteria were used:

- All MFOS Registrars in institutions offering the course.
- MFOS consultants working for the state and in private practice.
- Consent to participate to the study.

Exclusion Criteria

The following exclusion criteria were used:

- Participants who do not consent to be part of the study.
- Universities who did not consent to part of the study
- Incomplete questionnaires.

3.8 Data Collection Tool

A self-administered questionnaire was used to collect data for the present study based on a previous study published by Gigliotti et al. (2015), the questionnaire consisted of 36 questions. The questionnaire did not ask for any information identifying any of the participants. The anonymous survey was conducted to encourage maximum participation, unbiased and objective responses from registrars and consultants. The questionnaire focus was based on the registrars and consultant's 'Satisfaction with Academic exposure'; 'Satisfaction with Clinical Exposure' and the 'Procedures performed by individual' during their MFOS programme and the areas of interest post qualification or currently engaged in. The detailed questionnaires contents are shown in Annexure C. The questionnaire was composed 11 questions focusing on demographics, satisfaction with modules and interest in sub-specilisation.

3.9 Data Analysis

As outlined in Chapter 2, the aim of this research study was to assess the satisfaction levels of registrars and consultants with the scope of training in MFOS programme. Descriptive research was employed to describe numerical data obtained from registrars and consultants regarding their level of academic exposure, clinical exposure and procedures performed in their field of study.

Tables and graphs were used to present the results. The results are presented in accordance with the following themes:

- Demographic profile of the participants
- Satisfaction with academic exposure, clinical exposure and procedures performed by registrars

- Satisfaction with academic exposure, clinical exposure and procedures performed by consultants.
- Satisfaction with academic exposure, clinical exposure and procedures performed by all participants.
- Areas of interest in sub-specialisation
- Associations between level of satisfaction and areas of sub-specialisation.

All information from the questionnaires was entered into Microsoft Excel, cleaned; verified and exported to IBM SPSS statistics 27 ® software for statistical analysis[35]. All the variables in this data were categorical variables and therefore only appropriate descriptive statistics (frequency and percentage) and inferential statistics, chi-squared or (Fisher's exact test), were used for the analysis. The study sample characteristics, specifically the categorical variables were described using frequency and percentages. The dependent outcome variables in this study are the satisfaction with academic, clinical exposure and procedures performed by individual and the independent variables are – age, gender, type of training and expertise. Chi-squared test was used to determine the significant association between the exposure (independent) and the outcome (dependant) variables. Fischer's exact test were only used for determining association between the categorical variables where the expected number of frequencies in a cell was fewer than 5 (Freeman & Julious, 2007). Level of significance was set at p-value less than 0.05. The questionnaire was used elsewhere but adapted for the study, so it was necessary to determine the internal consistency in this setting. Cronbach's alpha (α) was used to determine the internal consistency of the questionnaire.

3.10 Ethical Consideration

Respect of autonomy obligates us to respect decisions of adults who have decision making capacity. In order to respect the principle, one must tell the truth, respect the privacy of others, protect confidential information and to obtain consent for interventions with patients.

The principle of beneficence is the moral obligation to act for the benefit of others. The aspects of beneficence involve providing benefits and balancing the benefits and risks/ harms. This principle aims to protect and defend the rights of others, prevent harm from occurring to others, remove conditions that will cause harm[32,33].

Nonmaleficence indicates there is obligation not to inflict harm on others, first do no harm. The principle supports the following rule, do not kill, do not cause offense, do not cause pain and suffering.

The principle of justice obligates one to equitably distribute benefits, risks, costs and resources. The following rules are supported by the principle, each person an equal share and according to the need[32,33].

Ethical principles namely autonomy, beneficence, nonmaleficence and justice were adhered to. Questionnaire responses were confidential and anonymous. Informed Consent (Annexure C) for participation was included in the questionnaire. The study was approved by the Human Research and Ethics Committee (HREC) of Witwatersrand University and the Hospital Research and Ethics Committee (Wits Oral Health Centre) (reference: M190707 (Annexure D). Furthermore, permission to conduct the study at the various institutions was granted by their respective research committees (Annexure E).

Chapter 4 Results

In this chapter, the data obtained from the respondents to the questionnaire is analysed and interpreted.

4.1 Internal reliability of the questionnaire

The internal reliability of the overall tool was good 0.90 and the internal reliability of the three sections of the questionnaire ranged from 0.64 – 0.90.

Table 4.1: Internal reliability of the questionnaire

Questionnaire	**α**
Overall tool - 36 items	0.91
Satisfaction with academic exposure - 12 items	0.89
Satisfaction with clinical exposure - 12 items	0.64
Satisfaction with procedures performed - 12 items	0.90

The Cronbach's alpha test scores by George and Mallery (2005) are illustrated.

Cronbach's alpha	**Interpretation**
Cronbach's alpha ≤ 0.5	Unacceptable
0.5 < Cronbach's alpha ≤ 0.6	Poor
0.6 < Cronbach's alpha ≤ 0.7	Questionable
0.7 < Cronbach's alpha ≤ 0.8	Acceptable
0.8 < Cronbach's alpha ≤ 0.9	Good
Cronbach's alpha > 0.9	Excellent

Source: George and Mallery (2005)

Figure 4.1: Cronbach's Alpha interpretation according to George and Mallery

4.2 Demographic characteristics

A total of 43 participants participated in the study from 90 invitations, resulting in a response rate of 47.8%. Of the participants 22 (51.16%) were registrars and 29 (67.4%) were male.

Table 4.2: Age distribution, particulars of training, and the career plans of the registrars and consultants.

		Registrars (n=22)		**Consultants (n=21)**		**All (n=43)**	
		n	%	n	%	n	%
Gender	Female	7	31.8	5	23.8	12	27.9
	Male	15	61.2	14	66.7	29	67.4
	Prefer not to say			2	9.5	2	4.7
Current age in years	30- 35	9	41	3	14.3	12	27.9
	35- 40	9	41	3	14.3	12	27.9
	40-45	1	4.5	5	23.8	6	14
	>45	3	13.5	10	47.6	13	30.2
Type of MFOS training	4-year MD option	1	4.6	N/A	N/A	1	2.3
	4-year traditional	14	63.6	16	76.2	30	69.8
	5-year programme	5	22.7	4	19	9	20.9
	6-year MD integrated	2	9.1	1	4.8	3	7
Career plans	Combination of private practice and academics	12	54.5	15	71.4	27	62.8
	Full-time academics	1	4.6	2	9.5	3	7
	Full-time private practice	4	18.2	4	19.1	8	18.6
	Sub-speciality interests	5	22.7	N/A	N/A	5	11.6
Years post qualification	< 5 years	N/A	N/A	8	38.1	8	18.6
	5 - 10 years	N/A	N/A	4	19	4	9.3
	10 - 15 years	N/A	N/A	2	9.5	2	4.7
	15 - 20 years	N/A	N/A	3	14.3	3	7
	>20 years	N/A	N/A	4	19	4	9.3
Level of study	First year	5	22.73	N/A	N/A	5	11.63
	Third year	8	36.36	N/A	N/A	8	18.6
	Fourth year	6	27.27	N/A	N/A	6	14
	Fifth year	3	13.64	N/A	N/A	3	7

Table 4.2 indicates that the participants consisted of registrars from institutions which granted permission for their participation as well as consultants who participated out of choice. Table 4.2 indicates that there was an equal distribution of registrar and consultants, 67.4% (n=29) were male, 27.9% (n=12) were female while 4.7% preferred not to participate in the question. Of the 29 male respondents 48.3% (n=14) were registrars and 51.7% (n=15) were consultants, while of the 27.9% female respondents 58.3% (n=7) were registrars and 41.7% (n=5) were consultants.

It was noted that 41% (n=9) of the registrars were between the ages of 30-35 and 35-40 years respectively, while 47.6% (n=13) consultants were over the age of 45. Of all the registrars, most, 36.36% (n=8) were in third year of the programme and 13.64% (n=3) in fifth year. Of the consultants, 38.1% (n=8) have been consultants for less than five years, while only 9.5% (n=2) have been working for between 10-15 years post qualification. Of all participants in the study, it was also noted that majority 69.8% (n=30) were registered or completed the 4-year traditional programme and only one 2.33% (n=1) completed a 4-year MD programme while three (7%) did a 6-year MD programme. A total of 62.8% (n=27) were interested in a combination of academics and private practice and only three (7%) were in full time academics.

Level of satisfaction with MFOS training: academic exposure

Table 4.3: Level of satisfaction of participants with academic exposure according to Course/MFOS module

Course/MFOS module		**Consultants (n=21)**		**Registrars (n=22)**	
Level of satisfaction with academic exposure		**n**	**%**	**n**	**%**
Oral pathology	Satisfied/ Yes	19	**90.5**	16	72.7
	Unsatisfied/ No	2	9.5	4	18.2
	n/a			2	9.1
Dentoalveolar Surgery	Satisfied/ Yes	20	**95.2**	20	**90.9**
	Unsatisfied/ No	1	4.8	1	4.5
	N/A			1	4.5
Preprosthetic Surgery	Satisfied/ Yes	12	57.1	10	45.5
	Unsatisfied/ No	9	42.9	10	45.5
	N/A			2	9.1
Traumatology	Satisfied/ Yes	21	**100**	20	**90.9**
	Unsatisfied/ No			1	4.5
	N/A			1	4.5
Orthognathic Surgery	Satisfied/ Yes	17	**81**	8	**36.4**
	Unsatisfied/ No	4	19	9	40.9
	N/A			5	22.7
TMJ Surgery	Satisfied/ Yes	14	**66.7**	18	**81.8**
	Unsatisfied/ No	7	33.3	2	9.1
	N/A			2	9.1
Reconstructive Surgery	Satisfied/ Yes	13	61.9	6	27.3
	Unsatisfied/ No	7	33.3	14	63.6
	N/A	1	4.8	2	9.1
Cleft Lip and Palate Surgery	Satisfied/ Yes	2	9.5	5	22.7
	Unsatisfied/ No	18	**85.7**	15	**68.2**
	N/A	1	4.8	2	9.1
Regional Reconstructive Surgery	Satisfied/ Yes	8	38.1	7	31.8
	Unsatisfied/ No	12	57.1	13	59.1
	N/A	1	4.8	2	9.1
Oncologic Surgery	Satisfied/ Yes	1	4.8	4	18.2
	Unsatisfied/ No	18	**85.7**	14	**63.6**
	N/A	2	9.5	4	18.2
Craniofacial Surgery	Satisfied/ Yes			2	9.1
	Unsatisfied/ No	20	**95.2**	16	**72.7**
	N/A	1	4.8	4	18.2
Cosmetic Surgery	Satisfied/ Yes				
	Unsatisfied/ No	21	**100**	18	**81.8**
	N/A			4	18.2

Table 4.3 indicates the level of satisfaction with *academic exposure* for a course module by registrars and consultants. The satisfaction levels of registrars with traumatology and dentoalveolar surgery was 90,9% (n=20) for both modules. While for the satisfaction levels for consultants was at 100% for traumatology and 95.2% for dentoalveolar surgery.

The satisfaction levels to academic exposure to oral pathology for consultants and registrars was 90% (n=19) and 81.8% (n=18) respectively.
On the contrary, all consultants who responded in academic exposure of five modules, not satisfied Cleft Lip and Palate Surgery, 85.7 % (n=18); Oncologic Surgery, 85.7 % (n=18), Craniofacial Surgery 95.2% (n=20) and (n=21) Cosmetic Surgery, (n=21).

Incidentally, the four modules with most dissatisfaction for consultants were also areas of dissatisfaction for registrars though with lesser percentages (Table 4.3).

Two modules experienced contrasting reports by the participants; while 81% (n=17) of consultants were satisfied with orthognathic surgery, only 36.4% (n=8) of registrars were satisfied. A similar result was noted for reconstructive surgery where most consultants 61.9% (n=13) were satisfied than registrars 27.3% (n=6).

Level of satisfaction with MFOS training: clinical exposure

Table 4.4: Level of satisfaction of participants with clinical exposure by course/module

		Consultants (n=21)		**Registrars (n=22)**	
Level of satisfaction with clinical exposure		**N**	**%**	**n**	**%**
Oral pathology	Satisfied/ Yes	21	**100**	18	**81.8**
	Unsatisfied/ No			4	18.2
	n/a				
Dentoalveolar Surgery	Satisfied/ Yes	20	**95.2**	21	**95.5**
	Unsatisfied/ No	1	4.8	1	4.5
	N/A				
Preprosthetic Surgery	Satisfied/ Yes	13	61.9	14	63.6
	Unsatisfied/ No	8	38.1	7	31.8
	N/A			1	4.5
Traumatology	Satisfied/ Yes	21	**100**	21	**95.5**
	Unsatisfied/ No			1	4.5
	N/A				
Orthognathic Surgery	Satisfied/ Yes	17	**81**	**7**	**31.8**
	Unsatisfied/ No	4	19	12	54.5
	N/A			3	13.6
TMJ Surgery	Satisfied/ Yes	12	57.1	15	68.2
	Unsatisfied/ No	9	42.9	5	22.7
	N/A			2	9.1
Reconstructive Surgery	Satisfied/ Yes	10	47.6	8	36.4
	Unsatisfied/ No	11	52.4	14	63.6
	N/A				
Cleft Lip and Palate Surgery	Satisfied/ Yes	5	23.8	7	31.8
	Unsatisfied/ No	16	**76.2**	13	**59.1**
	N/A			2	9.1
Regional Reconstructive Surgery	Satisfied/ Yes	8	38.1	9	40.9
	Unsatisfied/ No	13	**61.9**	13	**59.1**
	N/A				
Oncologic Surgery	Satisfied/ Yes	2	9.5	7	31.8
	Unsatisfied/ No	17	**81**	15	**68.2**
	N/A	2	9.5		
Craniofacial Surgery	Satisfied/ Yes	1	4.8	2	9.1
	Unsatisfied/ No	19	**90.5**	19	**86.4**
	N/A	1	4.8	1	4.5
Cosmetic Surgery	Satisfied/ Yes			1	4.5
	Unsatisfied/ No	19	**90.5**	19	**86.4**
	N/A	2	9.5	2	9.1

Table 4.4 indicates the level of satisfaction with clinical exposure by participants (Registrars and Consultants). Consultants were most satisfied with *clinical exposure* on Oral Pathology 100% (n=21), Traumatology 100% (n=21) and Dentoalveolar Surgery at 95,2% (n=20). Registrars were most satisfied with *clinical exposure* on Oral Pathology 81,8% (n=18), Traumatology 95.5% (n=21) and Dentoalveolar Surgery at 95.5% (n=21).

There is a middle-ground level of satisfaction with both consultants and registrars with regards to TMJ surgery and Pre-prosthetic Surgery. The consultants were at 57,1% (n=12) and 61,9% (n=13) respectively. Registrars recorded 68.2% (n= 15) and to 63,6% (n=14) respectively.

Two modules experienced opposite reviews in the reporting. There is a high level of satisfaction among consultants with Orthognathic Surgery 81% (n=17) in comparison to a low level 31,8% (n=7) to registrars. For reconstructive surgery consultants recorded a satisfaction rate of 68,2% (n=15) and only 36,4% (n= 8) for registrars.

Consultants were most unsatisfied with Oncological Surgery 81% (n=17), Craniofacial Surgery 90,5% (n=19) and Cosmetic Surgery 90,5% (n=19). Registrars were most unsatisfied with Oncological Surgery 68,2% (n=15); Craniofacial Surgery 86,4% (n=19) and Cosmetic Surgery 86,4% (n=19). However, the level of satisfaction of registrars in cleft lip and palate seems to better than that of consultants.

Level of satisfaction with MFOS training: procedures performed

Table 4.5: Level of satisfaction with procedures performed by participants

		Consultants (n=21)		**Registrars (n=22)**	
Level of satisfaction with procedures performed		**n**	**%**	**n**	**%**
Oral pathology	Satisfied/ Yes	21	**100**	**18**	**81.8**
	Unsatisfied/ No			4	18.2
	n/a				
Dentoalveolar Surgery	Satisfied/ Yes	21	**100**	21	**95.5**
	Unsatisfied/ No		28.6	1	4.5
	N/A				
Preprosthetic Surgery	Satisfied/ Yes	15	**71.4**	8	**36.4**
	Unsatisfied/ No	6	28.6	13	59.1
	N/A			1	4.5
Traumatology	Satisfied/ Yes	21	**100**	**22**	**100**
	Unsatisfied/ No				
	N/A				
Orthognathic Surgery	Satisfied/ Yes	16	**76.2**	8	**36.4**
	Unsatisfied/ No	5	23.8	10	45.5
	N/A			4	18.2
TMJ Surgery	Satisfied/ Yes	10	47.6	11	50
	Unsatisfied/ No	10	47.6	8	36.4
	N/A	1	4.8	3	13.6
Reconstructive Surgery	Satisfied/ Yes	10	47.6	8	36.4
	Unsatisfied/ No	9	42.9	11	50
	N/A	2	9.5	3	13.6
Cleft Lip and Palate Surgery	Satisfied/ Yes	2	9.5	3	13.6
	Unsatisfied/ No	15	**71.4**	15	**68.2**
	N/A	4	19	4	18.2
Regional Reconstructive Surgery	Satisfied/ Yes	4	19	3	13.6
	Unsatisfied/ No	13	61.9	15	68.2
	N/A	4	19	4	18.2
Oncologic Surgery	Satisfied/ Yes	3	14.3	2	9.1
	Unsatisfied/ No	14	**66.7**	**16**	**72.7**
	N/A	4	19	4	18.2
Craniofacial Surgery	Satisfied/ Yes			1	4.5
	Unsatisfied/ No	18	**85.7**	**17**	**77.3**
	N/A	3	14.3	4	18.2
Cosmetic Surgery	Satisfied/ Yes				
	Unsatisfied/ No	16	**76.2**	18	**81.8**
	N/A	5	23.8	4	18.2

This table indicates the level of satisfaction with procedure performed by participants (Registrars and Consultants) as indicated in Table 4.5. Both registrars and consultants were most satisfied with *procedures performed* in Traumatology, Oral Pathology and Dentoalveolar Surgery at 100%(n=22) and 100%(n=21); 81.8% (n=18) and 100% (n=21), 100% (n=21) and 95.5% (n=20) respectively.

There was an inverse response for Orthognathic and Preprosthetic Surgery. Consultants recorded high levels of satisfaction with results of 76.2% (n=16) and 71.4% (n=15). The registrars recorded low levels of satisfaction with 36.4% for the two respective areas. An average level was scored again same as satisfaction with clinical exposure on TMJ Surgery at 47.6% (10) for consultants and 50% (11) for registrars.

A high unsatisfactory level was recorded for performing procedures for Cleft Lip and Palate Surgery 71.4% (15) for consultants and 68.2% (15) for Registrars; Regional Reconstruction Surgery 61.9% (13) to 68.2% (15) and Oncological Surgery 66.7% (14) to 72.7% (16). Respondents revealed that very little or no procedures were performed by both consultants and registrars regarding Craniofacial Surgery and Cosmetic Surgery as their response to being satisfied with procedures performed recorded levels 0% (0) to 4.5% (1) for and 0% (0) to 0% (0), respectively.

Although there is an improvement in clinical exposure to cleft lip and palate, the actual training is still low.

Table 4.6: Participant's level of satisfaction with academic exposure, clinical exposure and preforming procedures during training (n=43).

MFOS Field of study	Academic exposure	n	%	Clinical Exposure	n	%	Performing Procedures	n	%
Oral pathology	Satisfied/ Yes	35	**81.4**	**Satisfied/ Yes**	**39**	**90.7**	**Satisfied/ Yes**	**39**	**90.7**
	Unsatisfied/ No	6	14	Unsatisfied/ No	4	9.3	Unsatisfied/ No	4	9.3
	N/A	2	4.7	N/A			N/A		
Dentoalveolar Surgery	Satisfied/ Yes	40	**93**	**Satisfied/ Yes**	**41**	**95.3**	**Satisfied/ Yes**	**41**	**95.3**
	Unsatisfied/ No	2	4.7	Unsatisfied/ No	2	4.7	Unsatisfied/ No	2	4.7
	N/A	1	2.3	N/A			N/A		
Pre-prosthetic Surgery	Satisfied/ Yes	22	52.2	Satisfied/ Yes	27	62.8	Satisfied/ Yes	23	53.5
	Unsatisfied/ No	19	44.2	Unsatisfied/ No	15	34.9	Unsatisfied/ No	19	44.2
	N/A	2	4.7	N/A	1	2.3	N/A	1	2.3
Traumatology	**Satisfied/ Yes**	**41**	**95.3**	**Satisfied/ Yes**	**42**	**97.7**	**Satisfied/ Yes**	**43**	**100**
	Unsatisfied/ No	1	2.3	Unsatisfied/ No	1	2.3	Unsatisfied/ No		
	N/A	1	2.3	N/A			N/A		
Orthognathic Surgery	Satisfied/ Yes	25	58.1	Satisfied/ Yes	24	55.8	Satisfied/ Yes	24	55.8
	Unsatisfied/ No	13	30.2	Unsatisfied/ No	16	37.2	Unsatisfied/ No	15	34.9
	N/A	5	11.6	N/A	3	7	N/A	4	9.3
TMJ surgery	Satisfied/ Yes	32	**74.4**	**Satisfied/ Yes**	**27**	**62.8**	Satisfied/ Yes	21	**48.8**
	Unsatisfied/ No	9	20.9	Unsatisfied/ No	14	32.6	Unsatisfied/ No	18	41.9
	N/A	2	4.7	N/A	2	4.7	N/A	4	9.3
Reconstructive Surgery	Satisfied/ Yes	19	44.2	Satisfied/ Yes	18	41.9	Satisfied/ Yes	18	41.9
	Unsatisfied/ No	**21**	**48.8**	**Unsatisfied/ No**	**25**	**58.1**	**Unsatisfied/ No**	**20**	**46.5**
	N/A	3	7	N/A			N/A	5	11.6
Cleft Lip and Palate Surgery	Satisfied/ Yes	7	16.3	Satisfied/ Yes	12	27.9	Satisfied/ Yes	5	11.6
	Unsatisfied/ No	**33**	**76.7**	**Unsatisfied/ No**	**29**	**67.4**	**Unsatisfied/ No**	**30**	**69.8**
	N/A	3	7	N/A	2	4.7	N/A	8	18.6
Regional Reconstructive Surgery	Satisfied/ Yes	15	34.9	Satisfied/ Yes	17	39.5	Satisfied/ Yes	7	16.3
	Unsatisfied/ No	**25**	**58.1**	**Unsatisfied/ No**	**26**	**60.5**	**Unsatisfied/ No**	**28**	**65.1**
	N/A	3	7	N/A			N/A	8	18.6
Oncologic Surgery	Satisfied/ Yes	5	11.6	Satisfied/ Yes	9	20.9	Satisfied/ Yes	5	11.6
	Unsatisfied/ No	**32**	**74.4**	**Unsatisfied/ No**	**32**	**74.4**	**Unsatisfied/ No**	**30**	**69.8**
	N/A	6	14	N/A	2	4.7	N/A	8	18.6
Craniofacial Surgery	Satisfied/ Yes	2	4.7	Satisfied/ Yes	3	7	Satisfied/ Yes	1	2.3
	Unsatisfied/ No	**36**	**83.7**	**Unsatisfied/ No**	**38**	**88.4**	**Unsatisfied/ No**	**35**	**81.4**
	N/A	5	11.6	N/A	2	4.7	N/A	7	16.3
Cosmetic Surgery	Satisfied/ Yes			Satisfied/ Yes	1	2.3	Satisfied/ Yes		
	Unsatisfied/ No	**39**	**90.7**	**Unsatisfied/ No**	**38**	**88.4**	**Unsatisfied/ No**	**34**	**79.1**
	N/A	4	9.3	N/A	4	9.3	N/A	9	20.9

Satisfaction with the MFOS scope of training: Academic exposure; clinical exposure and preforming procedures during training (N=43).

Table 4.6 reveals that collectively registrars and consultants (n=43) were highly satisfied with all aspects academic, clinical and performing the surgical procedures. The courses most participants were satisfied with included Oral Pathology (81.4%, 90.7% and 90.7%). Dentoalveolar Surgery (93%, 95.3% and 95.3%) and Traumatology (95,3%, 97.7% and 100%). TMJ surgery showed satisfaction with regards to academic exposure with 74.4% and registered 62.8% satisfaction with clinical exposure but participants were relatively even with performing the procedures.

The results also revealed that registrars and consultants were very dissatisfied with the level of academic; clinical and performing surgical procedures in the areas of Oncological Surgery (74.4%, 74.4% and 69.8%), Craniofacial Surgery (83.7%, 88.4% and 81.4%) as well as Cosmetic Surgery (90.7%, 88.4% and 79.1%).

In addition, the respondents were not satisfied with Orthognathic Surgery with a result of 58.1 (n=25), Pre-prosthetic Surgery 51,2% (n=22), and Reconstructive surgery as 51.2% (n=22), respectively.

Table 4.7: Association between academic exposure and demographic characteristics (p-values)

Academic exposure	**Age**	**Gender**	**Type of MFOS Training**	**Classification (registrars vs consultants)**
Oral pathology	0.07	0.28	0.33	0.55
Dentoalveolar Surgery	0.20	1.00	1.00	0.77
Preprosthetic Surgery	0.95	0.29	0.89	0.42
Traumatology	0.41	1.00	1.00	1.00
Orthognathic Surgery	0.28	0.89	0.66	0.00*
TMJ Surgery	0.17	0.34	0.94	0.06
Reconstructive Surgery	0.01*	0.90	0.31	0.07
Cleft Lip and Palate Surgery	0.44	0.66	0.76	0.48
Regional Reconstructive Surgery	0.88	0.82	0.92	1.00
Oncologic Surgery	0.34	0.21	0.53	0.28
Craniofacial Surgery	0.82	0.55	0.11	0.11
Cosmetic Surgery	0.32	0.43	0.36	0.11

*$p<0.05$

Association between academic exposure and demographic characteristics

There was a statistically significant association between classification and the satisfaction with academic exposure in orthognathic surgery where consultants were more likely to be satisfied with academic exposure. (p=0.00). There was a statistically significant association between age and the satisfaction with academic exposure in reconstructive surgery (p=0.01). Those that were older (>40) were more likely to be satisfied with academic exposure. (Table 4.7).

Table 4.8: Association between clinical exposure and demographic characteristics, p-values

Clinical exposure	**Age**	**Gender**	**Training**	**Classification (registrars vs consultants)**
Oral pathology	0.56	1.00	0.13	0.11
Dentoalveolar Surgery	0.32	1.00	0.22	1.00
Preprosthetic Surgery	0.81	0.40	0.71	1.00
Traumatology	0.70	1.00	0.09	1.00
Orthognathic Surgery	0.07	0.56	0.83	0.00*
TMJ Surgery	0.55	0.15	0.96	0.18
Reconstructive Surgery	0.20	0.75	0.11	0.54
Cleft Lip and Palate Surgery	0.25	0.03*	0.16	0.34
Regional Reconstructive Surgery	0.25	0.56	0.75	1.00
Oncologic Surgery	0.20	1.00	0.13	0.08
Craniofacial Surgery	0.88	0.43	0.23	1.00
Cosmetic Surgery	0.97	1.00	0.56	1.00

*$p<0.05$

Association between clinical exposure and demographic characteristics

There was a statistically significant association between classification and the satisfaction with clinical exposure in orthognathic surgery (p=0.01), consultants were more likely to be satisfied than registrars. There was a statistically significant association between gender and the satisfaction with clinical exposure in cleft lip and palate surgery (p=0.03). The males were more likely to be satisfied with clinical exposure than females (Table 4.8).

Table 4.9: **Association between procedures performed by individuals and demographic characteristics, p-values**

Procedures performed	**Age**	**Gender**	**Training**	**Classification (Registrar vs consultants)**
Oral pathology	1.00	0.43	1.00	0.11
Dentoalveolar Surgery	0.50	1.00	1.00	1.00
Preprosthetic Surgery	0.55	0.83	0.95	0.05
Traumatology	n/a	n/a	n/a	n/a
Orthognathic Surgery	0.05	0.80	0.26	0.01*
TMJ Surgery	0.49	0.57	0.86	0.68
Reconstructive Surgery	0.69	0.96	0.38	0.76
Cleft Lip and Palate Surgery	0.39	0.79	0.51	1.00
Regional Reconstructive Surgery	0.19	0.81	0.90	0.91
Oncologic Surgery	0.35	0.69	0.25	0.90
Craniofacial Surgery	0.32	0.22	0.03*	1.00
Cosmetic Surgery	0.46	0.42	0.31	0.72

*p<0.05

Association between clinical exposure and demographic characteristics

There was a statistically significant association between classification and the satisfaction with procedures performed by individual in orthognathic surgery (p=0.01). Consultants were more likely to be satisfied with performing procedure in Orthognathic surgery than registrars. There was a statistically significant association between the type of training and the satisfaction with procedures performed in craniofacial surgery (p=0.03) (Table 4.9). Only 9% of the registrars and 4.1% of the consultants indicated that they were satisfied.

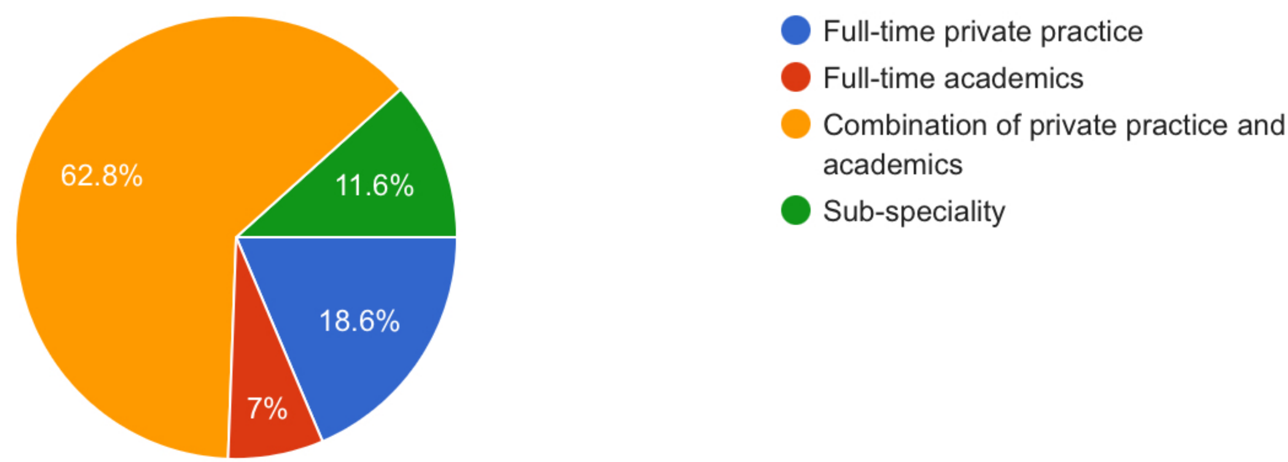

Figure 4.2 Career plans

The above figure 4.2 indicates of the participants who participated in the survey, 7% were interested in full time academics, 11.6% in subspecialisation, 11.6% in full time private practices and the majority 62.8% were interested in a combination of private practice and academic.

Do you have any interest in sub-speciality?

Majority of the participants (72.09%) indicated having an interest in a sub-speciality (Figure 4.3).

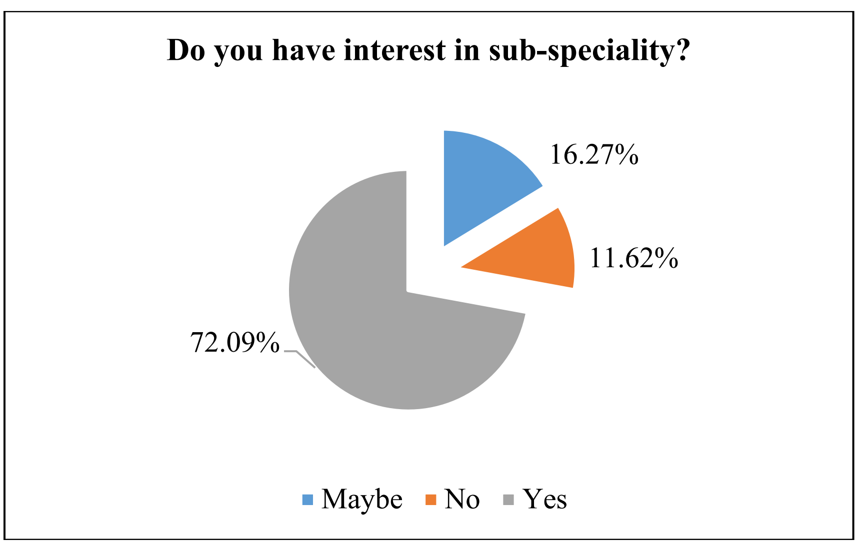

Figure 4.3: Level of interest in sub-speciality. (n=43)

Do you have a dual qualification in dentistry / medicine?

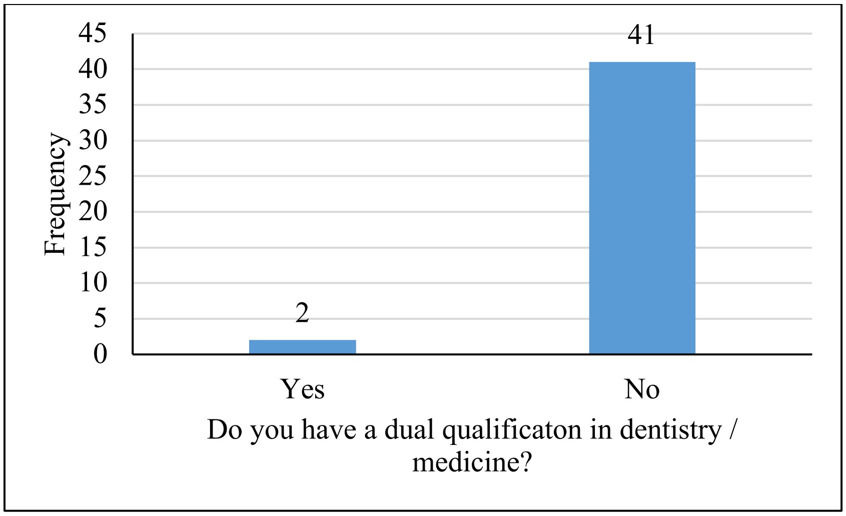

Figure 4.4: Dual qualification

The above figure shows that only 5 % (n=2) of the participants were dually qualified and 95% (n=41) had a single qualification and were dentists.

The most common sub-specialities of interest indicated were – cleft lip and palate surgery (32.6%), orthognathic surgery (20.9%), oncological surgery (20.9%) and traumatology (18.6%) (Figure 4.5).

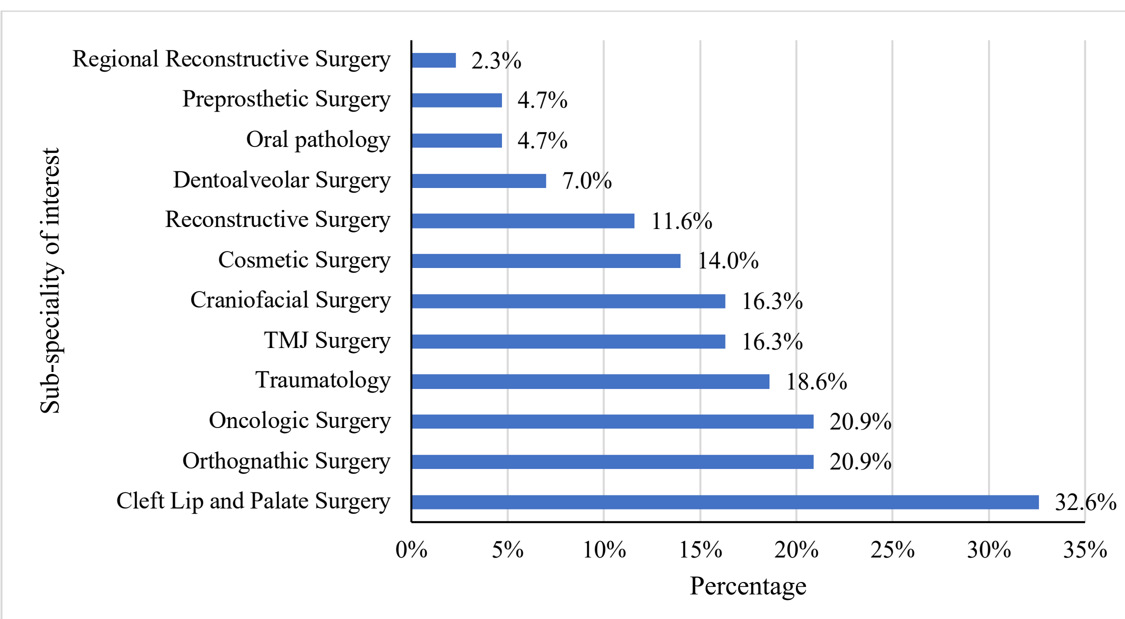

Figure 4.5: Areas of sub-speciality interest

Association between level of satisfaction with academic exposure and intended field of sub-specialisation

There was a statistically significant association between level of satisfaction with procedures in TMJ surgery and interest in Cleft Lip and Palate Surgery speciality (p=0.03) and Craniofacial Surgery (p=0.02) (Table 4.10).

Table 4.10: Association between level of satisfaction with *academic exposure* and intended field of sub-specialisation, are these p-values?

Procedures performed	**Oral pathology**	**Dentoalveolar Surgery**	**Preprosthetic Surgery**	**Traumatology**	**Orthognathic Surgery**	**TMJ Surgery**	**Reconstructive Surgery**	**Cleft Lip and Palate Surgery**	**Regional Reconstructive Surgery**	**Oncologic Surgery**	**Craniofacial Surgery**	**Cosmetic Surgery**
Oral pathology	1.00	0.47	1.00	0.04	0.43	1.00	1.00	0.20	1.00	0.75	1.00	1.00
Dentoalveolar Surgery	1.00	0.20	1.00	1.00	1.00	1.00	1.00	0.24	n/a	0.24	0.06	1.00
Preprosthetic Surgery	0.54	0.64	0.54	0.80	0.82	0.36	0.73	1.00	1.00	0.44	0.20	0.55
Traumatology	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.10	n/a	0.38	0.02	1.00
Orthognathic Surgery	0.64	0.68	0.64	0.22	0.12	0.72	0.81	0.41	1.00	0.87	0.33	0.44
TMJ Surgery	1.00	1.00	0.45	0.78	0.79	0.31	0.66	**0.03***	1.00	0.48	**0.02***	1.00
Reconstructive Surgery	1.00	0.18	1.00	0.84	0.51	0.34	1.00	0.78	0.51	0.86	0.10	0.16
Cleft Lip and Palate Surgery	0.42	1.00	1.00	0.37	0.24	1.00	1.00	0.84	1.00	0.51	0.09	0.73
Regional Reconstructive Surgery	1.00	1.00	0.25	0.23	0.86	1.00	0.75	0.77	0.42	0.60	0.11	1.00
Oncologic Surgery	0.24	1.00	1.00	0.45	0.49	0.15	0.15	0.31	1.00	0.59	0.40	0.80
Craniofacial Surgery	1.00	1.00	1.00	0.71	1.00	0.70	0.61	0.13	1.00	0.57	0.32	1.00
Cosmetic Surgery	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.19	0.12	1.00

*p<0.05

Association between level of satisfaction with *clinical exposure* and intended field of sub-specialisation

There was a statistically significant association between level of satisfaction with cleft lip and palate surgery and interest in sub-specialisation in reconstructive surgery speciality (p=0.04) (Table 4.11).

Table 4.11: Association between level of satisfaction with clinical exposure and intended field of sub-specialisation

Procedures performed	**Oral pathology**	**Dentoalveolar Surgery**	**Preprosthetic Surgery**	**Traumatology**	**Orthognathic Surgery**	**TMJ Surgery**	**Reconstructive Surgery**	**Cleft Lip and Palate Surgery**	**Regional Reconstructive Surgery**	**Oncologic Surgery**	**Craniofacial Surgery**	**Cosmetic Surgery**
Oral pathology	1.00	1.00	1.00	1.00	0.56	0.52	1.00	0.59	1.00	1.00	1.00	1.00
Dentoalveolar Surgery	1.00	0.14	1.00	1.00	0.38	1.00	0.22	1.00	1.00	0.38	1.00	1.00
Preprosthetic Surgery	0.55	0.34	0.55	1.00	0.40	0.35	0.41	0.82	1.00	1.00	1.00	0.28
Traumatology	1.00	1.00	1.00	1.00	0.21	1.00	0.12	1.00	1.00	0.21	1.00	1.00
Orthognathic Surgery	0.58	0.41	0.58	0.14	0.86	1.00	0.57	0.18	1.00	0.86	0.32	1.00
TMJ Surgery	0.58	0.60	1.00	0.05	0.81	1.00	0.25	0.04	1.00	0.81	0.57	1.00
Reconstructive Surgery	1.00	0.07	1.00	0.43	0.71	0.68	1.00	0.52	0.42	0.71	0.43	0.22
Cleft Lip and Palate Surgery	0.55	0.61	1.00	0.01	0.52	0.76	**0.04***	0.13	1.00	0.52	1.00	0.74
Regional Reconstructive Surgery	1.00	1.00	0.15	0.12	0.45	0.41	1.00	1.00	0.40	1.00	1.00	1.00
Oncologic Surgery	0.45	0.60	1.00	0.78	1.00	0.75	0.10	0.61	1.00	0.15	0.75	0.70
Craniofacial Surgery	1.00	1.00	1.00	1.00	0.71	1.00	1.00	0.32	1.00	1.00	1.00	1.00
Cosmetic Surgery	1.00	1.00	1.00	0.65	1.00	1.00	0.48	0.16	1.00	0.36	1.00	1.00

*p<0.05

Association between level of satisfaction with *procedures performed* and intended field of sub-specialisation

There was no significant association between level of satisfaction with procedures performed and intended field of sub-specialisation (Table 4.12).

Table 4.12: Association between level of satisfaction with procedures performed and intended field of sub-specialisation

Procedures performed	Oral pathology	Dentoalveolar Surgery	Preprosthetic Surgery	Traumatology	Orthognathic Surgery	TMJ Surgery	Reconstructive Surgery	Cleft Lip and Palate Surgery	Regional Reconstructive Surgery	Oncologic Surgery	Craniofacial Surgery	Cosmetic Surgery
Oral pathology	1.00	1.00	1.00	1.00	0.56	0.52	1.00	1.00	1.00	1.00	1.00	1.00
Dentoalveolar Surgery	1.00	0.14	1.00	1.00	1.00	0.30	1.00	1.00	1.00	1.00	1.00	1.00
Preprosthetic Surgery	0.52	1.00	1.00	0.22	0.77	1.00	0.69	0.67	0.47	0.59	0.25	0.72
Traumatology	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Orthognathic Surgery	0.60	0.46	1.00	0.19	0.86	0.45	1.00	0.40	0.44	0.45	0.37	0.24
TMJ Surgery	0.58	1.00	0.09	0.10	0.39	0.47	0.08	0.15	0.51	0.47	0.24	0.82
Reconstructive Surgery	1.00	0.16	0.22	0.28	0.32	0.62	1.00	0.58	1.00	0.38	0.51	0.46
Cleft Lip and Palate Surgery	1.00	1.00	0.52	0.70	0.71	0.27	1.00	0.41	1.00	0.24	1.00	1.00
Regional Reconstructive Surgery	1.00	0.49	0.33	0.53	0.87	0.34	0.81	0.90	1.00	0.23	0.60	0.81
Oncologic Surgery	0.25	0.39	0.52	0.70	0.71	0.16	0.77	0.24	1.00	0.19	0.82	0.81
Craniofacial Surgery	1.00	1.00	0.34	0.68	0.71	0.44	1.00	0.46	1.00	0.46	1.00	1.00
Cosmetic Surgery	1.00	1.00	0.38	1.00	0.37	0.31	0.28	0.69	1.00	1.00	0.31	1.00

*$p<0.05$

Chapter 5

5.1 Discussion

The response rate of the current study was approximately 47,8% which is slightly better than the study conducted by Aziz et al. (2013), which had a response rate of 44%. In contrast, a study conducted by von Websky et al. (2012), in Germany, UK and Switzerland focusing on the satisfaction of surgery registrars (residents), had a total response rate of 23% of 2039 invites. (n=469), with different rates between the 3 countries (Germany 25%, UK 14%, Switzerland 37%). A study conducted by Laskin et al. (2003), in USA in determining the satisfaction of the programme selection had a response rate of 30.8%. However, a study conducted in Canada by Gigliotti et al. (2015), yielded an 88.9% (n=32) response rate of the survey whilst Takahashi (2009) had a response of 74.9% (n=1124) which are significantly higher than in the current study[29]. The difference in the response rate may be attributed to many different reasons such as type of survey, time to complete the survey and method of distribution (online versus face to face). Yan and Fam (2010) reported the electronic surveys generally have a response rate of 11% when compared to self-administered questionnaire survey methods[37]. It has been noted that it is generally difficult to receive adequate response rates in surveys from medical practitioners. This could be due to many factors including the busy schedule[34]. The initial plan in this study was to have self-administered questionnaire and emailed link responses. Due to COVID-19 during the data collection process, only the email option was used to complete the questionnaire. This could have had a bearing on the response rate, as the non-contact communication increased dramatically during this period. Cronbach's alpha (α) was used to determine the internal consistency of the questionnaire. The results ranged from 0.64 to 0.9 between the questions, indicating that the questionnaire had a good internal consistency, thus being highly reputable. The study conducted by Atassi et al. (2018), had score averaging 0.84 – 0.90 which indicated a high internal consistency. In comparison the present study indicates a good result for academic exposure and performance of surgical procedure. The internal consistency of clinical exposure was moderate at 0.64. This tool is reliable as the study has an overall Cronbach alpha score of 0.91.

5.2 Age

In this study, it was noted that amongst consultants, 71% (15) were above the age of 40 years whereas 82% (n=18) of registrars were between the age of 30-40 years old. The study by Aziz et al. (2013), had a comparable average age of 32 years of age amongst registrars. The study by Zeller et al. (2020), reported an average age of 32.15 (+- 0.75) years and Von Websky et al. (2012), reported in a study to have a range between 25-46 years of age which were registrars. This study indicates that the bulk of the registrars were below the age of 40. Thus, it can be surmised that this age range allows registrars to practice in the system for a longer period of time post qualification. Interestingly, the dual qualification programme does not seem to have an adverse impact in the age of the registrars. This lack of difference in age of the registrar could be caused by the fact that some dentists practise as general dentist for a number of years before embarking on registrarship while dual qualified dentists tend continue with medicine or dentistry soon after completing the first degree.

5.3 Gender

The majority of participants in the present study were males at 67.4% (n=29) with only 27.9% (n=12) of the participants were female. This finding reflects an improvement in the female composition of the total number of MFOS specialists registered with HPCSA in South Africa (188 registered specialists, of which 10% are female). This improvement could be a reflection of the political dispensation that encourages equity in employment. The outcome of this study compares favourably with other international studies (Arya et al. (2021), Pabst et al. (2019) and von Websky et al. (2012).

Arya et al. (2021), regarding the number of women in other surgical disciplines, in the US, general surgery -22%, plastic surgery -17%, vascular surgery -15%, neurosurgery -9%, thoracic surgery -8% and orthopaedic surgery -6%[38].

The findings of the current study correspond with a study by Pabst et al. (2019), in Germany which found that many of the respondents 68% (n=53/73) were male and 27% (n=20/73) were female. The study conducted by von Websky et al. (2012), Switzerland; 74% of 477 respondents were male and 26% female. The findings of Aziz et al. (2013), in USA indicated 90.4% (n=85) of the participants were male. Marti et al. (2017) found in a study conducted in the USA that of the MFOS enrolled registrars, that 13% of 267 registrars were female. Additionally, the authors found that during the period of 2000-2009; 13% of the graduates were female and in 2015, only 6.6% (n=422) of registered MFOS consultants were female. Rostami et al. (2010) documented an increase of female entering the MFOS programme of 2% from 1999 to 2010. This is a positive indication as the duration of the course is seen as deterrent. In this study both registrars and consultant groups are male dominated. In the countries where the pathway of study requires a dual qualification before enrolment of MFOS, a low female enrolment is expected. However, one would expect an elevated female enrolment as the study requirement is a single degree in dentistry. This issue should be reviewed so as to establish why there is a low female enrolment.

The long training period to qualify in MFOS could be a deterrent to females, especially those who are interested in starting a family, as the dual degree pathway could affect their reproductive years. The extended working hours could also serve as a deterrent for those females that have families. Patriarchal society in Africa could also have had bearing on the number of females in the past entering the programme, compared the US which would be considered a liberal society for a far longer period. The number of females currently as registrars compares favourably with studies of von Websky and Pabst which are based in Europe. The current increased number of female registrars indicate the countries attempt to rectify gender in-equalities of the past. This, and previous studies conducted indicate a male dominance in the field of MFOS. The recruitment process of registrars may also have a bearing on these numbers.

5.4 Training Programme

In this study, 69.8% of the participants were enrolled in the 4-year traditional programme, 36.4% of registrars who participated were in their third year of the programme with 13.6% in the fifth year. Approximately 20% of consultants were within 5 years of graduation from the programme. The time spent in the programme could have influenced the responses, as longer training period could ensure that registrars, were exposed to much more procedures.

This study appears to confirm that MFOS in South Africa is primarily a dental speciality, as only 4.7 % (n=2) of the respondents were dually qualified. The individuals who completed the medical degrees could have done so to improve the chance of being accepted into the programme or completed the medical degree first and required the dental component to be considered for acceptance.

5.5 Satisfaction

In a study by Laskins et al. (2003), the satisfaction of the type of programme was evaluated, including the standard 4-year or MD integrated programme. The participants had to indicate if they were satisfied at that point or whether they would have chosen a different pathway. In this study 70% of participants indicated they would not change the selected program only 25% indicated hey would have a different program. The study conducted by Von Websky et al. (2012) indicted the 67% of participants were satisfied with their current situation. The current study investigated the modules individually, in terms of academic, clinical and procedural exposure.

Participants appeared to be very satisfied with the areas of expertise in all the parameters, namely academic, clinical and procedural exposure. They were particularly satisfied in the fields of dento-alveolar surgery, TMJ, traumatology and oral pathology. In the field of preprosthetic surgery which is considered to be in a particular category of expertise, the registrars recorded a low 38% satisfaction. The low level of satisfaction could be due to unavailability of the patients in the training institutions and associated costs of these procedures. The improvement of materials and awareness programs for patient could result in a decreased need for these services. The knowledge of available treatment options may be limited to small parts of the community. The excessive amount of time taken to complete the total rehabilitation of the patients could also be a deterrent.

All the above-mentioned factors would ultimately affect the exposure that registrars receive. The result suggests that a concerted effort had to be undertaken to ensure that these figures are adjusted to a higher level of satisfaction as this fall into a category of expertise. Measures need to be under-taken to ensure that this area of expertise is thoroughly covered. Unfortunately, during the period of responses to questionnaires, the country was faced with the COVID-19 pandemic and non-emergency procedures had to be postponed. This probably had a negative bearing on registrar responses, especially those who were in the middle of the programme.

Another finding showed that there was lower level of satisfaction (36.4% in academic exposure, 31.8% in clinical exposure and 36.4% in procedures performed) expressed by registrars compared to (81% in academic exposure, 81% in clinical exposure and 76.2%in procedures performed) consultants in the module of Orthognathic Surgery. While in Preprosthetic surgery (45.5% in academic exposure, 63.6% in clinical exposure and 36.4%in procedures performed) for registrars and (57.1% in academic exposure, 61.9% in clinical exposure and 71.4% in procedures performed) recorded by consultants. The satisfaction levels in Orthognathic surgery could be influenced by the fact that registrars are exposed to the procedures later on in the course. The registrars who answered the question were at different levels of their studies.

Consultants did however record a higher level of satisfaction in Preprosthetic surgery in procedures performed and orthognathic surgery. Factors contributing to this could be the increase in costs of treatment over the years between the two groups. This field requires collaborative effort with department orthodontics. The medical aid changes that occurred over the years together with gate keeping measures on procedures has affected the cost to patients over the years. The very low levels of satisfaction with clinical and procedure exposure are an indication for the need for sub-specialisation in the field.

The other area of concern which had recorded low satisfaction between consultants and registrars was regional reconstructive surgery. This could be due an overlap (grey area) with plastic surgery. There is also a skills shortage in this field which limits the exposure of registrars. It is assumed that preference may unintentionally be given to registrars by the plastic surgery department. A suggestion would be for the inclusion of a course in microvascular surgery as an area of sub specialisation.

There was higher satisfaction amongst registrars compared to consultants in the module of TMJ surgery. This was a significant increase, which can be attributed to the advancement in the treatment planning and management of such conditions. An increase in skill availability to ensure that registrars are better exposed to this field could have resulted in the difference in the level of satisfaction between the two groups. The availability of companies who sponsor TMJ components to registrars and the possible competitive prices amongst companies allowing easier access and affordability to patients could be the reason why registrars were exposed to more procedures in TMJ. TMJ surgery does not only include joint replacement, but it also includes other conditions such as TMD. TMJ reconstruction is unfortunately not a common phenomenon is this part of the world.

Ongoing feedback can provide students with the opportunity to give an update on the progress of the programme. This may result in improvements to the academic programme and increased retention[12]. A common view is that satisfied students are more likely to be loyal to the universities, thus remaining in the programme and possibly maintaining contact and support of an institution after graduation[12]. In a study conducted by Aziz et al. (2013) registrars and consultants, felt that research was useful in motivating those who were considering a career in academics but did not have much influence on candidates interested in private practice. The registrars in the study did indicate that they found the allocated research time as insufficient[13].

Exposure and experience in the various divisions of the clinical practice within MFOS is largely dependent on the geographical location, e.g., road traffic accidents and pathology. It may also be dependent on the most prevalent cases present in the clinic, e.g., specific pathologies in certain groups of people or influenced by environmental factors. The type of programme which the individuals have completed ranges between 4-6 years. It could be that individuals who were at the institutions for longer period were exposed to a greater scope of practise, relating to time spent as registrars.

5.6 Career Plans

In this study it was found that a total of 72.9% participants were interested in sub-specialisation across the modules, while 16.27% were unsure and 11.62% were not interested. It was also found that 62.8% were interested in a combination of private and academic practice, 18.6% full time private practice, 11.6% sub-specialisation and 7% involved in full time academics. When compared with the study conducted by Aziz et al, (2013), 55.3% of the participants intended to go into full-time private practice, 28.7% combine private and academic career, 7.4% planned sub-specialisation (fellowship), 5.3% full time academic and 3.2% planned a military career. Drugan et al. (2004) found that 47% of 257 participants in his study intended to work in a Public Hospital and only 21% indicated that they would consider an academic career[14].

Walker and co-authors conducted a study in which 76.6 % of participants indicated an interest in completing a fellowship course. Areas of interest were: 62.6 % in trauma compared to 18.6% in the current study, 52.7% oncological surgery, 45.1% facial aesthetics, 23.1% dentoalveolar surgery, 23.1% craniofacial surgery, 20.9% cleft lip and palate surgery and only 7.7% indicated interest in TMJ surgery. In the current study, participants showed an interest in different areas of sub-specialisation these included cleft-lip and palate surgery 32.6% (n=14). Orthognathic and Oncologic surgery each attracting an interest of 20.9% (n=9). Of the participants who were part of the study conducted by Walker, only 20.9% were interested in an academic career. One in twelve graduates entered academic positions with at least half of all the registrar programmes having no graduates entering the academic field[13]. The academic field is of vital importance to ensure that students receive adequate training to qualify and for the advancement of the profession.

The areas to which an individual is exposed can affect their interest and choice of subspecialisation. This suggests the need for subspecialisation in areas which included cleft lip and palate surgery as well as craniofacial surgery. It was interesting to note that some areas with least satisfaction for academic exposure, clinical exposure and the procedures performed, had the greatest interest in term of subspecialisation. The lack of exposure in these specific fields could be what sparked an interest for the participants.

5.7 Limitations

The sample size for this study was small despite the efforts by the principal investigator to send reminders in the form of emails to the HOD of the institutions. The results of the findings are thus true for the current cohort and setting and may not be extrapolated to other settings.

The responses of the participants relied on their memory which might introduce recall bias- the older consultants recall bias was anticipated due to period of qualification and could not be avoided. A disadvantage was that consultants in the study were previously or currently affiliated with the institutions only. It is recommended that future studies should include all registered consultants and not just individuals affiliated to the institutions.

5.8 Summary Findings

1. Registrars were generally satisfied in the fields of Oral Pathology, Traumatology, and Dentoalveolar surgery which are considered crucial to the field of expertise. They were satisfied with all aspects of academic, clinical and procedural exposure.
2. Consultants were very satisfied with Oral Pathology, Dentoalveolar surgery and traumatology, followed by Orthognathic and preprosthetic surgery.
3. Registrars as well as consultants were least satisfied with areas such as craniofacial surgery, cosmetic surgery, oncologic surgery, cleft lip and palate surgery.
4. The areas of greatest interest for sub-specialisation included those areas the participants felt least satisfied perhaps, due to less exposure. These were fields of cleft lip and palate surgery, oncologic surgery and orthognathic surgery.

5.9 Conclusion

Registrars and consultants were very satisfied in the areas of expertise across the academic, clinical and procedural exposures. These areas included Oral pathology, Dentoalveolar surgery and traumatology. There was a relatively even distribution in the areas of competence, which included Orthognathic and TMJ surgery. The participants were dissatisfied in areas of familiarity across academic, clinical and procedural exposure, which included Cosmetic, Craniofacial, Oncological, Cleft Lip and Palate surgery. The greatest interest for subspecialisation was in the fields Cleft lip and Palate, Oncologic and Orthognathic surgery.

Satisfaction in the education/teaching environment is a key factor for effective and productive employees. Equally, clients who require surgery put their trust in the practitioner to provide a professional service. It therefore becomes incumbent on institutions to ensure that graduates are up to the task. Since the satisfaction rates of registrars was limited in this study, further studies into what affects and drives the satisfaction within the programme should be explored further.

In addition, student feedback enables institutions to benchmark their performance and track their progress and provides information useful for meaningful recruiting. The importance of programme appraisal was emphasized with delegation of responsibility to ensure that standards are met and maintained[12].

5.10 Recommendations

1. The MFOS training institutions should conduct regular surveys to evaluate whether the programme meets the expected level of medical standards for the educators and students. Regular evaluations and feedback will help institutions keep abreast of new developments and best equip registrars to cope in the field of specialisation. It would also allow the department within institutions to assist the registrars to maximize their time while in the programme.
2. Rotations should be arranged with fellow public institutions or private practices which offer the services that the registrars are not adequately exposed to. Collaborations and interdepartmental rotations with other departments such as the Plastic Surgery and ENT should be explored and formalised.
3. The current programme is 4 years with a rotational minimal of 9 months which are spent outside of the department. An extension of the programme to 5 years could be essential to ensure that registrars are adequately equipped to cope with all aspects of the scope of practice. This may be costly on departments initially, but it will ensure that competent consultants treat patients and have a broader spectrum of knowledge and skills in the field of Maxillofacial and Oral Surgery.
4. Further investigations and more in-depth studies are recommended to understand the reasons behind registrars' dissatisfaction and other challenges with the programme. This will allow educational institutions the opportunity to evaluate the current educational

concepts. Modifications to the program could be made if required to ensure that registrars receive the maximum knowledge and technical skills from the programme.

5. Future plans, with regards to available fellowship programmes both local and abroad could be explored to enhance exposure to different scenarios.
6. Consider a comprehensive fellowship in orthognathic surgery. Fellowships in oncology, craniofacial and cosmetic surgery abroad are strongly recommended.
7. Student exchange programmes should be arranged by institutions of higher learning to broaden registrar's experiences.

5.11 Declaration of interest

None.

5.12 Funding

None

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Annexure A

WITS UNIVERSITY

The level of satisfaction of registrars and recently qualified specialist surgeons with the maxillofacial program.

Overview:

My name is Brent Marlan Haines. I am a registrar in the Department of Maxillo-Facial and Oral Surgery of the University of Witwatersrand. I am currently conducting a study entitled: **The level of satisfaction of registrars and recently qualified specialist surgeons with the maxillofacial program.**
I have permission from the University of the Witwatersrand, Human Research Ethics Committee (Medical) with number M190707, and the Head of Oral Health sciences, Professor S Nemutandani.

My study involves evaluation the satisfaction levels of registrars and recently qualified specialists with the program. I would like to invite you to participate in my study in order to improve the departmental protocols. If you agree to participate, you will be requested to complete a consent form. Participation in the study is purely voluntary and confidential. There will be no personal benefit to you from your participation, but I hope that by your participation in the study, the department will be able to influence curriculum and assist the department

I'm inviting you to take part in this research study, by please filling in the following questionnaire. This will take about 10 minutes of your time. The questionnaire consists of closed ended questions requiring you to mark an "X" at the part relevant to you and appropriate answer. Please return the questionnaire to me via email or by hand.

There are no risks involved in participating. Participation is voluntary, refusal to participate or discontinue participation will not be held against you. All information will be anonymous and treated as strictly confidential.

Should you wish to know more about this research you may contact me on 082 0844 076 or email brent.marlan@gmail.com You may also contact my supervisor's Dr. Mabongo on 011 717 2243 or email Mzubazi.M abongo@wits.ac.za, Dr. Y Kolisa on 011 717 2247 or email Yolanda.Kolisa@wits.ac.za.

The outputs of the study will be shared with you once completed.

Contact details of HREC administrator and chair:

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee"). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.
If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Date: May 2019

Annexure B

OMS CHIEF RESIDENT SATISFACTION SURVEY from Aziz, Ziccardi, and Chuang. Training in OMS Residents. J Oral Maxillofacial Surgery 2013.

1. **Gender**
   a. Male
   b. Female

2. Age (fill in) _________

3. Type of OMS training

a. 4-yr traditional
b. 6-yr MD integrated
c. 4-yr MD option
d. OMS/PhD
e. OMS/MD/PhD
f. Other

4. Career plans

a. Full-time private practice
b. Full-time academics
c. Combination of private practice and academics
d. Sub-speciality

5. Are you satisfied with your OMS training?
Satisfaction with Academic exposure- lectures, seminar and presentations.

	Satisfied/ Yes	Unsatisfied/ No	Not applicable N/A
Oral Pathology			
Dentoalveolar surgery			
Preprosthetic surgery			
Traumatology.			
Orthognathic surgery			
TMJ surgery			
Local Reconstructive surgery			
Cleft lip and palate surgery			
Regional reconstructive surgery			
Oncologic surgery			
Craniofacial surgery			
Cosmetic surgery			

Satisfaction with Clinical Exposure to procedures- theatre observations and assisting.

	Satisfied/ Yes	Unsatisfied/ No	Not applicable N/A
Oral Pathology			
Dentoalveolar surgery			
Preprosthetic surgery			
Traumatology			
Orthognathic surgery			
TMJ surgery			
Local Reconstructive surgery			
Cleft lip and palate surgery			
Regional reconstructive surgery			
Oncologic surgery			
Craniofacial surgery			
Cosmetic surgery			

Procedures performed by individual.

	Satisfied/ Yes	Unsatisfied/ No	Not applicable N/A
Oral Pathology			
Dentoalveolar surgery			
Preprosthetic surgery			
Traumatology.			
Orthognathic surgery			
TMJ surgery			
Local Reconstructive surgery			
Cleft lip and palate surgery			
Regional reconstructive surgery			
Oncologic surgery			
Craniofacial surgery			
Cosmetic surgery			

6. Do you have any interest in sub-speciality?

a. Yes
b. No

7. If you answered yes to question 6, what is your field of interest?

a. Oral Pathology
b. Dentoalveolar surgery
c. Preprosthetic surgery
d. Traumatology
e. Orthognathic surgery
f. TMJ surgery
g. Reconstructive surgery
h. Cleft lip and palate surgery
i. Regional reconstructive surgery
j. Oncologic surgery
k. Craniofacial surgery
l. Cosmetic surgery

8. Do have a dual qualification Dentistry/ Medicine?

a. Yes
b. No

9. If you answered yes to question 8, which did you complete first?

a. Dentistry
b. Medicine

10. Current level as registrar: _______year.

11. Current years post qualification.

< 5		5 - 10		10 - 15		15 - 20		> 20	

Annexure C

Consent Form

I hereby consent to participate in the study conducted by Dr. Brent Marlan Haines (Maxillo-Facial and Oral Surgery registrar) titled: **Training satisfaction, and career plans of Maxillofacial and Oral Surgery registrars and newly qualified consultants in South Africa.**

I have been adequately informed about the study. I understand that the participation is voluntary and that my privacy and rights shall be protected at all times.

Participant Signature: ______________________ Date: ____________

Research investigator: ______________________ Date: _____________

Annexure D

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

R14/49 Dr BM Haines

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M190707

NAME: **(Principal Investigator)**	Dr BM Haines
DEPARTMENT:	School of Oral Health Sciences Department of Maxillofacial and Oral Surgery Dental School University
PROJECT TITLE:	Training satisfaction and career plans of Maxillofacial and Oral Surgery registrars and consultants in South Africa
DATE CONSIDERED:	2019/07/26
DECISION:	Approved conditionally
CONDITIONS:	This approval applies to the Dental Schools at the Universities of the Witwatersrand and Pretoria only; further institutions may be considered if ethics and management approval is presented to the HREC (Med)
SUPERVISOR:	Dr Y Kolisa
APPROVED BY:	CB Penny Dr CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	2020/01/17

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

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the 3rd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.
I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **July** and will therefore reports and re-certification will be due early in the month of **July** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

____________________ ________________
Principal Investigator Signature Date

PLEASE QUOTE THE CLEARANCE CERTIFICATE NUMBER IN ALL ENQUIRIES

Annexure E

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

FACULTY OF HEALTH SCIENCES

School of Oral Health Science

Department of Oral Biological Sciences, 7 York Road, Parktown, 2193. Tel: 011 717 2045 Fax: 086 553 3890 Email: Julitha.Molepo@wits.ac.za

31 January 2020

Dr B. Haines
Maxillofacial and Oral Surgery
Faculty of Health Sciences
University of the Witwatersrand
Johannesburg

RE: PERMISSION TO CONDUCT RESEARCH

REFERENCE: HRRC/January/01/2020

It is my pleasure to grant final approval to conduct your research at Wits Oral Health Centre titled "Training satisfaction and career plans of Maxillofacial and Oral Surgery registrars and consultants in South Africa".

The Hospital Research and Risk Committee allocated a unique reference number to this application – Kindly quote this reference number in all future correspondence regarding this research.

Please note that the Hospital Research and Risk Committee should be informed of the estimated date the research will commence, as well as regular status reports until the research has been concluded. Within a month after conclusion of the research project, a written report must be submitted to the Head of School/CEO, summarizing the final result/outcome as well as the recommendations made based on the research concluded.

Regards,

WITS ORAL HEALTH CENTRE
Faculty of Health Sciences
7 York Rd Parktown, 2193
03 FEB 2020
CEO Prof M S Nemutandani
SCHOOL OF ORAL HEALTH SCIENCES

Prof M. S Nemutandani
CEO/Head of School
Date:

Annexure F

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

7 York Road, Parktown, 2193 South Africa • Telegrams "Witsmed" • Telephone (011) 717-2000 • Fax (011) 484-2717

Department of Maxillo-Facial and Oral Surgery
Tel: 0117172130
E-Mail Address: liza.huygen@wits.ac.za

18 October 2019

Dr B Haines
Maxillo-Facial and Oral Surgery

PROTOCOL APPROVAL: DENT 2019/29

I would like to inform you that your protocol, as recommended by the Research Committee, has been approved by the Chair of School.

Title: "Training satisfaction and career plans of Maxillo-Facial and Oral Surgery registrars and consultants in South Africa"

Good luck with your research.

PROF E RIKHOTSO
HOD
MFOS

Annexure G

SEFAKO MAKGATHO HEALTH SCIENCES UNIVERSITY

Postgraduate Studies, Research Development, Integrity & Ethics
Sefako Makgatho University Research Ethics Committee (SMUREC)

Dr BM Haines
18 Cane Ridge Mewsnaco Estate
Kingsbrugh
4126

Dear Dr BM Haines

RE: DR BM HAINES – PERMISSION TO CONDUCT STUDY AT SEFAKO MAKGATHO HEALTH SCIENCES UNIVERSITY (SMU)-ORAL HEALTH CENTRE

SMUREC **NOTED** your letter requesting permission to a conduct a study at the SMU-Oral Health Centre.

SMUREC **NOTED** that the researcher has already received ethical approval from the University of the Witwatersrand, Human Research Ethics Committee (Medical).

Study Title:	Training Satisfaction, and career plans of Maxillofacial and Oral Surgery Registrars and Consultants in South Africa
Researcher:	Dr BM Haines
University:	University of the Witwatersrand
Protocol Reference No.:	M190707
Approval letter date:	06 September 2019

SMUREC provided reciprocal **APPROVAL** for the above mentioned study to be conducted at the SMU-Oral Health Centre.

Yours Sincerely,

PROF C BAKER
CHAIRPERSON

05 March 2020

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Pretoria, Gauteng
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Email: lorato.phiri@smu.ac.za

Chairperson:
Prof LM Sykes
Members:
Prof SM Dawjee
Prof A Bhayat
Dr PD Brandt
Dr S Naidoo
Dr T Madiba
Dr C Davidson
Secretary:
Ms C Swart

RESCOM
School of Dentistry
Faculty of Health Sciences

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

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leanne.sykes@up.ac.za
christa.swart@up.ac.za

Drs B Haines 2019-10-10

PROTOCOL APPROVAL: DENT 2019/29

We would like to inform you that your protocol, as recommended by the Research Committee, has been approved by the Chair of School.

Title: "Training satisfaction and career plans of Maxillo-Facial and Oral Surgery registrars and consultants in South Africa".

Good luck with your research!

LMSykes

PROF L SYKES
CHAIRPERSON: RESEARCH COMMITTEE

Annexure I

Dr

ORIGINALITY REPORT

6%	4%	4%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	hdl.handle.net Internet Source	1%
2	R. John Tannyhill, Michael Baron, Maria J. Troulis. "Do Graduating Oral-Maxillofacial Surgery Residents Feel Confident in Practicing the Full Scope of the Specialty?", Journal of Oral and Maxillofacial Surgery, 2020 Publication	1%
3	wiredspace.wits.ac.za Internet Source	1%
4	www.tandfonline.com Internet Source	1%
5	Shahid R. Aziz, Vincent B. Ziccardi, Sung-Kiang Chuang. "Training Satisfaction Versus Dissatisfaction Among Chief Residents in Oral and Maxillofacial Surgery—A Pilot Survey", Journal of Oral and Maxillofacial Surgery, 2013 Publication	1%
6	Sanjeev Kumar. "Training Pathways in Oral and Maxillofacial Surgery Across the Globe—A	1%

Mini Review", Journal of Maxillofacial and Oral Surgery, 2017
Publication

7	"Demographics, training satisfaction, and career plans of Canadian oral and maxillofacial surgery residents", International Journal of Oral and Maxillofacial Surgery, 2015 Publication	1 %

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