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ANAESTHESIOLOGY REGISTRARS' EXPERIENCE OF THEIR TRAINING AT THE UNIVERSITY OF THE WITWATERSRAND: A QUALITATIVE STUDY

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Medicine in the branch of Anaesthesiology

Johannesburg, 2017

DECLARATION

I, Saweda Cuthbert, declare that this research report is my own work. It is being submitted for the degree of Master of Medicine in the branch of Anaesthesiology at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

.....(Signature of candidate)

.....day of .....(month), 20.....

ABSTRACT

Postgraduate education for anaesthesiologists is a complex multifaceted process that balances statutory education requirements, service delivery and the personal circumstances of the registrar. The aim of this study was to describe how anaesthesiology registrars in the Department of Anaesthesiology at Wits experience their training.

The experiences of anaesthesiology registrars at a South African University were explored in this descriptive, exploratory and qualitative study through a series of naïve sketches. A naïve sketch was selected as an instrument to elicit the participants' narratives and purposive sampling was employed to select the 41 registrars; in various stages of their training; from whom data were collected. Thematic analysis according to Braun and Clarke's six phases was used to analyse the data. Trustworthiness was established using Lincoln and Guba's framework.

The participants had a roller coaster experience of learning, where good and bad experiences played a role in becoming a specialist. The struggle for academic achievement was characterised by the lack of protected teaching time and the high clinical workload. In addition, the participants found it challenging balancing their academic and personal lives. Despite the challenges, the registrar journey played a key role in shaping them into specialists.

Each of the participants' experienced a challenging but fulfilling journey that equipped them with the skills and confidence to become accomplished specialists. This study demonstrated that there are a number of stressors that affected the participants' journeys. Training could therefore be tailored with this in mind and all aspects of the programme should aim to reduce these stressors as much as possible.

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TABLE OF CONTENTS

DECLARATION ii

ABSTRACT iii

ACKNOWLEDGEMENTS iv

TABLE OF CONTENTS v

LIST OF FIGURES viii

LIST OF TABLES ix

LIST OF ABBREVIATIONS x

CHAPTER ONE: OVERVIEW OF THE STUDY 1

1.1 Introduction 1

1.2 Background of the study 1

1.3 Problem statement 3

1.4 Aim 4

1.5 Operational definitions 4

1.6 Demarcation of the study field 5

1.7 Research methodology 6

1.7.1 Study design 6

1.7.2 Study population 6

1.7.3 Study sample 6

1.7.4 Data collection 7

1.7.5 Data analysis 7

1.8 Significance of the study 7

1.9 Outline of the research report 8

1.10 Conclusion 8

CHAPTER TWO: BACKGROUND AND LITERATURE REVIEW 9

2.1 Introduction 9

2.2 History of anaesthesia in South Africa 9

2.3 Anaesthesiology training 10

2.3.1 Anaesthesiology training internationally 10

2.3.2 Anaesthesiology training in South Africa 12

2.4 Factors influencing anaesthesiology training 14

2.4.1 Physical factors and their consequences on specialist training 14
2.4.2 Psychological factors and their consequences on specialist training 15
2.4.3 The influence of the working environment on work performance . 16
2.4.4 Educational factors 18
2.5 Conclusion 20
CHAPTER THREE: RESEARCH METHODOLOGY 21
3.1 Introduction 21
3.2 Problem statement 21
3.3 Aim 21
3.4 Ethical considerations 21
3.5 Research methodology 22
3.5.1 Study design 22
3.5.2 Study population 23
3.5.3 Sampling strategy 23
3.5.4 Data collection 25
3.5.5 Trustworthiness 25
3.6 Data analysis 27
3.7 The researcher's role in the study 29
3.8 Conclusion 29
CHAPTER FOUR: RESULTS AND DISCUSSION 30
4.1 Introduction 30
4.2 Demographic information 30
4.3 The experiences of the participants 31
4.3.1 The "roller coaster" experience of learning 31
4.3.2 The struggle for academic achievement 34
4.3.3 Lack of protected teaching time- an addition to the academic struggle? 38
4.3.4 Unresolved tensions- service or learning? 39
4.3.5 The challenge of balance 40
4.3.6 Growth- from registrar to specialist 42
4.4 Discussion 44
4.4.1 Introduction 44

4.4.2 The gender experience 45
4.4.3 The academic experience 47
4.4.4 The research experience 51
4.4.5 The psychological and social experience 52
4.4.6 The racial experience 54
4.4.7 Conclusion 55
4.5 Limitations of the study 56
CHAPTER FIVE: CONCLUSION 57
5.1 Introduction 57
5.2 Summary 57
5.2.1 Aim 57
5.2.2 Methodology 57
5.2.3 Findings 57
5.3 Recommendations 59
5.4 Conclusion 60
REFERENCES 61
APPENDICES 65
Appendix 1 65
Graduate Studies Committee approval 65
Appendix 2 66
Human Research Ethics Committee approval 66
Appendix 3 67
Information sheet 67
Appendix 4 68
Data collection sheet 68
Appendix 5 70
The author's naïve sketch **70**
Appendix 6 73
List of participants' demographics **73**

LIST OF FIGURES

Figure 4.1: The oxygen-haemoglobin dissociation curve 49
Figure 4.2: The phases of becoming an anaesthetic professional.....49

LIST OF TABLES

Appendix 6: List of participants' demographics.....73

LIST OF ABBREVIATIONS

HPCSA	Health Professions Council of South Africa
Wits	University of Witwatersrand
ICU	Intensive Care Unit
CHBAH	Chris Hani Baragwanath Academic Hospital
CMJAH	Charlotte Maxeke Johannesburg Academic Hospital
HJH	Helen Joseph Hospital
RMMCH	Rahima Moosa Mother and Child Hospital
WDGMC	Wits Donald Gordon Medical Centre
ICAS	Independent Counselling and Advisory Services

CHAPTER ONE: OVERVIEW OF THE STUDY

1.1 Introduction

An overview of the research project will be introduced in this chapter. It is outlined by a background of the study followed by the problem statement, aim and operational definitions of the study. The demarcation of the study field as well as an outline of the research report is also provided.

1.2 Background of the study

Anaesthesiology training varies internationally. In South Africa it is a four year programme governed by the Health Professions Council of South Africa (HPCSA) (1) that is intellectually, physically and psychologically taxing for many registrars internationally (1-9).

There are several factors that influence the experience of anaesthesiology training. Some of the negative aspects of training (9-21) can be divided into physical, environmental, psychological and educational factors.

Despite the large number of negative factors influencing anaesthesiology training, not all factors are negative. The following statements reflect some of the positive aspects of anaesthesiology training:

> The best part about the job is knowing you've really been there for each patient, right by his/her side, during moments when they truly need a helping hand or comforting presence and also knowing that each concrete task you do has tangible meaning and often immediately visible helpfulness (22).

> The emphasis of our teaching is not just passing the examination… but to make us good clinicians. Rotating through the hospitals and experiencing the different working environments has helped me to be more rounded academically. I have worked with many consultants who

> have different ways of approaching similar cases. This has helped me have a variety of options when approaching cases I meet (12).

The stress of training impacts negatively on several physical aspects of the registrar's life. Physical illnesses such as peptic ulcer disease, hypertension and muscle tension syndromes are some of the adverse consequences of stress (14). Pregnancy which places significant physical strain on the body is even more of a challenge for healthcare professionals. Higher rates of pregnancy related complications such as premature labour, low birth weight and abruptio placentae have been found amongst medical students and practioners (21).

The structure of the anaesthetic work environment contributes to work-related stresses (9, 15). Noise pollution in theatres, long working hours, erratic opportunities for sleep as well as abuse from patients and fellow members of staff can all add to the unpleasant nature of the anaesthetic working environment (9, 13, 15, 17-19, 23-25). Increased noise levels in operating rooms as well as the induction of anaesthesia produces a stress response in anaesthetists that results in an elevated heart rate and possible abnormal electrocardiogram changes (24, 25). Increased noise levels also result in some degree of cognitive dysfunction that interferes with short term memory, verbal communication in theatre and mental efficiency (17). Long working hours and erratic work schedules contribute to sleep loss which can also affect cognitive function (19). Sleep deprivation has a negative impact on patient-doctor relationships and can result in poor patient outcomes (18).

A study undertaken in May 2014 in the Department of Anaesthesiology at the University of the Witwatersrand (WIts) revealed that registrars have higher levels of stress compared to that of non-medical professionals (26). Stress when inadequately managed results in increased irritability, extended fatigue, chronic anxiety, depression and burnout (27). The incidence of burnout and suicide amongst healthcare professionals is higher than in the general population and chemical dependence is a disease that those with high levels of stress may become susceptible to (10, 16, 28).

Women in particular are adversely affected by registrar training. Saloojee et al. (29) reported that female registrars find their training environment discriminatory or unsympathetic to their needs. Some felt they were not taken seriously as professionals and others felt they were not at liberty to fall pregnant. In terms of academic performance, female registrars seem to be at a disadvantage as they tend to fare worse in examinations in comparison to their male counterparts (30). Female registrars are also more likely to experience sexual harassment, emotional exhaustion and psychosomatic symptoms (14, 23).

The amount of conflict and dissatisfaction in marriages is significantly higher amongst medical practitioners compared to the general population (31). Considering that in a week assuming two nights on call, only 9 to 14 hours of free time is available to registrars for study, family and relaxation time (19).

The demands of service delivery often leave little time for academic related activities. As a result registrars have very little time to engage in their learning (32). Examination failure and poor quality research have been linked to inadequate study time and excessive clinical work (30, 33).

Having highlighted some of the negative and positive experiences of anaesthesiology training, it is clear that these experiences differ from registrar to registrar. Some registrars may have more negative than positive experiences and this is reflected in the literature review.

1.3 Problem statement

The training of registrars is an evolving process that endeavours to balance statutory education requirements, service delivery and the personal circumstances of the registrar. A large body of research explores the negative factors that influence the training experiences of registrars (9-37). These experiences however can also be positive (12, 22). Currently it is not known

how registrars experience their training in the Department of Anaesthesiology at Wits.

1.4 Aim

The aim of this study was to describe how anaesthesiology registrars in the Department of Anaesthesiology at Wits experience their training.

1.5 Operational definitions

Registrar: a qualified doctor who is enrolled for specialist studies and registered as such with the HPCSA. The term ‘registrar’ will be used in this study but in the literature review the term ‘resident’ has been used instead of registrar in some quoted studies.

Experience: in this study experience included any observations, emotions, perceptions, impressions or lived experiences described by the registrar.

Registrarship: the period of training that is mandatory for a registrar to complete in order to acquire specialist registration.

Examinations: In South Africa registrars training in Anaesthesiology are required to successfully complete a primary and a final examination in order to register with the HPCSA as specialists. The primary examination is also commonly known as "Part 1", the "FCA 1" fellowship examination or "primaries". Likewise the final examination is also known as "Part 2" or the "FCA 2" fellowship examination.

Rotations: The registrar is expected to rotate for a minimum of 15 months at Chris Hani Baragwanath Academic Hospital

and Charlotte Maxeke Johannesburg Academic Hospital respectively. A six month rotation at the Helen Joseph and Rahima Moosa Mother and Child Hospitals collectively, is also expected.

Important rotations are the Intensive Care Unit (ICU), neurovascular anaesthesia, cardiothoracic anaesthesia, paediatric anaesthesia and research rotations. The neurovascular anaesthesia rotation is a combination of chronic pain management, neuroanaesthesia and vascular anaesthesia. The neurovascular and cardiothoracic anaesthesia rotations are senior rotations. Registrars qualify for senior rotations that include the paediatric rotation after 24 months of training. Registrars rotate through each hospital and may not take leave whilst rotating through ICU. Currently, aside from the research block which is five weeks long, each registrar rotates for three months at a time.

Two registrars rotate through the Klerksdorp/Tshepong Hospital Complex at a time for a total of four weeks; all at once or for two weeks at a time.

1.6 Demarcation of the study field

This study was conducted in the Department of Anaesthesiology at Wits. The staff complement of the department is 74 consultants (anaesthesiologists and career medical officers), 112 registrars and 22 medical officers. The following hospitals are affiliated to the department.

- Chris Hani Baragwanath Academic Hospital (CHBAH) is a tertiary hospital with 2888 beds, 25 theatres and an average of 65 000 surgeries performed annually.

- Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) is a central hospital with 1200 beds, 23 theatres and an average of 23 000 surgeries performed annually.
- Helen Joseph Hospital (HJH) is a regional hospital with 500 beds, 7 theatres and an average of 6000 surgeries performed annually.
- Rahima Moosa Mother and Child Hospital (RMMCH) is a regional hospital with 338 beds, 5 theatres and an average of 6600 surgeries performed annually.
- Wits Donald Gordon Medical Centre (WDGMC) is a private hospital with 190 beds, 7 theatres and an average of 8500 surgeries performed annually. WDGMC is a partnership between Wits and Medi-Clinic.

The Klerksdorp/Tshepong Hospital Complex is currently the only outreach hospital affiliated with Wits.

1.7 Research methodology

1.7.1 Study design

This was a descriptive, exploratory and qualitative study that used naïve sketches as an instrument to explore narratives that addressed the research question.

1.7.2 Study population

The study population consisted of anaesthesiology registrars working in the Department of Anaesthesiology.

1.7.3 Study sample

The sample for this study was selected in order to achieve rich descriptions in the form of naïve sketches i.e. purposive sampling was used. A sample of registrars who would best respond to the research question was selected. Data saturation was achieved when new information or themes in the area

being explored ceased to emerge following the collection of 41 naïve sketches.

1.7.4 Data collection

Approval to conduct the study was obtained from the Graduate Studies Committee (Appendix 1) and the Human Research Ethics Committee (Medical) (Appendix 2) at Wits. With the assistance of the registrar committee suitable participants were identified. These participants were then approached, encouraged to participate in the study and asked to write a naïve sketch describing how they experienced their training. The completed narratives were returned in a sealed envelope to a sealed data collection box. Trustworthiness was ensured using Lincoln and Guba's (38) framework of trustworthiness.

1.7.5 Data analysis

Thematic analysis according to Braun and Clarke's six phases (39) was used to analyse the data in this study.

1.8 Significance of the study

The training of registrars is an evolving process that balances statutory education requirements, service delivery and the personal circumstances of the registrar. The results from this study may give a better understanding of how registrars experience their training in the Department of Anaesthesiology. Understanding the positive and negative experiences of registrar training can assist the department to more effectively manage this process. This may result in a more positive training environment that is to the benefit of the registrar, the department and especially to service delivery.

1.9 Outline of the research report

The research report consists of the following chapters.

Chapter 1: Overview of the study
Chapter 2: Background and literature review
Chapter 3 : Research methodology
Chapter 4 : Results and discussion
Chapter 5 : Summary, recommendations and conclusion.

1.10 Conclusion

This chapter gave a brief overview of the study. In the following chapter the relevant literature is reviewed.

CHAPTER TWO: BACKGROUND AND LITERATURE REVIEW

2.1 Introduction

This chapter explores the history of anaesthesia in South Africa as well as the manner in which anaesthesiology training differs on a national and international level. Thereafter the factors that affect anaesthesiology training will be discussed.

2.2 History of anaesthesia in South Africa

The Johannesburg General Hospital, now known as Charlotte Maxeke Johannesburg Academic Hospital, appointed Dr George Warwick Bampfylde Daniell as its first South African anaesthetist in 1907. Anaesthetists throughout South Africa since then, have met monthly at each other's homes to discuss relevant topics in anaesthesia. This led to the formation and subsequent inauguration of the South African Society of Anaesthetists in 1943. Before 1943 the registration of anaesthetists in South Africa required two years of general practice as well as proof of practical anaesthetic experience under a specialist. No examination was required at this stage. The Diploma in Anaesthetics was the only specialist qualification available to South African anaesthetists in 1949 (40).

The South African Society of Anaesthetists agreed that a separate anaesthetic faculty within the South African College of Physicians and Surgeons was necessary and this led to the formation of the Faculty of Anaesthetists in 1950 (40). The Diploma in Anaesthetics became a general practice qualification in 1953 and Fellow of the Faculty of Anaesthetists became the new specialist qualification (40).

Prior to 1991 non-specialist doctors trained in anaesthesia were free to call themselves anaesthetists. To avoid confusion the term "anaesthesiologist" became the approved terminology for a specialist in anaesthesia in March 1991 (40). The South African Society of Anaesthetists voted in favour of

changing its name to the South African Society of Anaesthesiologists in 1993 (40).

2.3 Anaesthesiology training

The acquisition of scientific knowledge and clinical skills in basic and specialist anaesthesia forms the basis of anaesthesiology training which varies internationally (41). To highlight the differences in anaesthesiology training, selected countries will be discussed briefly followed by an in-depth discussion of training in South Africa and particularly at Wits.

2.3.1 Anaesthesiology training internationally

In the evolution of international anaesthetic practice, the founding of the Association of Anaesthetists of Great Britain and Ireland in 1932, as well as the Australian Society of Anaesthetists in 1934, was a major breakthrough. Anaesthesiology became a recognised speciality in 1935 when the Royal College of Surgeons in England introduced the Diploma in Anaesthetics as a higher qualification (40).

The Royal College of Anaesthetists is the professional body governing the practice of anaesthesia in the United Kingdom. It was formerly known as the College of Anaesthetists which was founded in 1988. The awarding of its royal charter in 1992 led to the change in title. Prior to 1988 an anaesthesiologist was registered as a Fellow of The Faculty of Anaesthetists (founded in 1948) of the Royal College of Surgeons of England (4).

Anaesthesiology training is a post basic medical qualification that takes seven years to complete in the United Kingdom. It is divided into a basic, intermediate, higher and advanced level of training. The basic, intermediate and higher levels each take two years to complete. The advanced level of training takes a further one year to complete. The primary examination is achieved during the basic level of training and the final examination is achieved during the intermediate level of training. The higher level introduces trainees to specialist areas of anaesthesia. Thereafter a trainee may choose

to specialise in cardiothoracic, paediatric or neuroanaesthesia during the advanced level of training. Only after completing the advanced level of training may a trainee apply for a consultant post under the specialist title Fellow of the Royal College of Anaesthetists (4).

The College of Anaesthetists of Ireland which was established in 1998 governs the practice of anaesthesia. Specialist anaesthesia training in Ireland is a six year programme that results in the specialist title: Fellow of the Faculty of Anaesthetists of the Royal College of Surgeons. It consists of two years of basic training, three years of sub-speciality training and one year of advanced training. The membership examination, formerly the primary examination, must be achieved by the end of basic training. Passing the final examination is a pre-requisite for admission into advanced training which is completed by an exit interview (3).

In Australasia, the Australian and New Zealand College of Anaesthetists formed in 1992 governs the practice of anaesthesia. Anaesthesiologist training through this college takes five years to complete. The programme is divided into an introductory, basic, advanced and provisional level of training. Introductory training takes 26 weeks to complete. The primary examination is achieved during basic training which is completed after 78 weeks. Passing the final examination is a pre-requisite for entry into advanced training which takes 104 weeks to complete. Provisional training takes a further 52 weeks to complete (2).

The Royal College of Physicians, established in 1929, governs the practice of anaesthesia in Canada. The training programme takes five years to complete and is divided into 12 months of basic training, 12 months of adult anaesthesia, three months of paediatric anaesthesia, two months of obstetric anaesthesia and one month of chronic pain management. A six month elective is afforded to trainees and an additional 12 months of internal medicine training inclusive of ICU training is required. Trainees may sit for the single required exit exam at the end of their fifth year of training (7).

The American Board of Anaesthesiology which was established in 1938, certifies physicians who have completed an accredited programme of anaesthesiology training. This training in the United States takes four years to complete. Basic training takes place in the first year followed by three years of subspeciality training. An additional fellowship year of subspeciality training is optional. Trainees who have completed the training programme become certified upon the successful completion of the Part 1 and 2 American Board of Anaesthesiology examinations (6, 8).

2.3.2 Anaesthesiology training in South Africa

Training in anaesthesiology is a four year postgraduate programme governed by the College of Anaesthetists of South Africa which was established in 1954. Registrars who began their training after 2010 are required to have also completed a research project to a satisfactory degree before registration with the HPCSA as a specialist can be achieved (5, 41, 42).

2.3.2.1 Health Professions Amendment Act 29 of 2007

The HPCSA was established in terms of the Health Professions Amendment Act 29 of 2007. Anaesthesiology training is governed by this Act. The aim of the Act is as follows: "to establish the Health Professions Council of South Africa and professional boards; to provide for control over the education, training and registration for and practising of health professions registered under this Act; and to provide for matters incidental thereto" (1).

2.3.2.2 Health Professions Council of South Africa

The HPCSA is a statutory body that regulates the education, professional conduct, ethical behaviour and training of health professionals (1). The HPCSA, formerly known as the South African Medical and Dental Council, was established in 1928 in terms of the Health Act (then Act 13 of 1928). It was also responsible for the registration of nurses until the South African Nursing Council was established as a separate council in 1944 (1).

2.3.2.3 University of the Witwatersrand

Wits is located in the Gauteng province. Once accepted into the anaesthesiology training programme offered at Wits, registrars are expected to rotate through the following training facilities affiliated to Wits: CMJAH, CHBAH, HJH, RMMCH, WDGMC and the Klerksdorp/Tshepong Hospital Complex (42).

A registrar is expected to rotate for a minimum of 15 months at CMJAH and CHBAH each. A six month rotation at HJH and RMMCH collectively, is also expected. The following rotations are included in the training programme:

- general anaesthesia (general, orthopaedic, obstetric, plastic, ear, nose and throat surgery)
- ICU
- neurovascular anaesthesia (includes neuroanaesthesia, vascular anaesthesia and chronic pain management)
- cardiothoracic anaesthesia
- paediatric anaesthesia and
- research.

The neurovascular and cardiothoracic anaesthesia rotations are senior rotations that are demanding for the registrar. Registrars qualify for senior rotations that include the paediatric rotation after 24 months of training. Registrars rotate through each hospital and may not take leave whilst rotating through ICU. Aside from the research block which is five weeks long, each registrar rotates for three months at a time (42).

Wits has a current legal agreement with the Klerksdorp/Tshepong Hospital Complex located in the North West Province, that requires registrars to rotate through the Hospital Complex. Two registrars rotate at a time for a total of four weeks - all at once or for two weeks at a time (42).

2.4 Factors influencing anaesthesiology training

The negative and positive factors that influence anaesthesiology training can be divided into physical, psychological, environmental and educational factors. These factors will now be discussed. Unfortunately much of the literature (13, 18, 20, 21, 24, 30, 34, 35, 43) used to discuss these factors is dated.

2.4.1 Physical factors and their consequences on specialist training

The stress of registrarship impacts negatively on several physical aspects of the registrar's life. Stress affects immunity and may result in physical illnesses such as peptic ulcer disease, hypertension and muscle tension syndromes (14).

Pregnancy which places significant physical strain on the body is even more of a challenge for female registrars. A number of physical changes have been hypothesised to account for the adverse outcomes in the pregnancies of healthcare professionals. The upright position (prolonged standing when working for long hours) leads to a decreased cardiac output which alters uterine blood flow. Venous return decreases, reducing placental flow and causing variations in foetal heart rate. The placenta is responsible for the transport of nutrients to the foetus and reduced placental flow results in lower birth weights. Decreased plasma flow as a result of decreased cardiac output may stimulate the production of oxytocin which causes uterine contractions resulting in premature labour. Occupational stress in general, leads to catecholamine production which causes vasoconstriction that may lead to intrauterine growth retardation (21).

The pregnancies of 37 medical students and medical practitioners in private practice between January 1980 and July 1984 were reviewed retrospectively by Schwartz (38) in 1985. The incidence of threatened premature labour and abruptio placentae was much higher in this group than in that of the general population. This increased incidence of abruptio placentae was responsible for the much higher than anticipated caesarean section rate in this group.

In 1987 questionnaires were sent out to 1025 female obstetricians in the United States. A total of 454 pregnancies were evaluated through these questionnaires. The children of primiparous women who were delivered during or after their residency, had significantly lower mean birth weights (<2.5 kg) than those that were delivered before residency. This low birth weight rate was significantly higher for babies born during residency (35).

2.4.2 Psychological factors and their consequences on specialist training

Psychological and physical abuse from patients and members of staff is a disturbing reality. Psychological abuse was reported by 50% of the 186 residents who participated in a study at a Canadian medical school from July 1993 to June 1994. Physical assault by male and female patients or family members was reported by 14.7% and 9.8% of residents respectively. A small number of female respondents (5.4%) reported that they had been assaulted by a male supervisor (23).

A study in May 2014 in the Department of Anaesthesiology at Wits revealed that registrars have higher levels of stress compared to that of non-medical professionals (26). Stress when inadequately managed results in increased irritability, extended fatigue, chronic anxiety, depression and burnout (27). Burnout is defined as “the experience of emotional, mental and physical exhaustion as a result of prolonged emotional load”. It is characterised by and results in feelings of helplessness, fatigue, dysphoria and a negative attitude towards the working environment (10).

The following personality traits have theoretically been associated with burnout and may make certain registrars more prone to burnout than others:

- Learned resourcefulness trait - individuals with this trait are able to control their behavioural responses to internal events such as negative emotions, thoughts or pain (36).
- Anxiety trait - individuals who possess this trait respond to stressful situations with high levels of anxiety. They also have excessive

conflicting motivations, are unstable emotionally and have low self-esteem (36).

- Repression-sensitisation trait - "Repressors" deal with threatening situations by using avoidance strategies whilst "sensitisers" react to similar situations with more vigilance. "Sensitisers" report more anxiety, find it difficult to adjust to stressful events and will therefore be more prone to burnout than "repressors" (36).

In 1991, a study conducted in Israel amongst 21 female and 28 male psychiatrists (residents and specialists) between the ages of 27 and 65, confirmed the association of these personality traits with burnout. Participants were required to rate their level of burnout on a scale of 1 (never) to 7 (always) on a questionnaire designed to identify each personality trait. The anxiety and repressive traits correlated positively with burnout whilst the learned resourcefulness trait had a negative correlation with burnout. A positive correlation between learned resourcefulness, age, as well as level of experience suggested a lower incidence of burnout was found in older and more experienced participants (36).

The suicide rate amongst healthcare professionals is higher than in the general population and chemical dependence is a disease that those with high levels of stress may become susceptible to (26). The lack of professional counselling provided when anaesthetists are exposed to death, adds to work-related stress (44). This is less than ideal considering that most anaesthetists feel responsible for the death of their patients. In South Africa the seven recent suicide related deaths of anaesthesiologists led to the decision to form an employee health and wellness committee at Wits (15, 37).

2.4.3 The influence of the working environment on work performance

The structure of the anaesthetic work environment contributes to work-related stresses (9, 15). Noise pollution in theatres, long working hours, erratic opportunities for sleep as well as abuse from patients and fellow members of staff all add to the unpleasant nature of the anaesthetic working environment (9, 13, 15, 17-19, 23-25).

Surgical machinery, suction apparatus, telephones and monitor alarms are some of the factors that contribute to noise pollution in theatres. Increased noise levels in theatres produce a sympatho-adrenal discharge that results in peripheral vasoconstriction, arterial hypertension and pupillary dilation.

Anaesthesiologists develop cardiovascular changes produced by noise pollution that is inversely proportional to the amount of clinical experience they possess. Electrocardiogram changes such as ST segment depression and premature ventricular complexes have been detected in some of the least experienced anaesthetists (13). Similar cardiovascular changes occur when inducing anaesthesia.

A study (24) was conducted in Maryland in 1984 where the cardiovascular response to the induction of anaesthesia of 21 first year (1 to 6 months of experience) and 19 second year (17 months of experience) anaesthesiology trainees ranging between the ages of 26 and 31 was assessed through the use of a standard lead II electrocardiogram. A similar group of 15 staff anaesthesiologists (up to 15 years of experience) between the ages of 28 and 50 was also assessed. There was a progressive increase in the heart rate of trainee participants which peaked during intubation. This was a significant finding in all three groups. This progressive increase was significantly reduced in second year trainees as well as staff anaesthesiologists. The average pre-induction heart rate of the first year group was 24% of the resting heart rate which rose by 65% during intubation. A premature ventricular complex was noted in one particular first year trainee whilst dropped beats were noted in another first year trainee. Yet another first year trainee developed a sinus bradycardia associated with frequent deep breathing. The average pre-induction heart rate of the second year group was 24% of the resting heart rate which rose by 54% during intubation. In staff anaesthesiologists, the pre-induction heart rate was only 19% of the resting heart rate which rose by 39% during intubation. No change in electrocardiogram complexes was noted in both the second year trainee and staff anaesthesiologist groups (24).

A similar study (25) was conducted in New York in 1985 where the mean arterial blood pressures and heart rates of 12 anaesthesiology consultants (11 male and one female), were monitored continuously during the induction of anaesthesia with the use of an ambulatory electrocardiogram. These consultants were directing junior residents at the time. The mean arterial pressures and heart rates of participants rose significantly during tracheal intubation. Three participants developed premature ventricular complexes and ST depression greater than 1 mm was noted in one individual (25).

Noise pollution also interferes with verbal communication, short term memory as well as mental efficiency. This was shown in a 1995 study (17) conducted in India exploring the detrimental effects of noise on anaesthetists. A precision integrating sound level monitor was placed on the anaesthetic machine at the level of the anaesthetist's ear. Sound levels were measured for 15 minutes in each theatre. The emergency, orthopaedic, general, cardiothoracic as well as neurosurgery theatres were found to be the noisiest. The short term memory and mental efficiency of 15 male and five female anaesthesiology registrars working in these specific theatres was then measured using the Digit Symbol/Trail Making and Benton Visual Retention tests respectively. The tests were performed before and after noise exposure. Mental efficiency and short term memory was found to be significantly impaired after noise exposure (17).

2.4.4 Educational factors

Approximately 20 to 25% of work time is devoted to the teaching of junior members of staff which is an expected but unofficial requirement of registrar training (45). The majority of registrars benefit from teaching workshops and have a positive attitude towards teaching. This was the finding of a study (34) conducted in Washington D.C. in July 1979. Eight hours of teaching workshop and feedback sessions was provided to an experimental group (n = 27) of paediatric registrars. The control group (n= 26) received no formal instruction. A questionnaire was issued to both groups again at the end May 1980 to determine the perceptions that affect teaching and learning amongst

registrars. During this period, registrars in the experimental group were required to rate the effectiveness of their clinical teaching programme on a monthly basis. The questionnaire was completed by 53 participants in 1979 but only 49 did so in 1980. At the beginning of the study 75% of registrars reported that they enjoyed teaching and 77% stated that they would be more involved if their clinical responsibilities were less demanding. Eighteen percent in 1979 were confident about their teaching skills but in 1980 it was evident that registrars in the experimental group (44%) were significantly more confident than those in the control group (22%). Registrars in the experimental group were also more likely to have reported a positive attitude towards teaching having felt that it helped them to become better clinicians. This was echoed by the positive feedback they received from peers and students. The teaching skills of 52% of registrars in the experimental group and 22% of those in the control group who received feedback were rated as effective (34).

A positive correlation was found between registrars who enjoyed teaching (88.9%) and the amount of time spent preparing to do so. This was the finding of a study conducted in 1987 amongst 55 internal medicine registrars at the McGaw Medical Centre in Illinois. Registrars who spent more time preparing for teaching also felt more appreciated by the medical students they taught. When asked to comment on the disadvantages of teaching, registrars cited personal commitments (29.1%), time consuming clinical duties (87.3%) or exhaustion from being on call (49.1%) as obstacles to their teaching duties (43).

The ten paediatric and eight obstetrics and gynaecology registrars who participated in interviews at the teaching hospital of the University of Maastricht in the Netherlands agreed that most registrars did not have time to teach (46). The majority (68.9%) of anaesthetic registrars who participated in a study in Ireland also felt they had inadequate time to prepare for teaching (47). Registrars agreed that programmes focussing on the improvement of their teaching skills would be beneficial (46). As the 78.2% of the registrars in the Walsh study (47) had not attended a teaching course, teaching

programmes aimed at improving the teaching skills of registrars would be of benefit. Registrars confident in their teaching skills are more likely to teach in an organised manner, identify problems in student learning and take the necessary steps to correct them (34, 43, 47).

Although registrars are required to teach during working hours, a major part of their training includes being taught by specialist consultants. Winter et al. (48) conducted a study in August 1988 at the University of Cape Town which confirmed that formal teaching sessions were being provided to the 348 registrars enrolled for specialist training. The questionnaire used in the study was completed by 197 registrars and almost half of the respondents (47%) found the teaching by consultants to be inadequate.

2.5 Conclusion

An international review of the history of anaesthesiology training was provided in this chapter. A brief account of the training of South African anaesthesiology trainees at Wits was also provided. Although the literature reviewed explores some of the negative and positive aspects of the anaesthesiology training experience, training experiences of specific training centres such as the South African registrar circuits have yet to be explored. This study set out to explore these experiences at Wits. The following chapter reviews the research methodology.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used in this study. The problem statement, aim and ethical considerations of the study will also be provided.

3.2 Problem statement

The training of registrars is an evolving process that endeavours to balance statutory education requirements, service delivery and the personal circumstances of the registrar. A large body of research explores the negative factors that influence the training experiences of registrars (9-37). These experiences however, can also be positive (12, 22). There is no data currently describing how registrars experience their training in the Department of Anaesthesiology at Wits.

3.3 Aim

The aim of this study was to describe how anaesthesiology registrars in the Department of Anaesthesiology at Wits experience their training.

3.4 Ethical considerations

Approval to conduct this study was obtained from the Graduate Studies Committee (Appendix 1) and the Human Research Ethics Committee (Medical) (Appendix 2) of the University of the Witwatersrand.

The study was conducted adhering to good clinical research practice as set out in the South African Good Clinical Practice Guidelines (49) and the Declaration of Helsinski (50).

In all stages of research, the fundamental principles of the Declaration of Helsinski include respect for the individual, their right to self-determination and their right to make informed decisions (50). To achieve this an invitation in the form of an information sheet (Appendix 3) was issued to selected registrars

that provided details of the study. This allowed them to make an informed decision as to whether or not to participate in the study. The information sheet stated that participation in the study was voluntary and that participants could withdraw from the study at any time. The information sheet also stated that the submission of a data collection sheet (Appendix 4) would imply the participant's consent. Participants were professionals and as such my academic peers. I am therefore unable to exert undue influence on their participation in the study or in the event of their refusal to participate, their subsequent careers.

Only the researcher and supervisors had access to the raw data collected, which will be stored securely for six years after the completion of the study, thus ensuring confidentiality. Data collected had no identifying information and could not be linked to any particular registrar. Data collection sheets were returned anonymously in a sealed envelope which was placed into a sealed collection box.

Negative reactions to reliving experiences were not anticipated. However the established wellness programme within the Department of Anaesthesiology at Wits, which includes the Independent Counselling and Advisory Service (ICAS), was accepted as a service which participants who had negative experiences could engage with.

3.5 Research methodology

3.5.1 Study design

This study was a descriptive, exploratory and qualitative study. A qualitative study uses a systematic subjective approach to describe life experiences and give them meaning (51). An exploratory study investigates an area of concern that is poorly understood whilst a descriptive study provides information regarding this area of concern (51).

3.5.2 Study population

The study population consisted of anaesthesiology registrars working in the Department of Anaesthesiology at Wits. At present there are 108 registrars allocated to all the clinical training sites.

Given the academic nature of the registrar programme, examinations are a necessary milestone. Registrars are advised to complete the primary examination within the first two years of training to allow sufficient time for the completion of a research project and ultimately the final examination.

The registrar committee is a body of registrars that act as a bridge between senior members of staff, management and registrars as a whole. They are tasked with allocating registrars to rotation hospitals based on their year of training and examinations obtained. Participants best suited for the study would therefore be easily identified by the registrar committee.

3.5.3 Sampling strategy

This study embarked on a purposive sampling strategy. Purposive sampling is a type of non-probability sampling. In this type of sampling the researcher selects subjects most likely to provide rich descriptions that will give insight into the area being explored (51, 52). Selecting subjects with diverse perspectives and backgrounds to participate in the study will enhance the enrichment of emerging themes (53, 54).

The registrar commitee suggested names of registrars who could purposively be drawn from the following groups of registrars with the aim of selecting a wide range of registrars in various stages of their training:

- registrars who had yet to pass the primary examination (first attempt);
- registrars who had yet to pass the primary examination (second or multiple attempts);
- registrars who had passed the primary examination;

- registrars who were about to undertake or had just passed the final examination.

Anaesthesiology registrars working in the Department of Anaesthesiology who were selected to participate in the study and agreed to do so were included in the study. There were no exclusion criteria.

Participants were selected from the names suggested by the registrar committee. Selected participants were then approached and encouraged to participate in the study. An information sheet (Appendix 3) was issued and once verbal agreement was obtained, the participant was provided with a data collection sheet (Appendix 4). The data collection sheet consisted of a demographic section consisting of:

- gender
- age
- marital status
- parental status
- race
- year of training
- examinations passed and
- hospital rotations.

These specific demographics were chosen in order to understand the context from which the data were emerging. The literature reviewed has identified gender, race and family life as factors that impact academic success in registrarship (12, 14, 29, 30, 55). By contextualising the data with the international experience, similar or additional factors could be identified and compared. Additionally, difficulties that participants experience at specific training sites can be discerned.

3.5.4 Data collection

The data collection sheet also consisted of a section where participants could give a written account their experiences. A naïve sketch was selected as an instrument to elicit the participants' narratives. In a naïve sketch, participants are requested to write an account of experiences in response to an open-ended question (56). Participants were given the option to submit written or printed responses to the research question as it was anticipated that some participants would worry that their handwriting styles may make them identifiable. A naïve sketch allows for anonymity and as a result encourages honesty. Participants completed their data collection sheets at home in their own time and all chose to submit written responses. The data collection sheets were submitted in a sealed envelope into a sealed collection box which was made available in departmental tea rooms.

Data were collected over five months in 2015. Data saturation is the point in data collection where new information or themes in the area being explored cease to emerge. Data saturation in this study was achieved following the collection of 41 naïve sketches.

3.5.5 Trustworthiness

This study made use of credibility, dependability, confirmability and transferability according to Lincoln and Guba's (38) framework of trustworthiness.

The following frameworks of ensuring credibility were used in this study:

- Prolonged engagement means that the study is continued until sufficient understanding of the area being explored has been obtained (38). This was achieved as the researcher in her third year of anaesthesiology training was deeply involved in the context.

- Persistent observation was achieved through the consistent analysis of the data by the researcher and the research supervisors separately, in an effort to pursue different interpretations.

- Triangulation refers to the method of collecting data from different sources in order to highlight differing opinions and points of view (38). This was achieved to a limited degree by analysing the data and comparing it with the available literature.

- Peer debriefing is the process where experts in the area being studied are sought for advice (38). These experts help to ensure that the research process is being conducted in a trustworthy manner. This was implemented by the submission of the raw data to supervisors for expert advice and analysis. The supervisors ensured that data were interpreted in a truthful manner.

- Member checking involves the invitation of participants to review individual data in order to ensure that it has been interpreted correctly (38). The participant is then free to provide additional information. Due to the anonymous nature of the study, this aspect could not be implemented. The reflections that emerged were reviewed instead by a registrar not involved in the study and a recently qualified specialist anaesthesiologist.

- Referral adequacy was achieved by ensuring that all materials used to collect data were used and made available to document the findings.

Dependability refers to the reliability of data over time and changing conditions (38). An audit trail in the form of a detailed account of the research design, methodology as well as the methods of data collection and analysis used in this study was well documented. Marginal notes and electronic records of codes and themes generated were filed contemporaneously.

Confirmability refers to two or more independent people agreeing about the data's accuracy and meaning (38). This reduces the incorporation of existing bias, motivations or perspectives into the interpretation of data. This was ensured by assigning labels to each statement made by a participant. Selected statements were then quoted directly when discussing the results of the study. In addition, the use of a literature review and research supervisors as external coders enhanced the confirmability of this study.

Transferability refers to the extent with which the data may be applied to other groups (38). Sufficient descriptive data must be provided to achieve this. Documenting the specific groups of registrars invited to participate in the study would highlight the extent to which the data collected can be transferred. Furthermore, by ensuring that data saturation was achieved and an audit trail in the form of a detailed research record was maintained, the data would prove reliable enough to be transferable.

3.6 Data analysis

Thematic analysis is a method used to analyse qualitative data where themes within the data are identified and analysed. These themes should reflect the views that have been collected. Thematic analysis according to Braun and Clarke (39) was used in this study and consisted of the following six phases.

- In phase one, each naïve sketch together with its demographic information was divided into the participant's year of study. Each naïve sketch was then numbered in order to easily identify experiences narrated. The demographic information of each naïve sketch was then electronically tabulated. An electronic version of each naïve sketch was also generated as it would allow for organisation and coding at a later stage. Reflective remarks were written on paper as the data were organised electronically.

- In phase two codes were assigned to recurring experiences. A code is a symbol or abbreviation used to link words or phrases (39). These codes emerged from the narratives as well as the reflective remarks

referred to earlier. The codes generated were then grouped together reflecting similar experiences.

- In phase three, similar codes generated in phase two were grouped into themes. Electronic identification of each naïve sketch allowed for the easy identification and grouping of similar codes.

- The themes were reviewed iteratively in phase four. Each extract from the naïve sketches within a theme was analysed together with its accompanying demographic information in order to identify patterns that would link experiences to specific gender, marital, parental or racial groups. This was done to attempt to add meaning to experiences narrated.

- Additional review of the data was conducted in phase five. Each theme was subsequently defined and refined before receiving the following titles.
  Theme 1: "The roller coaster experience of learning".
  Theme 2: "The struggle for academic achievement".
  Theme 3-: "Lack of protected teaching time- an addition to the academic struggle".
  Theme 4: "Service or learning- unresolved tensions".
  Theme 5: "The challenge of balance".

  The research supervisors who acted as external co-coders, reviewed the themes and analysed them separately from the researcher. This ensured that the codes and subsequent themes identified could be linked and were reliable. Each analysis was an iterative process accompanied by fresh reflective remarks made on a new document. These remarks were then filed chronologically in order to track and monitor the process.

- In phase six the analysis conducted in phase five was reported to give an accurate account of the participants' experiences where each theme would be highlighted and then discussed.

3.7 The researcher's role in the study

My role as the researcher had implications for this study both potentially positive and negative. On the one hand, my own experience of the registrar journey allowed greater access to understanding the meaning of narratives and emerging concepts. On the other hand, I was tasked with ensuring that the emergent accounts from the naïve sketches represented the views from the participants as closely as possible and were not pre-determined by my own personal journey. In addition to the results of the study I have offered a naïve sketch relating my own experience of the registrar journey as Appendix 5.

3.8 Conclusion

In this chapter the research methodology was presented. The following chapter reviews and discusses the results of the study.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

The participants in this study have reflected on their time of learning as a transformative journey consisting of many parts. The journey begins with stories new participants have heard from others, leads into moments of engagement with learning and the recognition that comes with the successful completion of examinations and ends with the final plateau of becoming a specialist practitioner ready to join the community of anaesthesiology. This chapter describes the participants' journeys and contextualises them within the international experience. Final thoughts are presented in a concluding discussion.

4.2 Demographic information

The mean age of participants was 31 years and the vast majority (83%) of participants had worked in three or more of the five hospital sites.

The majority (71%) of the participants were female. Of this group, 55% were married and 35% of these married female participants had children. Fifty-six percent of married female participants had successfully completed the primary examination. The majority (67%) of male participants were also married but only 13% had children. Compared to their female counterparts, all the married male participants had completed the primary examination successfully.

Thirty-six percent of participants in the study were African. Of this group 20% were female married participants with children who had yet to complete the primary examination successfully. The only two African males in the study were both single and had completed the primary examination successfully.

Appendix 6 summarises the demographic information of the participants in this study.

4.3 The experiences of the participants

Six themes were identified from the data collected and describe the results obtained from this study. These are summarised here and are fully explored in the latter part of this chapter.

The first theme, **the roller coaster experience of learning**, discusses the good and bad experiences that played a role in the "roller coaster" experience of becoming a specialist. **The struggle for academic achievement** is explored as theme two and is a strong recurring theme as academic milestones were an integral part of the training experience. Accounts of the personal and academic challenges that participants faced whilst achieving these milestones, particularly of that surrounding the **lack of protected teaching time- an addition to the academic struggle**, emerge in a third theme. The fourth theme (**unresolved tensions- service or learning?**) reflects the contribution of the working environment to the stress experienced by participants, which was often exacerbated by the lack of resources within the public sector. Theme five, **the challenge of balance**, describes the difficulties participants and their families faced in trying to balance their academic and personal lives. **Growth- from registrar to specialist**, the final theme, represents the participants' reflections on the experiences that ultimately played a key role in shaping them into the specialists they are hoping to become.

In this chapter these themes are described in more detail. Extracts from the naïve sketches will be used to support the emergent themes. These are labelled according to the participant number followed by the year of study. For example (P1,Y1) represents participant number one in their first year of training.

4.3.1 The "roller coaster" experience of learning

The transitioning experience from being a registrar to becoming a specialist was seen as an exciting but challenging process with ups and downs. Part of what made the journey so exciting for participants was the acquisition of new

knowledge. Implicit in the process of learning was the concept of a "roller coaster" experience, which though thrilling, had its fair share of ups and downs.

> *My overall experience in summary has been a roller coaster ride. Initial moments of excitement and nervousness accompanied with fear. Then into excitement and eagerness to learn as I was suddenly anaesthetising difficult patients and constantly being exposed to techniques I had only read about in books* (P27,Y3).

This "roller coaster" experience was echoed in the headings "*positive*" and "*negative*" which was offered by several of the participants to structure their narratives. This particular participant structured her response as follows *(P12,Y2)*:

Positive

> *Good exposure to cases.*
> *More often than not good supervision and support.*
> *Opportunities to face challenges alone.*
> *Usually working as part of a team on call.*
> *Pre-call and post-call is a bonus.*
> *Good advice from seniors.*
> *Overall fair, good support structure from peers and seniors.*
> *Good part 1 teaching programme.*

Negative

> *Long days especially at CMJAH and CHBAH- too tired to study.*
> *Too much pressure to get part 1.*
> *Some consultants are overly downright nasty-creates tension when working with them.*

Participants were generally positive about the registrar journey despite having been warned it would be far from easy. They also gave insightful accounts of their experiences that highlighted the various factors which contributed to their

academic growth. This was despite their tentative entry into the registrar environment as reflected here:

> *... came in from a peripheral hospital with horrific and terrifying stories of colleague's experiences of the WITS circuit. Such stories have prepared me for the worst experience... I am hopeful for a good, maturing and productive experience* (P3,Y1).

The reported benefits of the registrar journey are numerous. An "*overall good learning experience with exposure to a wide selection of patients*" (P4,Y1) inspired participants to apply new knowledge and skill in a way that encouraged academic growth.

> *One sees ASA1 – 6*[1] *patients here and is exposed to a huge array of complicated cases and one really has to use one's knowledge and skill to the best of one's ability. It often pushes one beyond one's comfort zone* (P7,Y1).

A variety of learning opportunities such as the morning academic meetings, supervised training in theatre and tutorials made adjusting to the academic lifestyle a little easier. Tutorials not only provided academic support but also a socialisation aspect by encouraging participants to interact with consultants and fellow registrars.

> *Not used to the environment- very strange and unfriendly ...Tutorials helped me because I got exposed to a lot of people. I got used to alot of people and things changed* (P10,Y2).

Participants also pointed out that the opportunity to work at different hospital sites broadened their learning opportunities and perspectives. Whilst one site encouraged independence and leadership, another taught the importance of working with other health care professionals.

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[1] American Society of Anaesthesiologists physical status classification
ASA 1 - A healthy patient.
ASA 6 - A moribund patient not expected to live 24 hours with or without surgery.

> *Working at the different hospitals provides one with vast exposure. Each site has its benefits and downsides, its people and its politics. At some sites you are closely supervised and supported and at others you are completely alone and isolated. One day you have to follow a consultant's instructions to perform simple procedures, the next you are expected to function as a consultant in choosing anaesthetic techniques, management plans and managing anaesthetic lists* (P31,Y4).

Participants were often paired together in theatre. Although this encouraged teamwork and enabled participants to relieve each other for frequent breaks during the delivery of an anaesthetic, there appeared to be tension between this benefit and the disadvantage it posed if too many registrars were assigned to one theatre.

> *I find that CHBAH has too many registrars and this impairs training and decision-making ability as there is always too many competing registrars in theatre* (P18,Y3).

When participants were not paired in theatre, they often went "*... for long hours without being given a break to eat or drink"* (P16,Y3*)*. Not being afforded opportunities to rest, eat or use the bathroom*,* highlighted the poor working conditions that participants were subjected to at times. Sleep and rest rooms for after-hours responsibilities were far from satisfactory and were described as "*poor*", "*gross*", "*dirty*" and "*unusable*" (P4,Y1; P14,Y2).

4.3.2 The struggle for academic achievement

Participants spoke of a learning curve that was described as "*more exponential than linear or maybe like the oxygen haemoglobin curve*" (P28,Y3). This learning curve from novice to expert was riddled with obstacles and participants often leaned on each other for support.

> *My study group has been a pillar of strength. I don't think I could have approached this exam without them. We have learnt from one another and have supported one another* (P13,Y2).

The fear of the humiliation of failure often drove work performance - "*I think the fear instilled in me over 'screwing up' and becoming tea room 'gossip' pushed me to stand on my feet very fast* " (P13,Y2).

Passing the primary examination was a major hurdle and preparations for exams either made or broke participants. Long working hours made it difficult for participants to study and hospitals that were sensitive to the struggle were highly appreciated.

> *I think Bara has been a better hospital when it comes to working load and hours. I got time to study as days were shorter compared to other hospitals. Consultants played a role in giving us a chance to prepare for the next day's list* (P34,Y4).

One female participant with children was particularly vocal about her struggles with the academic demands of training.

> *I think we would all agree that children need quality time with their parents and to me it is utterly unreasonable that I practically cannot be both a dedicated parent and pursue my career goals. At WITS it seems one must significantly suffer. As a parent, the academic side will invariably then suffer because I put my child above everything else* (P16,Y3).

Another female participant implied that the emphasis placed on academic excellence was unreasonable since no effort was made by the department to aid the process especially for female registrars.

> *Shift in other countries and in other fields to retain females and make things more 'mum-friendly'. However not at all in wits anaesthesia. Very*

little emphasis on how we can make training easier/less stressful. Its all about exams... (P17,Y3).

These two participants were the only female participants to comment about their struggles with family and academic life. Beyond these specific gender framed experiences, further reporting on work-life balance will occur later on in this chapter.

The registrar journey as experienced by different racial groups was difficult to explore as few narratives specific to racial discrimination were offered. This comment only scratched the surface of how black participants experienced their training.

Generally if you follow the rules, stay out of the spotlight, work hard, keep your pettiness to yourself, smile and wave, especially if you are black, you will be fine (P33,Y4).

The comment implies that black participants felt they had to work harder to prove themselves. This in itself may not speak to racial discrimination within the Wits circuit. Tutorial sessions organised by a black consultant at CHBAH did however become a racial issue when only black registrars attended as reported in the following extract:

Afterthought [participant's word]*: the racism also rears its ugly head in many different areas such as tutorials ... we were outlawed because only black registrars showed up and this was then misconstrued as 'secret' tuts for blacks* (P24,Y3).

That being said, the lack of commentary by other black participants in the study suggests that racism is a sensitive but minor issue within the department as reflected in the use of the word "*afterthought*".

The pressures of academic achievement may be coloured by discrimination but are deeply experienced by many of the participants. In a societal context,

doctors are viewed as high achievers who hardly anticipate failure. For the first time participants were left feeling vulnerable as they struggled with passing exams.

> *It has been a challenging two and a half years... I did not anticipate having a problem with Part 1 exams but they have been the cause of most distress. My social life is non-existent due to studying and I feel my life is not balanced at all which makes me unhappy ... My confidence has been severely affected due to not passing exams* (P19,Y3).

> *I now fully comprehend what people say when they refer to Part 1 as a traumatic experience. I think the level of expectation we place on ourselves as well as from our seniors is high. I felt fragile at times and am most grateful to have passed on the first attempt* (P13,Y2).

In the event of not being successful in passing all three subjects in the primary examination, one participant felt that registrars should only write the subjects they failed when reattempting primaries (P19,Y3). Another participant felt that the option to write each subject on three separate occasions should exist (P16,Y3).

Being successful in passing exams contributed to the participants' sense of becoming visible within the department. Participants felt invisible unless they could show their worth by proving how much they knew.

> *Just make sure you pass your exams while you're at it as that's the only way to earn respect in the circuit. Without exams no one even bothers to memorise your name* (P33,Y4).

Despite the effort made by participants to prove themselves, consultants often added undue strain by abusing their role as educators. The following comment is illustrative:

> *I also find that some of the senior consultants can be demoralising, condescending and not encouraging us as registrars. Instead they frighten us, belittle us and shout unnecessarily* (P25,Y3).

4.3.3 Lack of protected teaching time- an addition to the academic struggle?

Protected teaching time is a term used to describe the learning activities for doctors and other health care professionals which are uninterrupted by clinical duties (32). The lack of protected teaching time by the department, made the tutorial programme difficult to attend. "*Premeds* [2] *and traffic*" (P39,Y4) were cited as reasons for the non-attendance of tutorials. It was suggested that if the work schedule of registrars writing the next set of exams could be adjusted accordingly, it may afford them the opportunity to attend tutorials more regularly (P25,Y3).

The Department of Anaesthesiology was reported as one of the few departments that offered protected teaching time for research and for that participants were grateful. The addition of an extra week of research after the research block helped many to complete their research. Despite this, some participants still found it difficult to complete their research projects for various reasons.

Many participants had difficulty with their literature review and felt trapped as problems typically arose once the decision to pursue a particular topic was made. Research was an unfamiliar territory for the majority of the participants and not knowing how to proceed after each step was frustrating.

[2] Premeds- the pre-operative assessment of a patient

> *Research is enlightening but to fit this into four years of registrar time is almost impossible- depends on time required for MMed topic. Unfortunately with a lot of the MMed topics you only know what you have to do to complete it once you start literature review and by then too much time has been invested into it to change topic as your new topic might have the same difficulties* (P40,Y4).

The time factor was also concerning to participants. One participant (P16,Y3) wondered why "*an extra six months wasn't added to the programme to afford registrars the time needed to give research it's own attention?"*

Another participant (P24,Y3) "*hated the research block"* and felt *"it is only for the government and not necessarily for ... academic growth".*

Yet another participant (P23,Y3) struggled with her supervisors and felt that the research co-ordinators *"... are biased, help certain registrars more than others and are generally overworked and do not have time to assist individuals"*.

4.3.4 Unresolved tensions- service or learning?

It seems the challenge was not only in managing one's academic progress but also the high clinical workload. "*It became an even steeper hill as along with ensuring satisfactory patient care and treatment,* [they] *had full-time studying to do"* (P27,Y3). This sentiment was echoed by a fellow participant - "*I feel the need for service delivery compromises time/quality of registrar training"* (P20,Y3).

A consequence of this challenge lies in the statement - "*consultants 'steal' your regional techniques because they want to practice*" (P1,Y1). It seems that registrars not confident in performing regional techniques, made up for gaps in their training when they became consultants.

Another participant reflected similar sentiments.

> *The regional block at Baragwanath was disappointing with lots of theoretical teaching and little hands on teaching as you do compete with the consultants to practice ultrasound guided blocks* (P18,Y3).

The threat of compassion fatigue that accompanies the heavy work load in the public sector often becomes a reality. This comment indicates that staff shortages emphasised the need and importance of team work:

> *HJH- coping with delays by nursing staff was particularly challenging and not having a dedicated nurse made giving an anaesthetic hard. It taught me about the need for teamwork* (P15,Y2).

In addition, frustrations ran high as theatre lists continued to run even in less than ideal circumstances.

> *Lists never get cancelled even if theatre temperature is freezing and equipment not available. Lists continue to run without ... drugs or intubating equipment* (P23,Y3).

Another participant echoed this sentiment:

> *Most of the time I am frustrated by the 'joys' of working in our shitty* [sic] *health care system. With having to constantly improvise and fight and continue doing cases despite inadequate resources. It eventually takes its toll and I have now become apathetic* (P35,Y4).

4.3.5 The challenge of balance

The challenges of registrarship caught participants unawares - "*I must admit that I was not quite prepared for the emotional, mental and physical assault that anaesthesia had waiting for me"* (P22,Y3). Despite this, there was a general understanding that "*these experiences* [would] *help to mould a character worthy of the speciality*" (P22,Y3).

The journey was tiring and began with energetic participants who "... *started off strong, full of excitement and energy* ... " (P35,Y4). As the journey continued, the expectation of academic performance and family responsibility placed a large amount of stress on participants. The programme was demanding with high expectations from seniors. Calls, tutorials, work, research and exams all had a great impact on personal life (P38,Y4). Some participants became anxious when they saw their peers struggle. This participant implied that more often than not there was a sense of fumbling in the dark.

> *I have not gone through specialist blocks but from what we have heard, it is rather intense and registrars often do not cope. It places a lot of unease to know this and I wish there was better information on what to expect* (P11,Y2).

The majority of participants struggled to balance their personal and work lives and eventually burned out as years of neglecting themselves or their families began to take its toll. The following comment is reflective of this struggle.

> *Found the last four years physically and emotionally taxing. Progressed quickly in the first two years and started senior calls early. Too early in fact. Burnt out in third year, needing to take one month off work to recover. Neglected family and health over last four years* (P41,Y4).

In addition to the struggle for participants to balance their social and academic lives, there appeared to be poor or little insight into participants' personal lives with almost no support or sympathy from seniors. The Independent Counselling and Advisory Service (ICAS) is a well-being service aimed at improving the health and performance of employees (57). Even with the recent introduction of ICAS to the department, additional emotional support from the department is welcomed. One participant commented that she had not made use of the ICAS services because she did not trust that it was confidential (P11,Y2*)*. Participants had no one to speak to when the pressure

of exams, research and work became excessive. It was reported that some registrars who were going through a difficult time were even gossiped about.

> *There should be a support group for all of us where we can speak about our problems in confidence, whether academic or social. Honestly some of us do not feel comfortable talking to consultants about problems as we know we will be the talk of the tearoom* (P25,Y3).

The participant who made this comment emphasised the lack of sympathy from seniors and suggested that a separate psychologist for the department should be provided for registrars needing emotional support (P25,Y3).

The registrar journey was seemingly exhausting. This is echoed in this extract in which this participant chose to leave the word 'exhausting' unpunctuated as if too listless to do so.

> *Challenging!!!*
> *Stressful!!!*
> *Exhausting* (P9,Y2).

Exhaustion aside*, " with the last shred of energy,* [participants] *hope to complete FCA 2 successfully* (P35,Y4)", but at what cost?

4.3.6 Growth- from registrar to specialist

Participants reflected their growth in other areas aside from academia. The development of an overall awareness of their learning environment and the desire to bring about positive change was demonstrated by this comment:

> *Klerksdorp outreach frustrating. I feel like a warm body rather than offering any expertise or bringing change to a junior department* (P38,Y4).

This statement, "*I found it difficult to balance home, work, family, personal, spiritual and leisure life and time* "(P35,Y4) is reflective of how participants began to see themselves as holistically as they are taught to see their patients. In this manner the importance of balance [bio-psycho-social model] is a valuable lesson that can be incorporated into patient care.

Participants also expressed concern about progress and feedback. Participants in all stages of training not only wanted to be involved in training decisions, but became concerned about how they were perceived by their peers. This is clear in the way this participant expressed outrage when a change perceived as less than ideal was implemented in the training programme:

> *The proposed 24hr acute pain and epidural service being introduced without any discussion with registrars is somewhat improper especially considering the excessive work hours expected. Even though in meetings it is often said that the department is concerned about registrars well-being, points like these imply otherwise. Furthermore fear of being labelled lazy or not willing to work prevents most people from voicing concerns* (P4,Y1).

Although the mentorship programme was developed to provide academic support in the form of assessment feedback and academic planning, some participants found the programme lacking.

> *Feedback during registrar/MO* [medical officer] *time generally poor in spite of mentor program. No idea how I compare to colleagues or whether I'm 'good' or 'bad'. Constructive criticism or any praise at all would be useful* (P38,Y4).

With all the challenges that participants faced in the quest for academic growth, was the experience of registrarship worth it? Was the end goal finally achieved? The answer perhaps lies in this statement by a final year participant that reflects maturity.

> *I've grown as a clinician and as a human being. Overall it's about what you put in because that is what determines what you get out of it. The harder you work, the greater the rewards* (P30,Y4).

Registrars are taught to think like anaesthesiologists who anticipate all aspects of surgery when doing pre-operative visits. Another final year participant proves that this goal of thinking is achieved when he chose to answer the research question in the following manner, "*I would like to divide this into patient, surgical and anaesthetic factors* " (P37,Y4).

Participants in their final year of training are now able to incorporate the sense of who they are not only as an individual but also as a specialist. Finally the transition from registrar to anaesthesiologist is complete.

4.4 Discussion

4.4.1 Introduction

Registrar training is a global challenge that affects the social, psychological and physical aspects of the trainee (9, 13, 17-19). This in turn affects the way in which registrars experience their training. The division of several participants' experiences into "*positive*" and "*negative*" aspects is echoed in some of the literature that describes similar experiences.

"T" is a female anaesthesiologist working in the United States. She is a wife and mother who constructed a blog website in 2007 to share her experiences with her peers and the public. Whilst addressing a series of questions posed by high school students interested in her field of practice, she shared some of the positive and negative aspects of being an anaesthesiologist.

> *Pros - the best part about the job is knowing you've really been there for each patient, right by his/her side, during moments when they truly need a helping hand or comforting presence, and also knowing that*

each concrete task you do has tangible meaning and often immediately visible helpfulness (22).

Cons - some careers in medicine are harder than others for making time for family - anaesthesiology can be flexible or it can be gruelling depending on where you end up working ... medical work environments can be toxic; the training is gruelling; the hours can be long and hard even after training is done (22).

Closer to home, Dr Makotsvana, a Zimbabwean registrar who qualified in the Department which hosted this study, provided her reflection of anaesthesiology training in South Africa. She noted that long working hours had made the tutorials that were offered several times a week difficult to attend. She also noted that the training programme was particularly challenging for female registrars. Those who chose to specialise, did so at the cost of raising a family and those who chose to start a family, continued to work long hours up to the third trimester of their pregnancies. Despite the challenges of training, she found fellow registrars to be supportive and acknowledged that it was important for registrars to stay balanced. She also reflected that the teaching programme was focused on producing good clinicians and not just successful examination candidates. Furthermore, she found that the opportunity to work with different consultants and rotate through different hospitals helped her to be "*more rounded academically*" (12).

The experiences reported by "T" and Dr Makotsvana are similar to the various experiences of the participants in this study. These experiences will now be discussed.

4.4.2 The gender experience

The observation made by Dr Makotsvana (12) and two female participants in this study (R16,Y3, R17,Y3) that women in particular are adversely affected by registrar training is echoed both at a national and international level.

Saloojee et al. (29) using a questionnaire in December 1991 studied registrars in the Department of Paediatrics and Child Health at Wits. They explored the registrars' perceptions of the training programme. There was a 97.5% response rate and 46% of respondents were female. Women gave a poorer rating for the training programme as they found the training environment "*discriminatory or unsympathetic to their needs*". Women also rated working relationships with senior house officers more poorly and 22% had experienced some form of sexual harassment. Fifty-nine percent of female registrars felt that they had been disadvantaged in their careers because of their gender. Some felt that more was expected from them as females as they were not taken seriously by staff, felt the pressure of the additional role of being a wife or were made to feel guilty for being pregnant. Additionally, the majority of female registrars (71%) felt that they were actively discouraged from becoming pregnant (29).

Female registrars are also more prone to the physical manifestations of stress. A Work-Home Interference model was developed and tested in a cross-sectional study of 105 male and 59 female registrars in an academic hospital in the Netherlands. The model sought to identify links between work/home stressors and psychosomatic complaints such as headaches and chest discomfort. In the study, female registrars were found to be significantly more prone to emotional exhaustion and psychosomatic symptoms than their male counterparts (14).

In terms of academic performance, female registrars fare worse than male registrars. In a study conducted in the United Kingdom from June 1999 until May 2008, registrars from the various medical schools in the United Kingdom were evaluated for their performance in the Fellow of the Royal College of Anaesthetists primary examination. It was found that overall, in the multiple choice questions, males performed significantly better than their female counterparts (30).

4.4.3 The academic experience

Academic support through tutorials within the Department of Anaesthesiology at Wits is readily available but can be improved upon through regular feedback on individual performance. Whilst participants felt that it is important to receive adequate training from consultants, they also felt that it is equally important to receive regular feedback (P38,Y4). This was a similar finding in other institutions.

A study conducted in 2006 amongst 32 family medicine registrars in the United Kingdom demonstrated that structured feedback allowed registrars to identify areas in their learning that needed improvement (58). Some registrars associated feedback with constructive criticism and when no feedback is obtained, it was assumed that their performance was satisfactory. Others need to be reassured that they are in fact doing well. Another registrar stated, "*Well I think I'm getting quite good feedback on actual, like specific things, sometimes I maybe just want, it's not even feedback it's more like reassurance that I'm not doing too badly*". Registrars also felt that although approachability is vital when it comes to receiving feedback, it may still be difficult to do so. This was reflected in the following statement:

> *I get on very well with the trainer and so I don't hesitate at all to ask him anything really. I tend to ask infrequently... sometimes I feel stupid if I ask certain questions that they think I should know, so I tend not to ask them unless I have to* (58).

Regardless of its form, academic support plays a key role in the pass rate of examinations. Those who passed the final Fellow of the Royal College of Anaesthesiologists examination in a study conducted in the United Kingdom in 1988 stated that they had great support from their respective departments in the form of tutorials and study aids. Those who failed the examination cited inadequate study time, excessive clinical work and change in domestic circumstances as contributing factors (30).

The difficulties in learning that result in high failure rates in examinations can perhaps be solved through the provision of protected teaching time. A study conducted at University of British Columbia (32) explored the effectiveness of their family medicine training programme. It was revealed that both registrars and consultants alike found the programme very effective. The programme afforded registrars the opportunity to engage in their learning by relieving them from on call duties for a week every two months. One registrar in that study remarked, "*None of us are post-call or on call, so we are not falling asleep and we actually can just focus on our academics*" (32).

The learning curve of academic growth is steep and academic support is therefore essential as well as beneficial. The descriptive reference to the learning curve as the oxygen-haemoglobin dissociation curve by one of the participants (P28,Y3) offers a useful analogy.

The oxygen-haemoglobin dissociation curve (Figure 4.1) is a sigmoid curve. It demonstrates a physiological concept where oxygen, which has a natural affinity for haemoglobin, can bind to it therefore saturating it. It can however never saturate it completely. There are certain factors that increase or decrease this affinity resulting in the human body either releasing the bound oxygen molecules (right shift) or holding on to them (left shift) (59).

This metaphor may have two equally relevant interpretations. One interpretation is illustrated below in Figure 4.2. Time is on the X-axis, the experiences of the participants is on the Y-axis, and haemoglobin is the knowledge acquired by registrars. Growth and knowledge increases as registrarship progresses (Phase 1). At the end of registrarship the onus will be on the now specialist to maintain this growth and knowledge ensuring it never becomes finite (Phase 2).

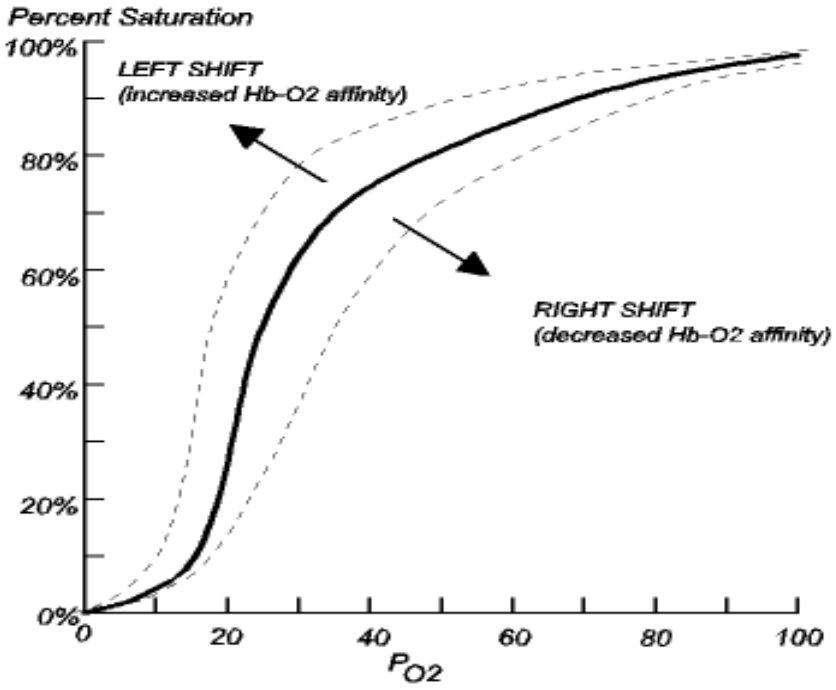

Figure 4.1: The oxygen-haemoglobin dissociation curve (59)

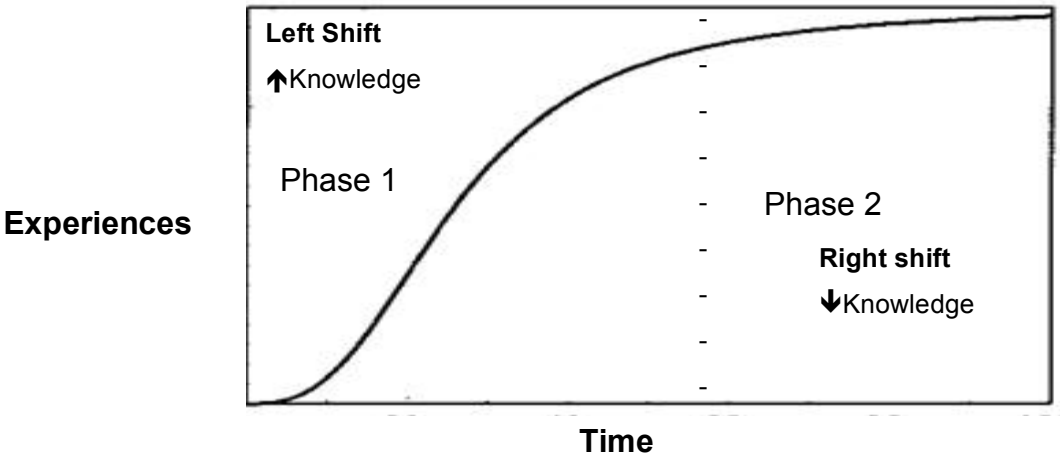

Figure 4.2: The phases of becoming an anaesthetic professional

The other interpretation is a more technical one where the shifting aspect of the curve is explored. In this interpretation Phase 1 and 2 (separated in Figure 4.2 by the dotted line) refer to the positive and negative aspects of registrarship respectively. Positive aspects of training encourage growth. Knowledge is acquired and retained during this stage and learning "shifts to the left". The negative aspects of training hinder growth and make it difficult to acquire and retain knowledge. Learning as a result "shifts to the right".

Phase 1 of the graph is larger and therefore reflects that positive experiences outweigh negative experiences.

In education the concept of transformation (60) involves the process during which students develop a professional identity and enter part of a community of practice through self-learning. In this way resilience, confidence, problem solving and critical thinking are developed (60). Donald Kirkpatrick's training evaluation model (61) was developed in 1959 to help trainers evaluate the effectiveness of their training in an objective way. The model, last updated in 1994, includes four levels through which to evaluate the impact of a training intervention:

- Level 1: Reaction measures how trainees react to their training.
- Level 2: Learning measures how much trainees have learnt.
- Level 3: Behaviour evaluates the changes in behaviour as a result of learning.
- Level 4: Result - here the trainer evaluates the overall result of the training process.

Looking at the overall progression of growth it is clear that self-awareness and evaluation begins to emerge as participants in this study move into their third and fourth year of training. There was a sole emphasis on academic training with the first year group but in the second, third and fourth year groups, narratives indicated that participants were beginning to develop their critical thinking skills. Not only were they aware of the flaws within the training program, but they were willing to offer suggestions on how these flaws could be amended to benefit them.

Using the Kirkpatrick model (61) to analyse the participants' reflections on their experience, it can be seen that the experiences of participants in the Wits circuit prove that the goal to produce self-aware, problem solving specialists is in fact successful.

4.4.4 The research experience

It was reported that the Department of Anaesthesiology at Wits offered protected teaching time for research for which participants were grateful. Despite this, some participants found it difficult to complete their research projects for a variety of reasons. Some participants had difficulty with their literature review whilst others hated the research block and felt the completion of a research project did not benefit them in any way (P40,Y4),(P24,Y3). Research supervisors were also not always readily available to some participants (P23,Y3). Participants found time constraints to be a major disadvantage to completing their research (P40,Y4,P16,Y3).

Although challenging for participants, research as a whole is acknowledged as an important part of clinical practice. In anaesthesia, this has been evidenced by the reduction of peri-operative mortality and morbidity rates over the past 50 years (33).

In 1988 the Australian and New Zealand College of Anaesthetists introduced research as a requirement for the completion of fellowship[3] training. A survey was conducted amongst registrars enrolled in the Auckland Anaesthesia Training scheme in 1998 to determine the registrars' perceptions of research. Although the majority of registrars (50%) had an appreciation of research, 35% had no desire to participate in research in the foreseeable future. Most registrars (63%) felt that formal research methodology training was necessary and should take place before the primary examination. The majority of these registrars however (52%), did not want a formal research methodology examination. "*Lack of resources and dedicated time for research*" were listed as disadvantages to conducting research. "*Poor clarification of guidelines*", "*involves considerable time*" and "*wastes time from passing exams*" were also listed as disadvantages (33).

Despite the development of established research requirements in most programmes, registrars are still resistant to research. Research looking into

[3] Fellowship refers to the period of training following registrarship usually in an area of interest within the
Specialty.

an explanation for this finding, found ineffective mentorship, limited funding resources and lack of statistical training, to be reasons (62). Sansone et al. (62) found that though the majority (75.6%) of the 131 registrar respondents in his study had attended a statistics course, 72% had rated their research skills to be below average. Registrars from internal medicine, general surgery, family medicine, psychiatry and emergency medicine in the United States participated in the study. The strongest motivation for research was the requirement to do so and registrars failed to see the long term benefits of experience gained during research. Lack of confidence, time restraints and well as the fufillment of other training requirements were cited as deterrents in conducting research.

4.4.5 The psychological and social experience

The onus is upon the registrar to successfully complete the necessary examinations as well as a research project within the four years allocated to registrarship. In addition to these requirements, it is expected that family and social responsibilities be fulfilled. The working environment was stressful, exhausting and competitive and it was a challenge to cope as the participants in this study struggled to balance their personal and academic lives.

Stress from preparing for examinations, long working hours and lack of sleep can have devastating consequences not only of the individual registrar; resulting in depression or burnout; but also on his/her family and patients. In 2003, a study conducted in the United States indicated that depressed registrars are 6.2 times more likely to make medical errors (evaluated through daily checks of ward charts and medication orders) than their non-depressed colleagues). More recently in June 2013, the Maslach Burnout Inventory was used to determine the levels of burnout amongst anaesthetists in Gauteng. The study revealed that 124 (21%) doctors working in the Department of Anaesthesiology at Wits and 86 (8.1%) of private anaesthetists demonstrated high levels of burnout (28).

In a week, assuming two nights on call, only 9 to 14 hours of free time is available to registrars for study, family and relaxation time. The majority of the

focus groups used in the United States sleep study (19) reflected this when 19 of the 22 groups agreed that the negative impact of sleep loss and fatigue together with the demands of residency resulted in minimal time for recreational activities. One resident commented, "*I feel as if I didn't have a right to have a life outside my work*". A large number of groups (17 out of 22) also agreed that interpersonal relationships were adversely affected. One obstetrics and gynaecology resident stated:

> *Sleep loss affects marriage. My partner doesn't understand; he wants to do things when I come home and am off-call. My spouse doesn't understand the pressure and the fatigue. It's really hard to get myself to do anything but sleep when I get home* (19).

Those not in relationships have little time to form them and female residents found this particularly stressful given their reproductive time constraints. Another obstetrics and gynaecology resident stated, "*If you're not already married, it's impossible to find a spouse. If you are married, it's hard to maintain your relationship*" (19).

The amount of conflict and dissatisfaction in marriages is significantly higher amongst physicians compared to the general population. Physicians are often married to other physicians and although it is advantageous to have a partner who is able to empathise with work demands, availing time for intimacy and child care becomes an even greater challenge (31).

Erratic work schedules disrupt normal patterns and contribute to sleep loss which impacts negatively on doctor-patient relationships and work performance. This was demonstrated in a study conducted in the United States in 2001. Interviews were conducted in 22 groups consisting of 89 senior residents and 60 interns from five academic medical centres. The majority of participants (20 of the 22 groups) reported that sleep loss had an adverse effect on their cognitive skills and complex thinking. These groups of participants described themselves as "*inattentive*", "*abrupt*" and "*impatient*" when fatigued. Many participants (14 groups) also admitted to taking short

cuts when managing their patients. Participants in eight of the focus groups admitted to having fallen asleep whilst on duty and when it came to rote performance, participants in nine of the focus groups admitted to being guilty of this practice when fatigued. Participants also completed a questionnaire which used the Epworth Sleepiness Scale to determine the effect that sleepiness, sleep loss and fatigue had on them. In the questionnaire, the majority of participants (89%) strongly disagreed with the statement "*my thinking is unaffected by sleep loss*" and 68% of participants agreed or strongly agreed that sleep loss and fatigue had a major impact on their work (19).

Fatigue resulting from sleep deprivation can have detrimental effects on work performance (13). The Libby Zion case in 1984 led officials in New York to review the working hours of registrars. Libby Zion had begun the use of phenelzine as part of her psychiatric treatment for stress in January 1983. In late February she had a tooth extracted and her dentist had prescribed oxycodone for pain. When she became febrile a few days later, her physician prescribed erythromycin and chlorpheniramine. In March she presented to the New York Hospital with agitation, fever and arthralgia and died shortly after receiving the drug meperidine. The cause of death was respiratory failure secondary to serotonin syndrome: a drug interaction that results in excess serotonin levels within the central nervous system. The intern and junior resident who had been in charge of her care had been on duty for 18 hours and it was implicated by a grand jury that fatigue had led to inappropriate management of her condition (18).

4.4.6 The racial experience

The participants in this study have addressed the environmental, social, psychological, gender and educational influences on registrarship. The one area that needs further exploration is the influence of race on registrars in the Department of Anaesthesiology at Wits. Racial discrimination has previously been identified as a factor that influences the educational experiences of registrars.

London et al. (55) performed a survey at the University of Cape Town assessing the trends in race and gender profile of registrars registered for the Masters of Medicine degree in the faculty from 1999 to 2006. Personal experiences of discrimination, the experience of the recruitment process as well the learning, teaching and research environments at the University of Cape Town were assessed. Fifteen percent of respondents felt that the University of Cape Town was an unwelcoming environment. Perceived unfriendliness (stated by three white registrars), and racial prejudice (stated by two non-white registrars), were cited as reasons. Discrimination was reported by 14% of respondents. Racial discrimination was experienced by seven (four non-white and three white) respondents. One participant specified that it was gender discrimination and five did not specify the type of discrimination. Those who reported racial discrimination gave a poorer assessment of the learning and research environment. Respondents that had a child during their training (10%) gave poorer ratings for the teaching environment.

Given the exploratory nature of this study further data collection in the form of in-depth interviews or focus groups was decided against. The lack of detailed commentary by the participants in our study about the presence or absence of racial discrimination within the Wits Department of Anaesthesiology was therefore disappointing. This limited any interpretation of the significance of race in our study and therefore gives opportunity for further research in this area.

4.4.7 Conclusion

Despite the challenges presented, the overall impression of the Department of Anaesthesiology at Wits is of a positive place in which to learn. Participants felt that Wits was the best place to complete their training. The academic programme was reported as excellent and provided academic growth through exposure to various disciplines and patient profiles.

4.5 Limitations of the study

Many participants found responding to the open-ended research question cumbersome and simply wanted to indicate on a checklist the pros and cons of their training. Some vocalised not knowing what to write. Prompts such as, "*give your account of any part of your experience- whether good and bad*" or "*give an account of your training that will add value to how future registrars are trained*" were given in some instances to guide narratives. This may have resulted in biased or guided perceptions of the training experience.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This chapter provides a summary as well as the recommendations and conclusion of the study.

5.2 Summary

This summary includes the aim, research methodology and findings of the study.

5.2.1 Aim

The aim of this study was to describe how anaesthesiology registrars in the Department of Anaesthesiology at Wits experience their training.

5.2.2 Methodology

This was a descriptive, exploratory and qualitative study that used naïve sketches as an instrument to explore narratives that addressed the research question. The study population consisted of anaesthesiology registrars working in the Department of Anaesthesiology at Wits. Purposive sampling was used and the sample for this study was selected in order to achieve rich descriptions in the form of naïve sketches. Forty one naïve sketches were collected. Data saturation was achieved during the analysis as no new information or themes emerged from the final narratives

5.2.3 Findings

The participants' experiences were described by six themes.

Theme 1: "The roller coaster experience of learning".

Theme 2: "The struggle for academic achievement".

Theme 3: "Lack of protected teaching- an addition to the academic struggle".

Theme 4: "Unresolved tensions- service or learning?"

Theme 5: "The challenge of balance".
Theme 6: "Growth- from registrar to specialist".

These themes described that overall the Wits Department of Anaesthesiology was a positive place in which to learn. The academic programme was reported as excellent and provided exposure to various disciplines and patient profiles. The environment was stressful and it was a challenge to cope as participants struggled to balance their personal and academic lives. The burden of health care in the public sector in South Africa added to the stress of training and participants felt that academic support though readily available, could be improved upon. Participants also felt that should disagreements with the training programme arise, safe channels to voice concerns did not exist. In addition, psychological and social support from the department was lacking and trust in the ICAS system has not been earned.

With regards to academic performance, support through tutorials was readily available but the tutorial programme was often difficult to attend due to limited or lack of protected teaching time. Participants found it difficult to complete their research projects for various reasons. Some participants had difficulty with their literature review whilst others hated the research block and felt the completion of a research project did not benefit them in any way. Research supervisors were also not always readily available to participants and some participants found time constraints to be a major disadvantage in completing their research.

Female participants struggled with registrarship and felt that training did not cater for their multiple roles as wives, mothers and scholars. Black participants seemingly felt the need to work harder than their colleagues but information was lacking and this aspect of registrarship could not be explored.

To add to the stress of the work environment, the state of sleep-rooms and bathrooms at the various hospital sites was far from optimal and participants often worked long hours without bathroom breaks or the opportunity to eat. Verbal abuse from consultants was an additional stressor that left participants

feeling demoralised. However despite the challenges, participants felt that Wits was the best place to complete their training.

5.3 Recommendations

This study has demonstrated that there are a number of stressors that affected the participants in this study. Training could therefore be tailored with this in mind and all aspects of the programme should aim to reduce work place stressors as much as possible.

- **The work environment**

The reported abuse from senior members of staff, limited psychological support, unsatisfactory restroom facilities and the lack of dedicated anaesthetic nursing staff, by the participants, all make for an unpleasant working environment. Restrooms and bathrooms should be upgraded regularly and registrars should be afforded tea and lunch breaks. The lack of a dedicated anaesthetic nurse at Helen Joseph Hospital could be amended as it adds to the workload of registrars. Additional ways of providing psychological support can also be provided. Furthermore, safe channels to report abuse from staff members can also be established.

- **Protected teaching time**

Participants struggled to attend the after-hours tutorial programme due to limited or lack of protected teaching time. Protected teaching time affords registrars the opportunity to attend lectures and reflect on their learning. It also leaves time to enjoy social activities that aid in reducing stress levels. It is therefore recommended that some hours of the working day be allocated for teaching.

- **Research**

Research was an unfamiliar territory for participants. Time constraints and the unavailability of research supervisors added to the academic stress of participants. Protected teaching time for research and additional research supervisors could possibly be afforded to registrars to assist them to complete their research timeously.

5.4 Conclusion

The participants had a roller coaster experience of learning, where good and bad experiences played a role in becoming a specialist. There was a struggle for academic achievement, which was due in part to the lack of protected teaching time and the high clinical workload. In addition, the participants found it challenging balancing their academic and personal lives. Despite the challenges, the registrar journey was experienced as a rewarding one that equipped registrars with the skills and confidence needed to become accomplished specialists.

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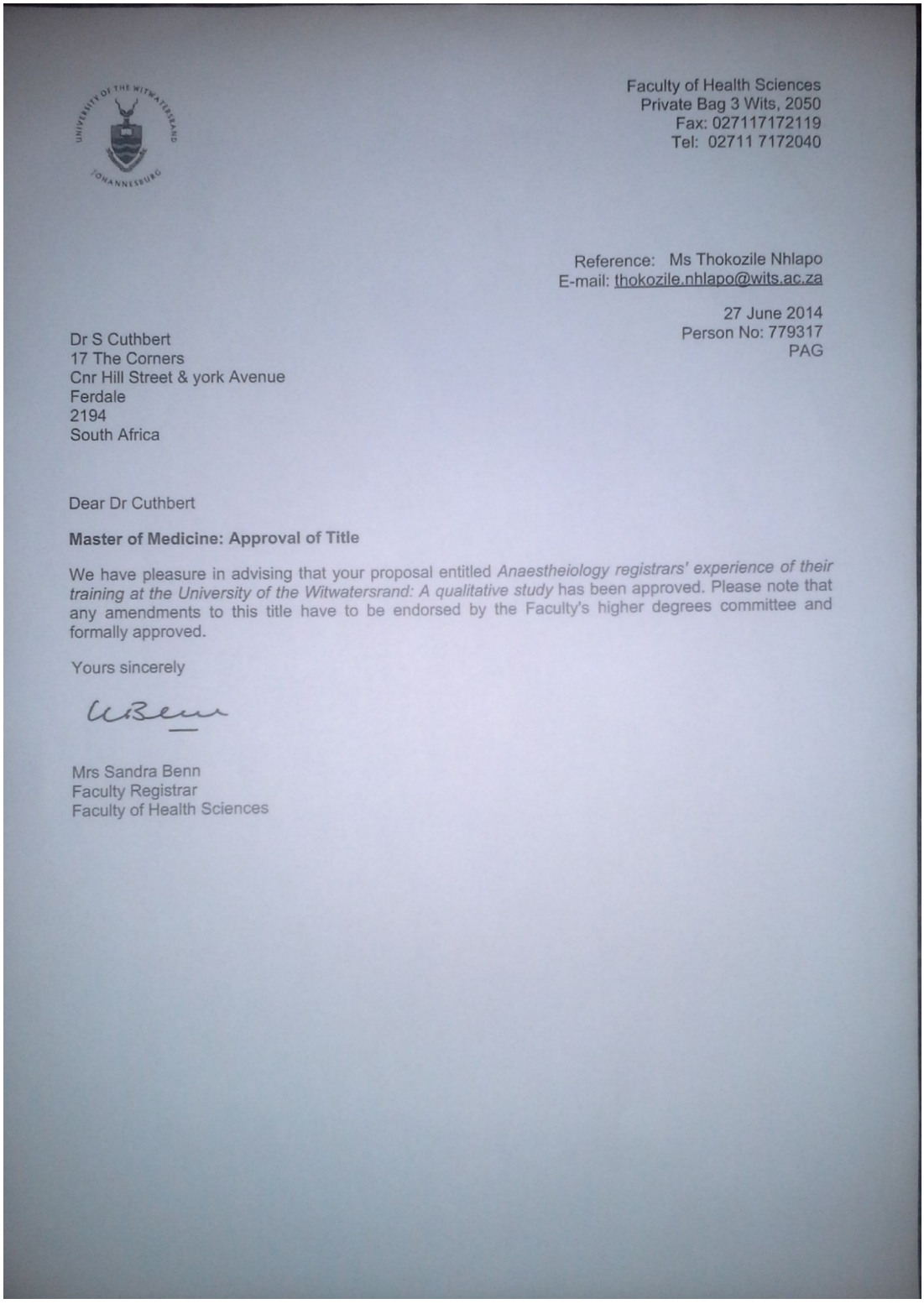
APPENDICES

Appendix 1

Graduate Studies Committee approval



Faculty of Health Sciences
Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172040

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

27 June 2014
Person No: 779317
PAG

Dr S Cuthbert
17 The Corners
Cnr Hill Street & york Avenue
Ferdale
2194
South Africa

Dear Dr Cuthbert

Master of Medicine: Approval of Title

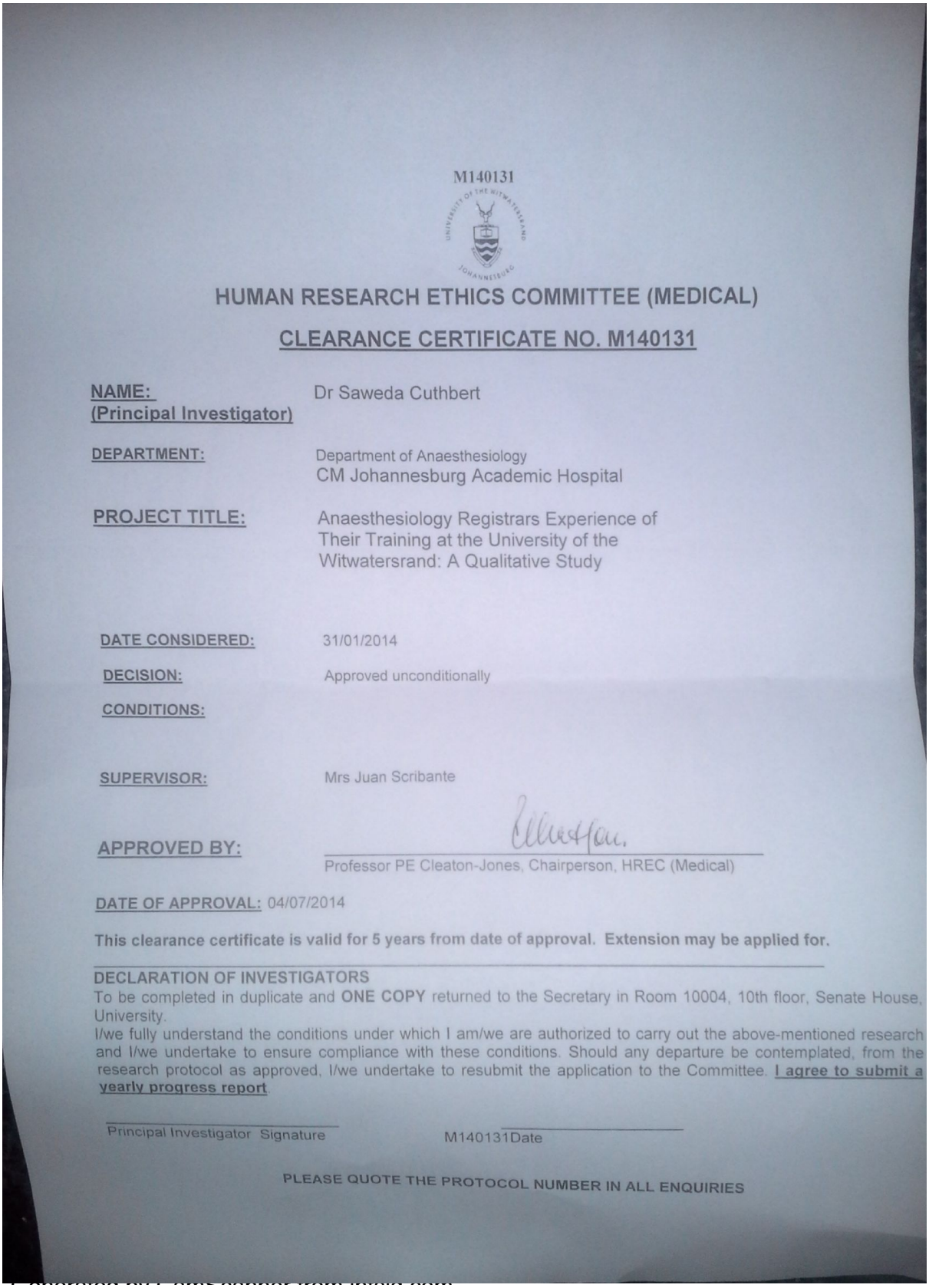
We have pleasure in advising that your proposal entitled *Anaestheiology registrars' experience of their training at the University of the Witwatersrand: A qualitative study* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

Appendix 2

Human Research Ethics Committee approval



M140131

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M140131

NAME: (Principal Investigator) Dr Saweda Cuthbert

DEPARTMENT: Department of Anaesthesiology
CM Johannesburg Academic Hospital

PROJECT TITLE: Anaesthesiology Registrars Experience of Their Training at the University of the Witwatersrand: A Qualitative Study

DATE CONSIDERED: 31/01/2014

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Mrs Juan Scribante

APPROVED BY:
Professor PE Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 04/07/2014

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

DECLARATION OF INVESTIGATORS

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

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

Principal Investigator Signature M140131Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 3

Information sheet

Dear colleague,
Hello, my name is Saweda and I am a fellow registrar in the Department of Anaesthesiology at the University of the Witwatersrand. I am currently doing my MMed titled **Anaesthesiology registrars' experience of their training at the University of the Witwatersrand: a qualitative study.** I would like to invite you to participate in this study. Understanding the positive and negative experiences of registrar training can assist the department to more effectively manage the training process. This may result in a more positive training environment that is to the benefit of the registrar, the department and especially service delivery.

Participation in this study is voluntary and you may withdraw from the study at anytime. Your consent to participate in this study will be implied by the submission of a completed data collection sheet. You will be required to indicate your age, race, gender, year of training, examinations passed, marital and parental status, as well as the hospitals through which you have rotated on your data collection sheets. This will help me to interpret your data as comprehensibly as possible. Once you have done this, you may proceed to respond to the research question.

This study is a qualitative study which means that you will be free to address the research question as extensively as you wish. You may submit a printed response if you do not wish to write out your responses. Additional pages (written out or printed) can be added to the data collection sheet if necessary but must be attached to the data collection sheet.

You may complete your data collection sheets at your own pace and place it in the unmarked envelope provided. The sealed envelope should be place in a sealed collection box which will be made available at combined academic meetings. Confidentiality will be maintained as the sealed collection box will be kept secure at all times and only the researcher and the supervisors will have access to the raw data.

Please feel free to contact me with any questions on 0724091973. Alternatively you may email me at snycuthbert@gmail.com. Further queries may be directed to the head of the ethics committee Prof Cleaton-Jones on 011 488 4397.

Your participation is welcomed and will be most appreciated. Thank you for your time.

Regards,
Saweda Cuthbert

Appendix 4

Data collection sheet

Please tick the appropriate boxes

Demographic information

1. Gender:
   - ☐ Male
   - ☐ Female
2. Age:_____
3. Marital status
   - ☐ Single
   - ☐ Married
   - ☐ Divorced
4. Do you have children?
   - ☐ Yes
   - ☐ No
5. Race
   - ☐ African
   - ☐ Mixed race
   - ☐ Caucasian
   - ☐ Asian
6. Year of training
   - ☐ First year
   - ☐ Second year
   - ☐ Third year
   - ☐ Fourth year
7. Examinations passed (primary or final exit examination):_____
8. Which hospitals have you worked in?
   - ☐ Charlotte Maxeke Academic Johannesburg Hospital
   - ☐ Chris Hani Baragwanath Academic Hospital
   - ☐ Helen Joseph Hospital/Rahima Moosa Mother and Child Hospital
   - ☐ Wits Donald Gordon Medical Centre
   - ☐ Outreach Hospitals (please specify) _____

Please describe your experiences in becoming an Anaesthetist at WITS.

Appendix 5

The author's naïve sketch

My registrarship now in my senior year, has been akin to a planned pregnancy where a woman transitions from being a wife or a daughter, to being a mother. In a planned pregnancy, there is an initial period of excitement (anticipation) when the pregnancy is confirmed but as the foetus develops and the physical stress it places on the woman begins to manifest, emotions become mixed (transformation). The woman fears she may not be strong enough to carry the pregnancy to term and she is anxious about not having adequate financial or emotional support to care for her unborn child. Emotions continue to be mixed even in the third trimester. On the one hand she looks forward to meeting her newborn. On the other hand, the birth of the child brings with it a new beginning. The idea of change at this stage, though daunting, is welcomed and the woman's new role as mother and caregiver begins (becoming).

Gould (63) reinforces the notion of pregnancy as a process that results in tremendous physical and psychological transformation. Women harbour ambivalent emotions about the process and the journey involves the woman having to incorporate the sense of who she is, not only as an individual, but also as a mother. Additionally, the development of the child ultimately changes her role in society as well as her relationships with those around her. Similarly my registrar experience has been a transformative process that encompassed the process of choosing a specialty and ultimately becoming a specialist.

Having decided on a future career in anaesthesiology, I will never forget the day I received the phone call informing me that my application for registrarship had been successful. I could hardly contain my excitement. I bought my books to prepare for the primary examination the following day and imagined sailing through the following four years. After all I was a diligent, determined and dedicated student who had never struggled to achieve a set academic goal. What could possibly go wrong? I found out soon enough.

In the following three years, I learned the invaluable lesson that I am human, complete with a set of weaknesses and strengths. I learnt that time was precious and had to be managed effectively. I learnt when to be a leader and when to work as a follower in a team. I learnt to be selfless and humble but also to stand up for myself. I learnt the value of friends and family. Most importantly I learnt that as a medical practitioner I could not care for others without caring for myself first.

The first two years were hard. The volume of work I went through for primaries was overwhelming and the long working hours were exhausting. There were days I had to drag myself out of bed and there were days I cried out of sheer frustration. I doubted my intelligence and at some point could hardly see my way past the primary examination. There were times I felt paranoid. It seemed as though consultants were waiting for me to fail and I constantly felt I had to prove myself. It did not help matters when a white consultant emphasised that black female registrars in our Department were often not successful in passing the primary examination the first time round.

The relief I felt after passing primaries was indescribable but I soon realised that more was expected from me now that I was eligible for senior rotations. Despite passing, I still felt unsure of myself. I became depressed and withdrew from family and friends. I was increasingly more paranoid, paralysed with the fear of not being good enough. I stopped exercising and began to overeat which of course made matters worse.

One day I woke up feeling overwhelmingly sad. Feeling unable to deal with the increasing burden of depression, I decided to take my own life. Thankfully, as a plea for help, I reached out to a friend who came to my rescue. She ensured I was booked off for a week and referred me for counselling. The fact that I had neglected my physical and mental health was made evident during my counselling sessions. As a result of this neglect, I was unable to manage my stress levels effectively and this had ultimately led to my breakdown. Having been enlightened, I took the opportunity to make positive changes

within my life and focused on my physical and mental health. I adopted the practice of positive thinking and engaged in extracurricular activities such as classical dancing in the form of Salsa. I am so proud of my progress as an individual and as a health professional. I am no longer fearful of criticism and almost welcome it within reason of course. I am eager to grow and take full responsibility for that growth. To maintain a cheerful demeanour in the face of daily challenges is difficult but having learnt what I have, it is imperative I do so in order to survive.

I now embrace the idea of being a specialist and feel deserving of the anticipated title. I feel my seniors are confident in my abilities and this in turn makes me confident. The future is somewhat unclear as I am unsure of what fellowship to pursue but for now I am just eager to complete my time.

Appendix 6

List of participants' demographics

Participant Number	Gender	Age	Marital Status	Children?	Race	Year of Study	Examinations passed	% of hospitals rotated through
1	Female	31	Single	N	Caucasian	1	None	20
2	Male	29	Single	N	African	1	None	60
3	Female	30	Married	Y	African	1	None	40
4	Female	28	Married	N	Asian	1	None	60
5	Female	31	Single	N	Caucasian	1	Primary	60
6	Female	30	Married	N	African	1	Primary	20
7	Female	27	Single	N	Asian	1	None	20
8	Female	36	Single	N	African	2	None	40
9	Female	31	Married	Y	Asian	2	None	60
10	Female	41	Married	Y	African	2	None	40
11	Female	29	Single	N	African	2	None	40
12	Female	28	Married	N	Asian	2	Primary	80
13	Female	32	Single	N	Asian	2	Primary	80
14	Female	31	Single	N	Caucasian	2	Primary	80
15	Female	29	Married	N	Mixed	2	Primary	80
16	Female	32	Married	Y	African	3	None	100
17	Female	30	Married	Y	Asian	3	Not stated	80
18	Male	34	Divorced	N	Mixed	3	None	80
19	Female	34	Married	N	Caucasian	3	Primary	100
20	Male	31	Married	N	Asian	3	Primary	80

Participant Number	Gender	Age	Marital Status	Children?	Race	Year of Study	Examinations passed	% of hospitals rotated through
21	Male	32	Single	N	African	3	Primary	100
22	Male	30	Married	N	Asian	3	Primary	80
23	Female	30	Single	N	Caucasian	3	Primary	60
24	Female	30	Single	N	African	3	Primary	60
25	Female	30	Married	N	African	3	Primary	100
26	Female	30	Single	N	Caucasian	3	Primary	100
27	Female	32	Married	N	African	3	Primary	80
28	Male	33	Married	N	Asian	3	Primary	100
29	Male	34	Married	Y	Caucasian	4	Primary	80
30	Female	34	Single	Y	African	4	None	80
31	Female	31	Married	N	Caucasian	4	Primary	100
32	Male	32	Single	N	Caucasian	4	Final	100
33	Female	Not Stated	Married	N	African	4	Final	80
34	Female	32	Married	N	African	4	Primary	100
35	Male	31	Married	N	Asian	4	Primary	100
36	Male	30	Married	N	Caucasian	4	Primary	100
37	Male	31	Married	N	Asian	4	Not stated	100
38	Male	32	Married	N	Caucasian	4	Final	80
39	Female	33	Single	N	African	4	Primary	80
40	Female	33	Married	N	Caucasian	4	Primary	100
41	Female	32	Single	N	Asian	4	Primary	100