



**THE EMOTIONAL IMPACT OF A DEATH ON THE THEATRE TABLE
ON THE ANAESTHETIST
IN SOUTH AFRICA**

Author: Dr. J.J.S. van Niekerk

Research dissertation submitted in fulfilment of the requirement for
MMed in Anaesthesiology
Faculty of Health Sciences
Department of Anaesthesiology
University of Free State

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Supervisor:

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DECLARATION

Full names of student: **Jacobus Johannes Stephanus van Niekerk**

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Topic of work: **The emotional impact of a death on the theatre table on the Anaesthetist in South Africa.**

Declaration:

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this dissertation is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.
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ABSTRACT

Introduction: Perioperative deaths in developing countries are a common occurrence, thus an anaesthetist in South Africa is likely to experience at least one death on the table during his career. It affects the anaesthetist emotionally and can lead to a variety of disorders like anxiety, depression, substance abuse and most commonly post-traumatic stress disorder (PTSD). Certain interventions, like debriefings, have been proposed in order to mitigate the impact of a death on the table, but are not done regularly. The aim of this study was to determine the emotional impact that a death on the theatre table has on anaesthetists. We determined whether the anaesthetist was debriefed, had time off after the death and measured the prevalence of subsequent PTSD.

Methods: The study followed a quantitative observational, cross-sectional design with convenient sampling using an online questionnaire. The Impact of Events Scale- Revised was used to measure the likelihood of PTSD. The study population was anaesthetists (consultants and registrars) registered with SASA who has experienced a death on the table.

Results: A total of 1859 potential participants were contacted of which 453 responded, yielding a 24% response rate. The final analysis included 375 completed questionnaires. A total of 28.8% (CI 24.4%- 33.6%) had a probable diagnosis of PTSD. Age, years of experience and level of qualification did not affect the likelihood of developing PTSD. Only 15.5% of respondents were debriefed although 82.7% would have wanted a debriefing. Of the respondents with probable PTSD, 93% would have wanted debriefing, 85% would have liked time off and 82% felt the event influenced their work decisions. Correlating figures in those without PTSD was lower (78%, 61% and 67% respectively).

Conclusion: The prevalence of PTSD following a death on the table was high and debriefings were not done in most cases. The authors recommend the development of workplace protocols to help an anaesthetist deal with a death on the table.

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LIST OF ABBREVIATIONS

Abbreviation	Meaning
ASA	American Society of Anesthesiologists
HPCSA	Health Professions Council of South Africa
IES-R	Impact of events scale-revised
PTSD	Post-traumatic stress disorder
SA	South Africa
SASA	South African Society of Anaesthesiologists
REDCap	Research Electronic Data Capture
ANSA	Anaesthesia Network of South Africa
HSREC	Health Sciences Research Ethics Committee
CI	Confidence interval
IQR	Interquartile range
CISD	Critical incident stress debriefing

DEFINITION OF KEY TERMS

Key term	Definition
Physician	A qualified medical practitioner, which is concerned with promoting, maintaining, or restoring health through study, diagnosis and treatment of disease, injury and other physical or mental impairments.
Anaesthetists	A medical specialist who administers anaesthetics. For the purpose of the study medical specialist in training is included.
Perioperative deaths	A death that occurs within the perioperative period, this includes ward admission, anaesthesia, surgery until 24 hours postoperatively.
Intra-operative death	A death that occurs intraoperatively, from the start of the anaesthetic until the patient leaves theatre.
Unexpected death	A death that was unforeseen or where the patient's clinical condition did not indicate any life-threatening abnormalities. e.g. Young healthy 5-year-old for routine tonsillectomy.
Expected death	A death that, although unintended, could be foreseen due to life-threatening illness or injury. e.g. a shocked 40-year-old male with a stab wound to the heart.
Private sector	Part of the medical services not under state control.
Public sector	Medical services that is under state control.
Procedure related deaths	The death of a person undergoing, or as a result of, procedure of a therapeutic, diagnostic or palliative nature, or of which any aspect of such a procedure has been a contributory cause. There is no specified time or procedures.

CHAPTER ONE – PROTOCOL

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INTRODUCTION

Physicians are taught from an early stage in their career- “first do no harm”. As anaesthetists they are responsible for the patient in every aspect: physically, physiologically and psychologically.(1) Thus following a death on the table the anaesthesiologist may feel responsible and experience a range of professional, personal and inter-personal emotions.(2,3) Anaesthesia is considered a high stress speciality and anaesthetists have high rate of substance abuse disorder, burnout and suicide, higher than the general public and higher compared to other physicians.(4–6)

In developed countries perioperative deaths due to anaesthetic complications alone are rare- 1 in 13000 -but perioperative deaths in general are more common- 1 in 500.(7) In developing countries the incidence of anaesthetic related deaths is 1 in 625.(8) Since 2007 perioperative deaths and anaesthesia related deaths in South Africa are classified under a blanket term known as procedure related deaths, thus the act now includes deaths related to procedures not requiring anaesthesia.(9) Although there were 1732 deaths reported as a result of complications from medical and surgical care in South Africa (SA) in 2015, it is not stated how many of these occurred intra-operatively.(10) Studies done in developed countries showed that 62 to 92% of anaesthetists witnessed at least one intra-operative death during his/her career.(3,6)

Although doctors are confronted with death more often than the average person it can still be a traumatic event.(11) Certain factors play a role in how an intra-operative death is perceived by the attending doctors (anaesthetist and surgeon). For instance, an anaesthetist would probably be affected more by an unexpected death of a young healthy ASA 1 (American Society of Anesthesiologists Physical classification) patient than an “expected” death of a polytrauma ASA 5E patient having emergency surgery.(3) Literature evaluating if there is a difference in perception between an expected and unexpected death on the table is scarce. In a Canadian study by Todesco 64% of anaesthetists experienced an unanticipated perioperative death, although only 11% of the deaths were anaesthesia related, 25% of anaesthetists felt that they were being blamed for the death.(12) Other aspects that cause considerable stress are the experience of the provider, litigation and the reclusive nature of the work, especially in the

private sector, as public health providers is protected by the institution and a consultant anaesthetist is usually available for advice.(6)

An individual can develop an array of different psychological disorders following a traumatic event, depending on how the individual perceives the event. Post-traumatic stress disorder (PTSD) is the most prevalent disorder following a traumatic event; other disorders include depression, anxiety and substance abuse disorders.(13) In up to 50% of cases PTSD is accompanied by depression, anxiety and substance abuse disorder. The relative risk for suicide attempt among PTSD sufferers is two, which is comparable to someone with alcohol dependence (2.5).(14) Certain recommendations have been made to try and mitigate the situation such as immediate debriefing, collegial support and whether or not the anaesthetist and surgeon should be allowed to continue with the theatre list.(6,15–17) Although immediate debriefing is mentioned as a noteworthy intervention, it remains a rare occurrence and thus leaves the affected anaesthetist vulnerable to negative emotional responses.(18) Debriefings can be done in the form of critical incident stress management, which comprises of two phases namely defusing and critical incident stress debriefing (CISD). Defusing is a peer led open group discussion and should be done within hours after the event. This can raise some themes or ideas for further CISD. CISD should be done within 10 days of the incident by a specially trained facilitator. There are several CISD models that can be used and it should be noted that CISD is not therapy but used to identify individuals that will need further assistance. In certain studies most anaesthetists agree that time off after such an event should be offered.(19) The amount of time off that is acceptable varies from one to two days and some feel a case-by-case approach should be followed.(2,3,7) In a resource and staff restrained setting like South Africa the chance of getting time off after an intra-operative death is probably very slim. Collegial support in the form of mentorship programs or “buddy” systems can help an anaesthetist cope better with a traumatic event. Having departmental or workplace protocols in place to deal with a death on the table is a valuable tool to provide support to a colleague in need.(16) Guidelines written for dealing with a death on the table focus more on the medico-legal aspects or on how to communicate and deal with the patient’s family than on mitigating the emotional impact on the anaesthetist.(17) As a death on the table is due to unnatural causes according to Health Professions Act (56 of 1974) and its amendment of 2007 the doctor is required to inform the police in accordance with the Births and Deaths Registration Act (51 of 1992). This means that a form D28 and form GW7/24 must be completed. This is a medicolegal post-mortem and does not require the consent of the family. An inquest will then be conducted in accordance with the

Inquest Act (58 of 1959). This does not imply that the anaesthetist is guilty, it is a requirement by law to determine the cause of death.(9) Dealing with the family after a death on the table is also very important, they just lost a loved one. The whole team involved with patient care should be present. When communicating with the family of a patient that unexpectedly died during a procedure you must establish a positive therapeutic relationship and then respond to the crisis in a professional and compassionate manner. For this purpose you can use the CARE(create credibility, articulate, relate and empathize) and SHARE (scrutinize, honest and humble, articulate, reassure and ensure self-care) approach.(20) As can be seen by this approach self-care of the physician is important to prevent the physician from becoming the second victim.

Most of the literature mentioned originates from developed countries and thus the amount of parallels to be drawn is limited. Anaesthetists in South Africa is under constant stress due to large workloads and an increasing litigation climate leading to a large percentage (21%) of anaesthetists having burnout. This can lead to an increase in errors and decrease in effective treatment of patients.(5) A recent study done at the University of KwaZulu-Natal explored the personal and professional reactions of a death on the table among anaesthesia trainees and highlighted that these reactions need to be addressed concisely.(2) However, it was a small study and did not include any private practitioners.

This study will evaluate the emotional impact of a death on the table on the anaesthetist by estimating the prevalence of PTSD after a traumatic event.

PROBLEM STATEMENT

In SA there are currently no accepted guidelines for the anaesthesia provider on how to deal with an intra-operative death emotionally. However, multiple sources mention that the anaesthetist is affected by an intra-operative death. These mostly consist of data from developed countries and thus cannot be extrapolated to a developing country like South Africa.

RESEARCH QUESTION

What emotional impact does a death on the theatre table have on the anaesthesia provider in SA?

AIM

The aim of this study is to determine the emotional impact of a death on the theatre table on anaesthesia providers in SA.

OBJECTIVES

The following objectives were derived from the research aim:

Primary objective

1. To determine the emotional impact of a death on the table on the anaesthesia provider.

Secondary objectives

1. To determine if an intra-operative death affected the anaesthesia provider's confidence.
2. To determine if a debriefing was done.
3. To determine if an anaesthetist that experienced an intra-operative death would want assistance in dealing with the event.
4. To determine if an anaesthetic provider prefers time off after a death on the table.
5. To determine if there is an association between age and experience of the anaesthesia provider and how a death on the table is perceived.
6. To determine the prevalence of PTSD amongst anaesthesia providers that experienced a death on the table.

IMPORTANCE AND BENEFITS OF THE STUDY

This study will:

- 1) make Anaesthesia Departments and practitioners aware of the emotional impact of death on the theatre table on the anaesthesiologist
- 2) show the importance of introducing a protocol to follow after losing a patient on the theatre table
- 3) aid in establishing guidelines to follow after a death on the table

4) assist the anaesthesiologist to continue providing optimal health care to the patients.

DELIMITATIONS AND ASSUMPTIONS

Delimitations

The following boundaries are set:

- Only the prevalence of PTSD amongst anaesthesia providers that experienced a death on the table will be determined. PTSD is the most prevalent disorder following a traumatic event.(13)
- The researcher will not include other emotional impacts e.g. anxiety, depression and substance abuse in this study. This is due to logistical reasons, as adding standardised questionnaires for each emotion would add an extra 25 questions per emotion. This would lead to a long and cumbersome survey and reduce the response rate.

Assumptions

The following are assumed:

- All anaesthetists that are able to read and write English as first or second language.
- All practicing anaesthetists that are registered with the South African Society of Anaesthesiologists (SASA).

STUDY DESIGN AND METHODOLOGY

INTRODUCTION

There are currently no accepted guidelines for the anaesthesia providers in SA on how to deal with an intra-operative death emotionally. This study will determine the emotional impact of death on the theatre table on the anaesthetist. The data thus collected could assist in creating guidelines to help the anaesthesia provider cope with a death on the table.

STUDY DESIGN

The study will follow a quantitative observational, cross-sectional design.

STUDY SETTING

There are more than 1500 anaesthetists in SA. The study setting can thus not be at one place in time due to logistics; therefore, the study setting will be an online platform involving all qualified anaesthetists and registrar anaesthetists registered at SASA who have experienced a death on the theatre table during his/her career.

STUDY POPULATION AND SAMPLING

Study population

All qualified anaesthesiologists and registrars in anaesthesiology registered at SASA in 2018 who have experienced a death on the table will be invited to take part in the research. Currently there are 1140 consultant anaesthetists and 396 registrar anaesthetists registered with SASA. General practitioners and medical officers with a Diploma in Anaesthesia is not included in the study.

English will be the accepted language of communication.

Sampling method

Convenient sampling will be used.

Sample size

The total study population is 1536 (1140 consultant and 396 registrar anaesthetists). The usual response to an online survey varies from as low as 17% to as high as 70%.^(21,22) Of course, this depends on several factors, with surveys among employees having the highest response rate and random online surveys the lowest.⁽²³⁾ Even though this survey can be seen as an internal survey, which usually has a higher response rate, a lower response rate of 35% will be more realistic, yielding a sample size of approximately 384.

Inclusion criteria

This study will include all the anaesthetists and registrar anaesthetists registered with SASA with internet access in SA, thus SASA is the data gatekeeper. The study will only include anaesthetists who have experienced a death on the theatre table during their career.

Exclusion criteria

Not to be included in this study:

1. Students and medical officers.
2. Any anaesthesiologist or registrar who has not experienced a death on the table during his/her career.
3. Anaesthesia providers not registered with SASA.

DATA COLLECTION

Measurement tools

An invitation with informed consent and link to the questionnaire will be emailed. Clicking on the link and starting the questionnaire will be regarded as consent given to take part in the study. The researcher will be available via email if there are any uncertainties or comments. A period of three months will be given to the participants to complete the questionnaire. The questionnaire will be sent multiple times during this period to improve response rate.

The software package from Research Electronic Data Capture (REDCap) managed by the Anaesthesia Network for South Africa (ANSA) will be used to gather the information. An

electronic questionnaire will be developed as a measurement tool (see Appendices). The questionnaire with the informed consent (see Appendices) will be e-mailed to the possible participants after ethical clearance is obtained. The questionnaire can be completed on a computer, smartphone or tablet. The questionnaire will consist of two sections. The first section will collect mainly biographic information (see Appendices: Biographic information). The second section will consist of the Impact of events scale-revised (IES-R) (see Appendices). The IES-R consists of 22 questions that measure avoidance, intrusion and hyperarousal symptoms.

The participants will be able to move back and forth between the questions. The questionnaire will take more or less 10 minutes to complete.

The following will be considered for the questionnaire:

1. anaesthesiologist generally don't have a lot of time, therefore the time needed to complete the questionnaire will be kept at a minimum;
2. questions will be kept short and to the point;
3. the questionnaire will be made user friendly by allocating tick boxes at most of the questions.

Measurement technique

The Impact of events scale-revised (IES-R) will be used (see Appendices) It consists of 22 questions about the traumatic event. The participant must score each question in terms of how it affected him/her. A score of 0 means the participant was not affected at all and a score of 4 means that it affected the participant in an extreme manner. The score of all 22 questions is then added and will indicate the probability the participant has to develop PTSD. If a participant achieves a total of 33 or more, he has a probable diagnosis of PTSD. Previous studies has shown that scores of 33 or more can be used as specificity (0.91) and sensitivity (0.82) screening for PTSD.(24,25)

There are three subscales within the IES-R, which correlates with the three main symptoms of PTSD. The subscales are:

1. the avoidance subscale (consisting of questions 5, 7, 8, 11, 12, 13, 17 and 22)
2. the intrusion subscale (questions 1, 2, 3, 6, 9, 14, 16 and 20)
3. the hyperarousal subscale (4, 10, 15, 18, 19 and 21).

The mean for each subscale is calculated, with the maximum mean score of 4 per subscale. The means of the subscales alone are not used in clinical diagnosis, but some clinicians use them to track changes in patient symptoms.(26)

Measurement procedure

The data collection will be done via an online survey, using the REDCap online platform from ANSA. The online survey will be designed and managed by ANSA. They will design the survey once approval from the HSREC has been obtained. A pilot study will then be done (the pilot study is described in detail later in the protocol). If any amendments are to be made the researcher will submit it for ethics approval again; if no amendments are to be made the researcher will ask ANSA to distribute the questionnaire to the participants. ANSA uses the SASA membership database and has access to all member email addresses. The survey will be active from the first time it is sent to the participants and participants will be given a three-month period to complete the survey. ANSA will be able to monitor which email address has completed the survey via the REDCap system. Once the three-month period has expired the data can be electronically exported to an Excel spreadsheet. The electronic data will then be sent to the Department of Biostatistics at the University of The Free State for analysis.

The procedure which includes the pilot study, is summarized in the following diagram. (p.21)

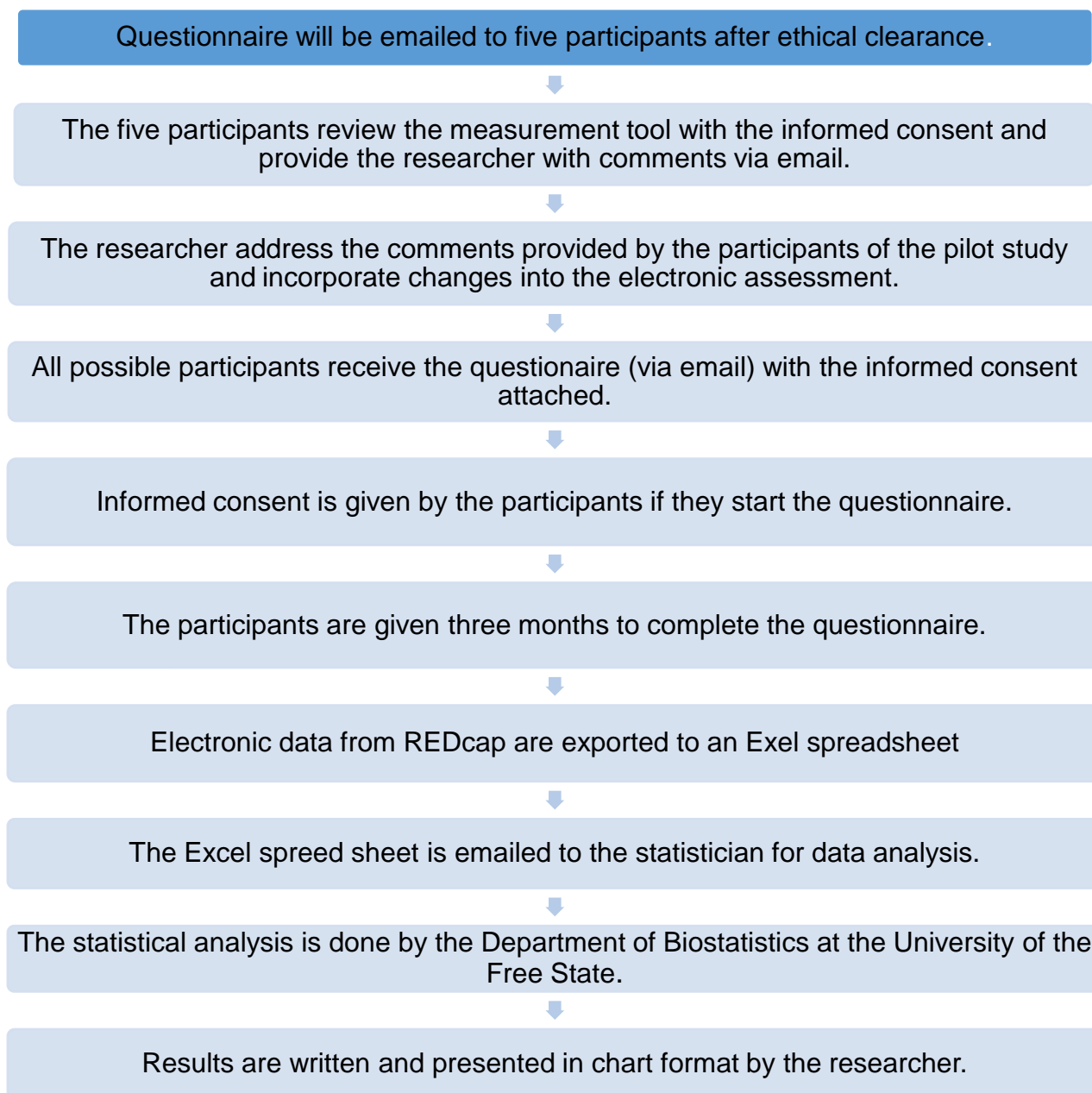


Figure 1: Summary of measurement procedure

Methodological and measurement errors

This research proposal will be read and evaluated by experts in the field of anaesthesiology and psychology. It will also be evaluated by the researcher and The Health Sciences Research Ethics Committee of the University of Free State. The researcher will make use of a qualified statistician at the University of Free State for the data analysis, and a language editor to proofread the research document.

Possible measurement errors that may occur are that some participants might not answer the questionnaire truthfully and some might be unwilling to participate.

Data integrity will be maintained due to the fact that the data collection is in electronic format and will be exported electronically to an Excel spreadsheet, thus minimizing the possibility of human error.

The measurement tool has content validity due to the following:

- 1 the questions asked in the questionnaire linked with the objectives of the study
- 2 the impact of events scale-revised will be used
- 3 a pilot study will be done.

No questions will be asked that might offend the research participants. The measurement tool will be written in English which is the universal language used in communication among anaesthesiologists.

Researcher bias will be limited by the following:

1. the researcher will not choose the research participants
2. participants will give consent to take part
3. all the research participants will receive the same questionnaire to determine the answer of the research question.

Pilot study

Five participants from the Department of Anaesthesiology of University of the Free State will be chosen to take part in the pilot study.

The aim of the pilot study will be to ensure that the online questionnaire is suitable, easy to understand and free from possible errors. The pilot study will also indicate any methodological and measurement errors that need to be addressed.

After permission from The Health Sciences Research Ethics Committee of the University of Free State is obtained, the researcher will invite five anaesthesiologists from the University of the Free State Department of Anaesthesiology to take part in the pilot study. The researcher will use convenient sampling.

The pilot study participants will receive electronically mailed letters of informed consent for permission to take part in the pilot study. When participants consent, they merely click on a link that will take them to the questionnaire. The participants will be requested to provide written electronic feedback after one week of receiving the measurement tool.

The comments and information provided by the pilot study participants pertaining to the questionnaire will be implemented to make the questionnaire more suitable and user friendly.

The raw data collected in the pilot study will be checked by the researcher to verify that the data would give the necessary information required to answer the aim and objectives.

All necessary amendments will be submitted to the Health Sciences Research Ethics Committee (HSREC) for approval.

If no amendments are made the pilot study data will be included in the main study.

DATA ANALYSIS

Descriptive statistics namely frequencies and percentages for categorical data and means and standard deviations or medians and percentiles for continuous data will be calculated. The prevalence of PTSD will be calculated and described by means of 95% confidence interval for the prevalence. Associations between age, years of experience and PTSD will be calculated and described by means of 95% confidence intervals. The analysis will be done by Department Biostatistics, UFS.

ETHICAL AND LEGAL CONSIDERATIONS

Ethical and legal considerations will be accounted for by following the ethical principles of Helsinki and the Health Professions Council of South Africa (HPCSA) guidelines for health researchers. The ethical permission will be sought from the Health Sciences Research Ethics Committee, UFS.

This is a quantitative observational study with a cross-sectional design and no patient contact will occur.

The dignity, integrity, rights to self-determination, privacy and confidentiality of the research participants will be upheld. All participants will give informed consent to take part in the study (see Annexure C). The electronic questionnaires will not be linked to the research participants; the researcher will not know who completed which electronic questionnaire. ANSA will send out the questionnaire via the REDCap online tool and will be able to monitor which email address has completed the questionnaire, but the system cannot link a specific questionnaire to a specific email address, thus anonymity of the participants is preserved.

There is minimal risk to participants. This will be mitigated by the fact that the questionnaire is anonymous. A link to the SASA wellness program with all the necessary contact details will be provided at the end of the questionnaire. Should any participant feel emotional distress during or after the survey they would be able to contact the SASA wellness team.

The Department of Anaesthesiology of the UFS will provide a portion of the funding needed. The student will cover the rest of the costs. The researcher is not affiliated to any institution other than the UFS.

The research will be compiled in such a way that there will be no conflict of interest.

The researcher will act in the best interests of the research participants at all times. If research participants wish to stop their participation at any given moment, they will be free to do so.

The researcher will store all information and main data for fifteen years; as stated before, the participants will not provide their names at any stage, thus information is not traceable to the research participants. No traceable information of the research participants will be required.

TIME SCHEDULE

Table 1: Time schedule for mini dissertation.

Task	2017		2018						2019
	Sept- Oct	Nov- Des	Jan- Feb	Mar- Apr	May- Jun	Jul- Aug	Sept- Oct	Nov- Des	Jan- May
Literature study	x								
Write protocol	x								
Revise protocol		x	x						
Submit ethics committee			x	x					
Collect data					x	x	x		
Statistical analysis								x	
Write report								x	
Revise report								x	
Proofread									x
Final revision									x
Print/bind/submit									x

BUDGET

The researcher will be responsible for most of the costs (Table 2.2). The Department of Anaesthesiology of the UFS will cover the R1000 for the REDcap research tool.

Table 2: Budget for mini dissertation.

Item	Cost
Internet costs	R 200
Paper	R 250
Pens	R 25
Printing costs	R 500
REDCap	R 1000
TOTAL	R1975

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CHAPTER TWO – ARTICLE

**INTENDED FOR PUBLICATION IN THE SOUTH AFRICAN JOURNAL
OF ANAESTHESIA AND ANALGESIA**

**THE EMOTIONAL IMPACT OF A DEATH ON THE THEATRE TABLE
ON THE ANAESTHETIST IN SOUTH AFRICA**

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Abstract

Introduction: Perioperative deaths in developing countries are a common occurrence, thus an anaesthetist in South Africa is likely to experience at least one death on the table during his career. It affects the anaesthetist emotionally and can lead to a variety of disorders like anxiety, depression, substance abuse and most commonly post-traumatic stress disorder (PTSD). Certain interventions, like debriefings, have been proposed in order to mitigate the impact of a death on the table, but are not done regularly. The aim of this study was to determine the emotional impact that a death on the theatre table has on anaesthetists. We determined whether the anaesthetist was debriefed, had time off after the death and measured the prevalence of subsequent PTSD.

Methods: The study followed a quantitative observational, cross-sectional design with convenient sampling using an online questionnaire. The Impact of Events Scale-Revised was used to measure the likelihood of PTSD. The study population was anaesthetists (consultants and registrars) registered with SASA who experienced a death on the table.

Results: A total of 1859 potential participants were contacted of which 453 responded, yielding a 24% response rate. The final analysis included 375 completed questionnaires. A total of 28.8% (CI 24.4%- 33.6%) had a probable diagnosis of PTSD. Age, years of experience and level of qualification did not affect the likelihood of developing PTSD. Only 15.5% of respondents were debriefed although 82.7% would have wanted a debriefing. Of the respondents with probable PTSD, 93% would have wanted debriefing, 85% would have liked time off and 82% felt the event influenced their work decisions. Correlating figures in those without PTSD was lower (78%, 61% and 67% respectively).

Conclusion: The prevalence of PTSD following a death on the table was high and debriefings were not done in most cases. The authors recommend the development of workplace protocols to help an anaesthetist deal with a death on the table.

Keywords: Observational, perioperative, death, anaesthetist, emotional, impact.

Introduction

The mantra of “first do no harm” is taught to physicians from the early stages of their career. Anaesthetists are responsible for the patient in every aspect: physically, physiologically and psychologically.(1,2) Thus, following a death on the table the anaesthesiologist may feel responsible and experience a range of professional, personal and inter-personal emotions.(3,4)

In developed countries perioperative deaths due to anaesthetic complications alone are rare - one in 13000- but perioperative deaths in general are more common - one in 500.(5) In developing countries the incidence of anaesthetic related deaths is one in 625.(6) In 2007 it was decided to classify perioperative deaths and anaesthetic related deaths in South Africa under a blanket term known as *procedure related deaths*, thus the act now includes deaths related to procedures not requiring anaesthesia.(7) Although there were 1732 deaths reported as a result of complications from medical and surgical care in South Africa (SA) in 2015, it is not stated how many of these occurred intra-operatively.(8) Studies done in developed countries showed that 62 to 92% of anaesthetists witnessed at least one intra-operative death during his/her career.(4,9) Doctors are confronted with death more often than the average person but it is still a traumatic event.(10) Certain factors play a role in how an intra-operative death is perceived by the attending doctors (anaesthetist and surgeon). For instance, an anaesthetist would probably be affected more by an “unexpected” death of a young healthy ASA 1 (American Society of Anesthesiologists Physical classification) patient than an “expected” death of a polytrauma ASA 5E patient having emergency surgery.(4) Literature evaluating if there is a difference in perception between an expected and unexpected death on the table is scarce. In a Canadian study by Todesco 64% of anaesthetists experienced an unanticipated perioperative death, although only 11% of the deaths were anaesthesia related, 25% of anaesthetists felt that they were being blamed for the death.(11) Other aspects that cause considerable stress are the experience or lack of experience of the provider, fear of litigation and the reclusive nature of the work, especially in the private sector, as public health providers are protected by the institution and a consultant anaesthetist is usually available for advice. (9)

Following a traumatic event an individual can develop an array of different psychological disorders like post-traumatic stress disorder, depression, anxiety and substance abuse disorder. Of these post-traumatic stress disorder (PTSD) is the most prevalent disorder.(12) PTSD leads to an increase in suicidal behaviour, interpersonal problems, decreased income, as well as mental and physical health issues.(13) Certain recommendations have been made to try and mitigate the situation such as immediate debriefing, collegial support and whether or not the anaesthetist and surgeon should be allowed to continue with the theatre list.(9,14–16) Although immediate debriefing is mentioned as a noteworthy intervention, it remains a rare occurrence and thus leaves the affected anaesthetist vulnerable to negative emotional responses.(17–19) Anaesthetists agree that time off after such an event should be offered. The amount of time off that is acceptable vary from one to two days and some feel a case-by-case approach should be

followed.(3–5) In a resource and staff restrained setting like South Africa the chance of getting time off after an intra-operative death is probably very slim. Guidelines written for dealing with a death on the table focus more on the medico-legal aspects or on how to communicate and deal with the patient’s family than on mitigating the emotional impact on the anaesthetist.(16)

Aim

The primary objective of the study was to determine the emotional impact of a death on the table on the anaesthetist by determining the prevalence of PTSD after a death on the table. The Impact of Events Scale-Revised (IES-R) was used to determine the likelihood of PTSD. Secondary objectives included determining if an anaesthetist was debriefed, had time off or had confidence issues after the event.

Method

Most anaesthetists and registrar anaesthetists in South Africa are members of the South African Society of Anaesthesiologists (SASA). This was a quantitative observational study with cross-sectional design. The SASA membership database was used to recruit participants via convenient sampling. An anonymous online questionnaire was emailed to all specialist and registrar anaesthetists registered with SASA in 2018. Only anaesthetists registered with SASA and who have experienced a death on the table was included in the study. The recruitment period spanned three months, from May 2018 to July 2018, and multiple reminders were sent to improve response rate. The online questionnaire was distributed and data collected via the Research Electronic Data Capture (REDCap) system which is managed by the Anaesthesia Network for South Africa (ANSA). Data collected consisted of the following components:

- 1) Demographic information: gender, age, years of experience, qualifications, workplace.
- 2) The watershed question: Have you ever experienced a death on the table? If they answered yes, the participants would be required to complete the following two components as well.
- 3) Debriefing information: did the anaesthetist receive a debriefing, would they have liked a debriefing, did they get time off, how much time off do they think is needed, did it influence their decision making.
- 4) IES-R: a 22-question screening tool for post-traumatic stress disorder.

When answering the IES-R the participants scored each question in terms of how it affected him/her. A score of 0 means the participant was not affected at all and a score of 4 means that

it affected the participant in an extreme manner. The score of all 22 questions is then summarised and this will indicate the probability the participant has to be diagnosed with PTSD. If a participant achieved a total of 33 or more, he is considered to have a probable diagnosis of PTSD. Previous studies has shown that scores above 33 can be used with specificity and sensitivity in screening for PTSD.(20) An electronic link to the SASA Wellness team flowchart with contact numbers was provided at the end of the questionnaire should the participants feel distressed after answering the questionnaire.

The data was captured electronically, exported to an Excel spreadsheet and sent to the University of the Free State Department of Biostatistics for evaluation. Descriptive statistics namely frequencies and percentages for categorical data and medians and percentiles for continuous data were calculated. The prevalence of PTSD was calculated and described by means of 95% confidence interval for prevalence. Associations between age, years of experience and PTSD were calculated and described by means of Chi-square or Fischer's exact test when the sample size was too small for categorical data. For numerical data Kruskal-Wallis test was calculated. P values ≤ 0.05 were considered statistically significant.

Ethics approval

This study was approved by the Ethics Committee of the Faculty of Health Sciences of University of the Free State (REF NR UFS-HSD2018/0129/2404). Permission was also obtained from the South African Society of Anaesthesiologists.

Results

A total of 1859 emails were sent to anaesthetists registered with SASA and 453 responses were received (24% response rate). A total of 375 questionnaires were analysed, 17 respondents have not experienced a death on the table, with 61 records being discarded due to incomplete, missing and nonsensical data. (See figure 1).

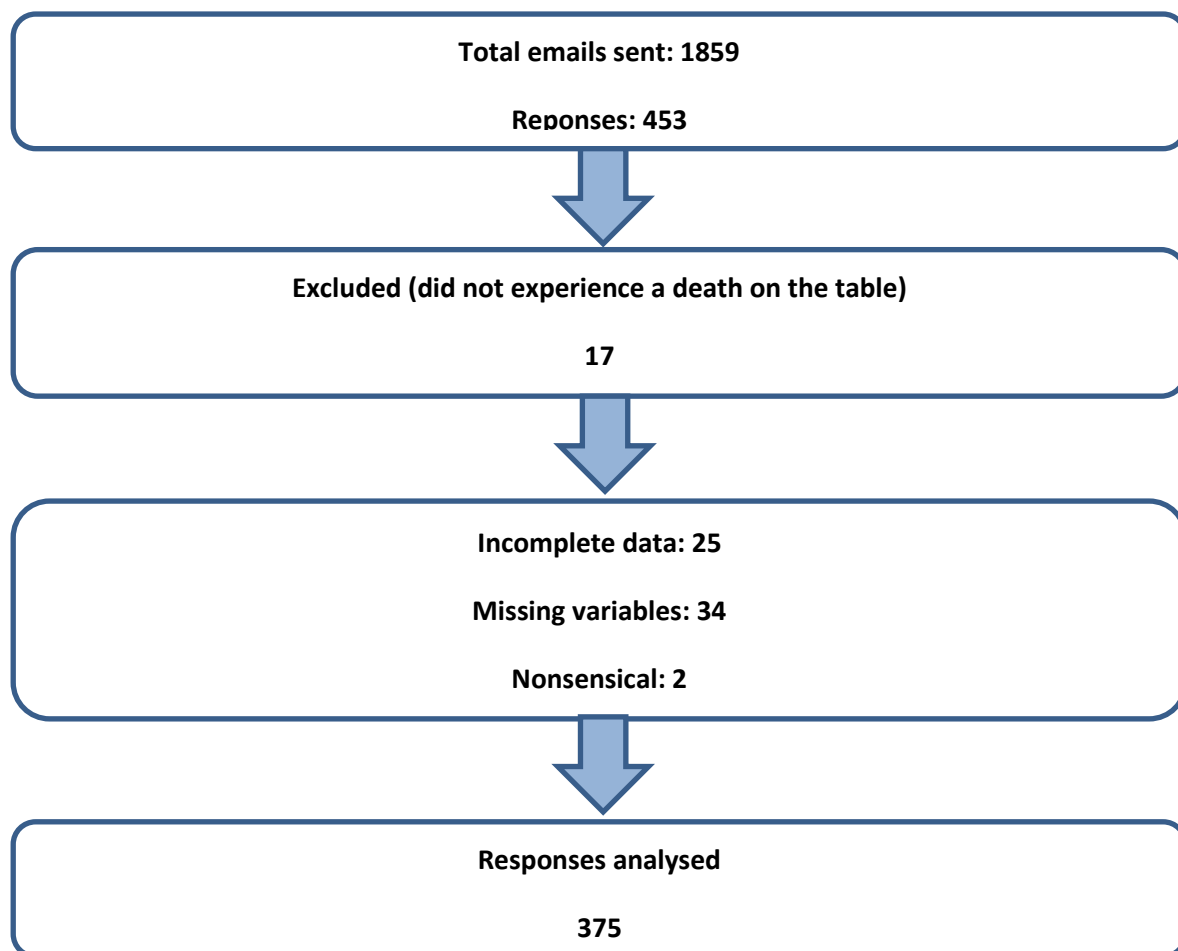


Figure 1: Breakdown of response to questionnaire

Of 392 participants 375 (96%) experienced a death on the table. The 375 participants that experienced a death on the table were used as the study sample. Table 1 shows the demographic data collected. The median age was 43 years (IQR 36-57) with slightly more male than females (57.6% vs 42.4%) experiencing a death on the theatre table. The median years of experience was 15 years with an interquartile range of 8 to 27 years. Most of the participants had at least a diploma in anaesthesia (61.1%), followed by a Fellowship (56%) and a MMed (42.4%) in Anaesthesia. This is probably because until 2012 registrars at Afrikaans universities completed a MMed alone. Private practitioners accounted for 54.6% of participants. Practitioners were either in solo practice or part of a group and they accounted for 25.3% and 29.3% of participants respectively. The government sector accounted for 30.4% of participants, with 13.1% working in both private and government sectors.

Table 1. Demographic characteristics of the sample group

Demographic characteristics	N= 375 Median (IQR)
Gender	
Male	216 (57.6%)
Female	159 (42.4%)
Age	43 (36-57)
Years of experience in Anaesthesia	15 (8-27)
Post-graduate qualifications	
Diploma in Anaesthesia	229 (61.1%)
FCA(SA)	210 (56%)
Certificate in critical care	7 (1.8%)
MMED in Anaesthesia	159 (42.4%)
PhD Anaesthesia	9 (2.4%)
None	11 (2.9%)
Other	32 (8.5%)
Workplace	
Private practice solo	95 (25.3%)
Private practice as part of association or partnership	110 (29.3%)
Government sector	114 (30.4%)
Government and private practice	49 (13.1%)
Other	7 (1.9%)

A total of 108 (28.8% CI 24.4%- 33.6%) participants had a probable diagnosis of PTSD as they scored more than 33 on the IES-R. There was no significant difference between the demographic data of the participants with PTSD and those without PTSD, as shown in Table 2.

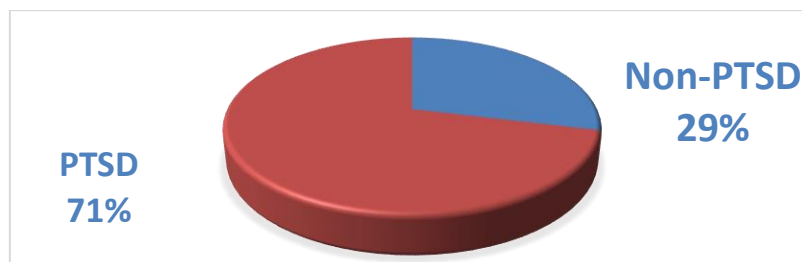


Figure 2: Prevalence of PTSD

Table 2. Comparison of the demographic characteristics of participants with and without PTSD

Demographic characteristics compared in participants with PTSD vs without PTSD	PTSD (N=108)	No- PTSD (N=267)	Chi-Square	P-Value
Gender			0.9429	0.3315
Male	58 (53.7%)	158 (59.2%)		
Female	50 (46.3%)	109 (40.8%)		
Age(years)			3.029	0.6954
28-34	22 (20%)	52 (19%)		
35-44	40 (37%)	91 (34%)		
45-54	18 (17%)	44 (16%)		
55-65	16 (15%)	58 (21%)		
66-74	9 (8%)	18 (7%)		
>75	3 (3%)	4 (1%)		
Years of experience in Anaesthesia			*	0.3195
1	1 (0.9%)	0		
2-4	2 (1.8%)	11 (4%)		
4-7	23 (21%)	43 (16%)		
8-15	33 (30.5%)	90 (33.7%)		
>15	49 (45%)	121 (45.3%)		
Post-graduate qualifications				
Diploma in Anaesthesia	73 (67.7%)	156 (58.4%)	2.72	0.0993
FCA(SA)	58 (53.7%)	152 (56.9%)	0.32	0.5689
Certificate in critical care	2 (1.9%)	5 (1.9%)	*	1
MMED in Anaesthesia	52 (48.2%)	107 (40.1%)	2.05	0.152
PhD Anaesthesia	0	9 (3.4%)	*	0.0645
None	2 (1.9%)	9 (3.4%)	*	0.7360
Other	7 (6.5%)	25 (9.4%)	0.82	0.3657
Workplace			3.38	0.495
Private practice solo	34(31.5%)	61 (22.9%)		
Private practise as part of association or partnership	27(25%)	83 (31.1%)		
Government sector	32(29.6%)	82 (30.7%)		
Government and private practice	13(12%)	36 (13.5%)		
Other	2 (1.9%)	5 (1.9%)		

* Fisher's Exact test used

Table 3 shows that in the PTSD group only 28.7% of participants had a departmental protocol in place compared to 41.6% in the non-PTSD group. Very few participants in both groups were debriefed (15%) although more participants with PTSD wanted debriefing (93.5%) than those without PTSD (78.3%). Most participants continued with the theatre list after the event, with no significant difference between the groups, but more participants with PTSD (85.2%) wanted time off than those without (61.4%). The amount of time that participants felt should be given off was similar between the two groups and most participants felt that the rest of the day off or a decision on a case by case basis should suffice. Significantly more anaesthetists in the PTSD

(82.4%) group felt that the death on the table influenced their decision making compared to the group without PTSD (66.7%).

Table 3. Post event proceedings among participants with PTSD and those without

Post event proceedings	PTSD (N=108)	No PTSD (N=267)	Chi-square	P- Value
Departmental protocol in place	31 (28.7%)	111 (41.6%)	5.4	0.02
Debriefing done	17 (15.7%)	41 (15.4%)	0.01	0.92
Debriefing wanted	101 (93.5%)	209 (78.3%)	12.46	0.0004
Continued with list	83 (76.9%)	196 (73.4%)	0.48	0.489
Would have liked time off	92 (85.2%)	164 (61.4%)	20.04	<0.0001
Amount of time off				
Rest of the day	39 (42.4%)	74 (45.1%)		
1 Day	10 (10.9%)	15 (9.2%)		
1 Week	1 (1.1%)	1 (0.6%)		
Decide on case by case basis	42 (45.7%)	74 (45.1%)		
Influenced decision making	89 (82.4%)	148 (66.7%)	9.29	0.0023

Discussion

This study found that the prevalence of PTSD following a death on the table among South African anaesthetists is significantly higher than expected, while the general population has a prevalence of 3% after a traumatic event. Studies assessing whether a patient death adversely affected the doctor caring for the patient found that the doctors were affected between 31% to 57%.(9,21–23) But these studies did not measure PTSD specifically and relied on subjective reporting of emotions felt by the doctors involved. Although not part of the outcomes, it was noted that 96% of respondents experienced a death on the table, meaning that most anaesthetists in South Africa will experience a death on the table during their careers. This is comparable with a study done by White in the United Kingdom, where 92% of their respondents reported having experienced a death on the table.(21) It was thought that the years of experience and age of the practitioner played a role in how a death on the table affects the practitioner, but we found that age, gender, years of experience, workplace and qualification do not differ significantly between the practitioners with PTSD and those without. In a study by Gazoni et al. only 15% of respondents were trainees and they did not note a correlation between the emotional impact and experience of the anaesthetist.(9) A Belgian study reporting on emotional exhaustion found it to be highest in trainees younger than 30 years, however this was in general and not linked to a traumatic event.(24)

Even though less than half of the respondents had a departmental protocol in place, if one was in place, anaesthetists were less likely to develop PTSD. In a study among Australian trainee anaesthetists almost half of respondents felt that they did not have departmental support.(18) Although having a debriefing did not significantly reduce the prevalence of PTSD compared to those participants without PTSD, the number of debriefings done is very low and the participants that developed PTSD display a need for further debriefing. It is worth noting that 78% of respondents without PTSD also felt they wanted a debriefing. This is in keeping with an American study where 89% of respondents that experienced a critical event felt that a debriefing should be done.(9) It might also be that if debriefings were done more regularly, we might have seen a difference, as debriefings have shown to make a difference in developing PTSD following a traumatic event. (16-18)

The issue of being given time-off would depend on the specific event, an expected vs an unexpected death or if the anaesthetist felt responsible for the death or not.(11,21) The temperament of the anaesthetist involved would also affect if the anaesthetist would want time-off but was not assessed in this study. In this study participants with PTSD showed an increased need for time off after the event compared to those without PTSD. At the 2019 SASA national congress during a session on wellness, concerns were raised about giving time-off to someone who has suffered a traumatic event, with some anaesthetists feeling that “getting back on the horse” is the best course of action. Others felt that the anaesthetist should not be allowed to continue the list, but that the affected anaesthetist should not be sent home alone and should attend a debriefing or be offered a counselling session in the time-off. Although it was shown that time-off is needed, in practice this might be challenging, especially for the solo practitioner and in a resource restrained environment. Even in developed countries anaesthetists continued with the list despite most guidelines recommending that the anaesthetist not continue with the list and some anaesthetists considering their subsequent patient care to be compromised within the first four hours following a traumatic event.(9,21) A large number of anaesthetists felt that experiencing a death on the table influenced their future decision making in anaesthesia (71%) but this amount was significantly higher in the group with PTSD (82.4% vs 66.7%). A qualitative South African study noted that most interviewees were concerned about their function in theatre and in an American national survey 51% of respondents felt their ability to provide anaesthesia was compromised immediately following the event.(3,9)

Limitations and strengths

The study is limited by the fact that only the prevalence of PTSD was measured. None of the other effects (anxiety, depression and substance abuse disorder) of a traumatic event were recorded and thus the emotional impact might be underestimated. The IES-R is only a screening tool and thus a definitive diagnosis cannot be made on it alone. The IES-R should usually be done within 7 days of the traumatic event, but because this might not have yielded enough numbers and the fact that PTSD has been shown to develop up to 10 years after a traumatic event, we decided not to enforce the time constraint. There might also be some volunteer bias, as convenient sampling was used and someone who was adversely affected by a death on the table might be more inclined to participate and if someone did not experience a death on the table or if they were not adversely affected they might not respond. Another limitation of the study is that the participants were questioned on their collective experience of death on the table and thus did not allow for multiple reporting. As the experience can differ depending on the circumstances it could have given some insight into whether an expected or unexpected death affected the anaesthetist more. Participants probably chose the most traumatic event, but it cannot be said with absolute certainty.

The study had a response rate of 24%, which is comparable with most online surveys.(25,26) Through the online platform we could reach a large variety of anaesthetists from different environments all over South Africa, which was lacking in some of the previous studies done. The IES-R has a good sensitivity (0.91) and specificity (0.82) for PTSD if a score of 33 or more is used.(27)

Recommendations

The prevalence of PTSD among South African anaesthetists after a death on the table is significantly higher than expected, with very little debriefings being done. It is recommended that departments, associations, partnerships and hospitals have a protocol in place to help the anaesthetist who has experienced a death on the table with strong emphasis on debriefing the anaesthetist after the event. This can be done in the form of critical incident stress management, which comprises of two phases namely defusing and critical incident stress debriefing (CISD).(28) Defusing is a peer led open group discussion and should be done within hours after the event. This can raise some themes or ideas for further CISD. CISD should be done within 10 days of the incident by a trained facilitator. There are several CISD models that can be used and it should be noted that CISD is not therapy but used to identify individuals that will need further assistance. Appointing someone within the department or partnership to coordinate

debriefings and wellness can help with increasing the number of debriefings being done. An experienced anaesthetic colleague should be assigned to the affected anaesthetist as a mentor to provide support for as long as required. Simulation based training is recommended as these coping skills are difficult to teach in a real situation and candidates that participated in these simulations found them useful.(29,30)

It is recommended that the anaesthetist should not continue with the list, but the time-off should be spent as part of the debriefing and counselling process.

Conclusion

This study found a high prevalence (29%) of PTSD among South African anaesthetists whom have experienced a death on the table. This not only affects the anaesthetist involved but can lead to impaired patient care. With very little debriefings being done and very few departments or workplaces having protocols in place to help the anaesthetist to deal with such an event, it seems that hardly anything is being done to help an anaesthetist that experienced a death on the table. Our data suggest that workplaces should have protocols in place and that there should be guidelines on when and how debriefings should be done as well as giving consideration for time-off. SASA is a prime position to impact the wellness of anaesthetists in South Africa, as they have a significant presence in the private as well as public sectors. This can be done by issuing guidelines on how to deal with a death on the table, thereby increasing the sustainability of anaesthesia services in South Africa.

As anaesthetists we should be aware of the impact a death on the table has on us and our colleagues and we need to play an active part in mitigating the adverse effects of such an incident.

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CHAPTER THREE - SUGGESTIONS FOR APPLICATION OF THE RESEARCH OR FURTHER RESEARCH

This research is important in raising awareness of the emotional impact of a death on the table on the anaesthetist, especially with the high rate of PTSD. It showed that inadequate debriefings are being done. Anaesthetists should be aware of the impact a death can have on them and as the primary caregiver to the patient in theatre he/she is in a good position to promote debriefings for the whole theatre team after such an event. Departments and practices should have specific protocols in place to help the anaesthetist cope with a death on the table. Consideration should also be given to allow time-off if it is deemed necessary. Incorporating debriefing skills and coping mechanism into training curricula should also be considered.

Further research should be done to establish the prevalence of anxiety, depression and substance abuse disorder after a death on the table. It should also endeavour to find if the anaesthetist is more likely to develop PTSD if an unexpected death occurs as opposed to an expected death. The optimal time-off has not yet been established, with most anaesthetists considering the rest of the day off or that it should be decided on case-by-case basis. A international trail that measures the outcome after the death on the table compared with how much time-off the anaesthetist got might indicate what time-off is optimal.

Another conundrum to address is how to help the solo practitioner as they do not have the same support as an anaesthetist working in a department or a partnership. They will also be less likely to get time off for a debriefing, as there is no one to help cover their list. An interventional study with debriefings and time-off implemented and then measuring the prevalence of PTSD can be done to evaluate to what extent these interventions influence the prevalence of PTSD.

APPENDIX A:

Ethics Approval

Health Sciences Research Ethics Committee

13 April 2018

Dear **Dr Jacobus van Niekerk**

Ethics Clearance: **The emotional impact of a death on the theatre table on the anaesthetist in South Africa**

Principal Investigator: **Dr Jacobus Van Niekerk**

Department: **Anaesthesiology (Bloemfontein Campus)**

APPLICATION APPROVED

Please ensure that you read the whole document

With reference to your application for ethical clearance with the Faculty of Health Sciences, I am pleased to inform you on behalf of the Health Sciences Research Ethics Committee that you have been granted ethical clearance for your project.

Your ethical clearance number, to be used in all correspondence is: **UFS-HSD2018/0129/2404**

The ethical clearance number is valid for research conducted for one year from issuance. Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the HSREC for approval to ensure we are kept up to date with your progress and any ethical implications that may arise. This includes any serious adverse events and/or termination of the study.

A progress report should be submitted within one year of approval, and annually for long term studies. A final report should be submitted at the completion of the study.

The HSREC functions in compliance with, but not limited to, the following documents and guidelines: The SA National Health Act. No. 61 of 2003; Ethics in Health Research: Principles, Structures and Processes (2015); SA GCP(2006); Declaration of Helsinki; The Belmont Report; The US Office of Human Research Protections 45 CFR 461 (for non-exempt research with human participants conducted or supported by the US Department of Health and Human Services- (HHS), 21 CFR 50, 21 CFR 56; CIOMS; ICH-GCP-E6 Sections 1-4; The International Conference on Harmonization and Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH Tripartite), Guidelines of the SA Medicines Control Council as well as Laws and Regulations with regard to the Control of Medicines, Constitution of the HSREC of the Faculty of Health Sciences.

For any questions or concerns, please feel free to contact HSREC Administration: 051-4017794/5 or email EthicsFHS@ufs.ac.za.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research. Yours Sincerely



Dr. SM Le Grange

Chair : Health Sciences Research Ethics Committee

**Health Sciences Research Ethics
Committee Office of the Dean: Health
Sciences**

T: +27 (0)51 401 7795/7794 | E: ethicsfhs@ufs.ac.za
IRB 00006240; REC 230408-011; IORG0005187; FWA00012784
Block D, Dean's Division, Room D104 | P.O. Box/Posbus 339 (Internal Post Box G40) | Bloemfontein 9300 |
South Africa www.ufs.ac.za



APPENDIX B:

Approval of head of department of Anaesthesiology

12 February 2018

Department of Anaesthesiology
Faculty of Health Sciences
University of the Free State
Bloemfontein
9321

Tel 051 4053071
Cell 0795195987

Email: jjsvniekerk@gmail.com

Dear Prof Lamacraft

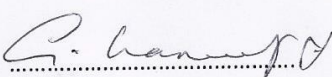
An observational study with cross-sectional design to determine the emotional impact of a death on the theatre table on the anaesthetist in South Africa.

All registrar and consultant anaesthetists registered with SASA (South Africa Society of Anaesthesiologists) will be invited to partake in an online survey. The survey will be anonymous. Demographic data as well as data from the Impact of events scale-revised will be collected and analyzed to determine the prevalence of post-traumatic stress disorder following a death on the theatre table. Informed consent is implied if the participants complete the questionnaire.

With your permission I would like to initiate the study on the

If you have any further queries regarding any aspect of the study please do not hesitate to contact me.

Sincerely yours,



DR JJS VAN NIEKERK
REGISTRAR: DEPARTMENT OF ANAESTHESIOLOGY
UNIVERSITY OF THE FREE STATE



I give permission for Dr. van Niekerk to perform this study

KONSULTANTE/CONSULTANTS: Proff J Diedericks, G Lamacraft, CL Odendaal, AM Kachelhoffer, Drr MA Pearson, MG Senekal, J Lemmer, NP Wessels, A Theron, N van der Westhuizen, H Noeth
Department of Anaesthesiology 205 Nelson Mandela Drive/Ryalaan P.O. Box/Posbus (G67) UNIVERSITY OF THE FREE STATE
Departemente Anesthesiologie Parkwest/Parkwes Bloemfontein 9300 UNIVERSITEIT VAN DIE VRYSTAAT
Lefapha la Barobatsi Bloemfontein 930 South Africa/Suid - Afrika YUNIBESITHI YA FREISTATA
T: +27 (0)51 405 3307
F: +27 (0)51 4444 3414
E: nellucia@ufs.ac.za; maribem@ufs.ac.za
and/en Prof. BJS Diedericks) diedericksbjs@ufs.ac.za



APPENDIX C:

Approval South African Society of Anaesthesiology



SOUTH AFRICAN SOCIETY OF ANAESTHESIOLOGISTS

Official Group
Of SAMA
Association
Not For Gain

T: +27 (0) 86 010 3137 (toll free) T: +27 (0) 31 368 2530 F +27 (0) 86 2429804

E: sasa@sasaweb.com PO Box 22511,
Glenashley, 4022, South Africa
www.sasaweb.com
www.sasaweb.com VAT Registration
Number: 4680223379

14 February 2018

To Whom it May

Concern Dear

Sir/Madam

RE: APPROVAL FOR RESEARCH

This letter serves as a formal approval from the South African Society of Anaesthesiologists (SASA) for Dr. Johannes van Niekerk's research project. This research, on the emotional impact of a death on the anaesthetist, will be applied to all members of SASA and shall be distributed through a survey to all members, through SASA and its affiliates. The SASA Executive Committee and the SASA Wellness for Anaesthetists Support Group support and encourage this initiative.

Should you have any further queries, please do not hesitate to contact me further.

Yours sincerely

N Zimmelman

Ms. Natalie Zimmelman
SASA CEO



President | Dr. DHS van Zijl **Vice President** | Prof. B Biccard **President (Past)** | Prof BJS Diedericks **Chief Executive Officer** | Ms. N Zimmelman **National Secretary** | Prof PJHL Fourie **National Treasurer** | Dr. S Chetty

APPENDIX D:

Informed Consent

INFORMED CONSENT FOR ANONYMOUS QUESTIONNAIRE

Dr. Johannes van Niekerk
2005017336
Department of Health
University of Free State

Dear Participant

The emotional impact of death on the theatre table on the Anaesthesiologist in South Africa

I am a MMed student at the University of the Free State, department of Anaesthesiology. You are invited to volunteer to participate in the research project on: *The emotional impact of death on the theatre table on the Anaesthesiologist in South Africa*.

This letter provides information to assist you to decide if you want to take part in this study. Before you agree you should fully understand what is involved. If you do not understand the information or have any other questions, do not hesitate to contact the researcher. You should not agree to take part unless you are completely happy with what is expected from you.

The purpose of the study is to determine the impact of death on the theatre table on the Anaesthesiologist. There are currently no accepted guidelines for the anaesthesia provider on how to deal with an intra-operative death emotionally, although multiple sources mention that the anaesthetist is affected by an intra-operative death.

The researcher would like you to complete a questionnaire consisting of biographic information questions and the impact on events scale-revised. The questionnaire will take more or less 10 minutes to complete. The information will be stored at 114 Monument Avenue, Lyttelton Manor, Centurion, 0157 for 15 years. This online questionnaire is anonymous, and your results cannot be traced to you. The researcher will be available at all times to assist you with completion of the questionnaire via email.

The Health Sciences Research Ethics Committee of the University of Free State, Faculty of Health Sciences granted written approval for this study (number of protocol: **UFS-HSD2018/0129/2404**). Your participation in this study is voluntary. You can refuse to participate or stop at any time without giving any reason. Once you have answered the questionnaire, you cannot recall your consent. The researcher will not be able to trace your information. Therefore, you will also not be identified as a participant in any publication that results from this study.

A link to the SASA Wellness for Anaesthetists Support Group website is supplied at the end of the questionnaire. Should you experience any distress during the questionnaire please follow the link.

Note: The implication of completing the questionnaire is that informed consent has been obtained from you. Thus, any information derived from your questionnaire (which will be totally anonymous) may be used for publication by the researcher.

The researcher sincerely appreciates your help.
Yours truly,

Dr. Johannes van Niekerk
Department of Anaesthesiology
jjsvniekerk@gmail.com

Health Sciences Research Ethics Committee administration: Mrs M Marais (051) 401 7795

APPENDIX E:

Questionnaire

BIOGRAPHIC INFORMATION

You have been asked to participate in a research study. Please note that by completing this questionnaire you are voluntarily agreeing to participate in this research study. You will remain anonymous and your data will be treated confidentially at all times. You may withdraw from this study at any given moment during the completion of the questionnaire. The results of the study may be published.

1. Indicate your gender?

Male Female

2. What is your age? _____

3. How many years of experience do you have in anaesthesia? _____

4. What post-graduate qualifications do you have?

Diploma in Anaesthesia MMED in Anaesthesia

FCA(SA) PhD anaesthesia

Certificate in critical care None

Other _____

5. Where do you work?

Private practice- solo

Private practice as part of association or partnership

Government sector

Government and private practice

Other _____

6. Have you ever experienced a death on the theatre table during your years of experience as an anaesthetologist?

Yes No

IF NO WAS ANSWERED TO THE QUESTION ABOVE PLEASE DO NOT CONTINUE WITH THE QUESTIONNAIRE. THANK YOU FOR YOUR TIME.

7. Did the department in which you worked at the time of the event have a protocol in place indicating the procedures to follow after a death on the theatre table?

Yes No

8. Did you receive any debriefing or trauma counselling after the event?

Yes No

9. Would you have liked debriefing after the event?

Yes No

10. Did you carry on with the theatre list immediately after the event?

Yes No

11. Would you have liked to have time off following the event?

Yes No

12. If yes, how long would you consider adequate?

The rest of the day	<input type="checkbox"/>	1 Day	<input type="checkbox"/>
1 Week	<input type="checkbox"/>	Decide on case-by case basis	<input type="checkbox"/>

13. Did the event have an influence on your decision making as an anaesthesiologist?

Yes No

Below is a list of difficulties people sometimes have after a stressful life event. Please read each item, and then indicate how distressing each difficulty has been for you after the death on the table you experienced?

See annexure B for the Impact of Events scale- Revised

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1.Any reminder brought back feelings about it	0	1	2	3	4
2.I had trouble staying asleep	0	1	2	3	4
3.Other things kept making me think about it	0	1	2	3	4
4.I felt irritable and angry	0	1	2	3	4
5.I avoided letting myself get upset when I thought about it or was reminded of it	0	1	2	3	4
6.I thought about it when I didn't mean to	0	1	2	3	4
7.I felt as if hadn't happened or wasn't real	0	1	2	3	4
8.I stayed away from reminders of it	0	1	2	3	4
9.Pictures about it popped into my head	0	1	2	3	4
10.I was jumpy and easily startled	0	1	2	3	4
11.I tried not to think about it	0	1	2	3	4
12.I was aware that I still had a lot of feelings about it, but I didn't deal with them	0	1	2	3	4
13.My feelings about it were kind of numb	0	1	2	3	4
14.I found myself acting or feeling like I was back at that time	0	1	2	3	4
15.I had trouble falling asleep	0	1	2	3	4
16.I had waves of strong feelings about it	0	1	2	3	4
17.I tried to remove it from my memory.	0	1	2	3	4
18.I had trouble concentrating	0	1	2	3	4
19.Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea or a pounding heart.	0	1	2	3	4
20.I had dreams about it	0	1	2	3	4
21.I felt watchful and on-guard	0	1	2	3	4
22.I tried not to talk about it.	0	1	2	3	4

If you at any time felt emotional distress during or after the survey, please follow the link below to the SASA wellness webpage.

<http://www.sasaweb.com/ContentDetailsOther/ContentDetailsOther#!ContentId=66&SubMenuType=1>

<http://www.sasaweb.com/ContentDetails/ContentDetails#?ContentId=66&SubMenuType=1>

[SASA:South African Society of Anaesthesiologists](#)

APPENDIX F:

SASA Wellness team flowchart

What to do when you want to contact the Wellness Team

Different scenarios:

1. You would like to chat to someone regarding a personal issue
2. You would like to chat to someone regarding someone else you are concerned about

Call a team member



Wellness Team members on call:

Ms Natalie Zimmerman SASA CEO: 082 331 7846 ceo@sasaweb.com

Dr Caroline Lee (Gauteng): 082 777 2136 dreamdocsa@gmail.com

Dr Allan Hold (KZN): 0826557792 allanhold@me.com

Dr Bhavika Daya (KZN): 0837871177 bhavikadaya@gmail.com

Dr Megan Jaworska (Cape): 0823712383 madzia2908@gmail.com

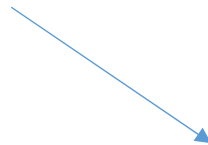


Do you feel that you are well-supported in what has been troubling you? Are you happy with the person you chatted to?



YES

With your permission, you may be referred to another team member and/or mentor and/or professional

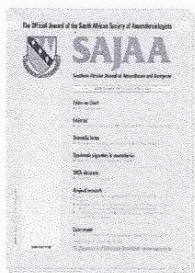


You may request to be referred to another team member and/or mentor and/or profession

If at any time you feel unhappy or uncomfortable, please do not give up. Please request to speak to someone else until you find someone you feel more comfortable to chat to.
We are here to help.
We do not mind if you want to speak to another team member. We have resources that we can call on for help.
Please do not hesitate to ask.

APPENDIX G:

Instruction to Authors



Instructions for Authors

Thank you for choosing SAJAA in which to publish your paper

Aims, scope and review policy

The *SA Journal of Anaesthesia and Analgesia* aims to publish original research and review articles of relevance and interest to the anaesthetist in academia, public sector and private practice. Papers are peer reviewed to ensure that the contents are understandable, accurate, important, interesting and enjoyable.

SAJAA is indexed in EMBASE and it is accredited by the Department of Education for the measurement of research output of public higher institutions of South Africa (SAPSE accredited).

All manuscripts must be submitted online.

The online submission process will prompt authors to check off the following declarations:

1. This manuscript has currently only been submitted to SAJAA and has not been published previously.
2. This work is original and all third party contributions (images, ideas and results) have been duly attributed to the originator(s).
3. Permission to publish licensed material (tables, figures, graphs) has been obtained and the letter of approval and proof of payment for royalties have been submitted as supplementary files.
4. The submitting/responding author is duly authorised to herewith assign copyright to the *South African Society of Anaesthesiologists (SASA)*.
5. All co-authors have made significant contributions to the manuscript to qualify as co-authors.
6. Ethics committee approval has been obtained for original studies and is clearly stated in the methodology.
7. A conflict of interest statement has been included where appropriate.
8. The submission adheres to the instructions to authors in terms of all technical aspects of the manuscript.

How to submit your paper online:

1. Visit www.sajaa.co.za
2. Register on the website as an author and log in.
 - Click on LOG IN and log in with username and password if already registered
 - If you have forgotten your password: Click on [Forgot your password?](#)
 - If you are not registered, click on: [Not a user? Register with this site](#)
3. Select **Author**
4. Click on **CLICK HERE TO FOLLOW THE FIVE STEPS TO SUBMIT YOUR MANUSCRIPT**
5. Follow the five steps to submit your paper

Article sections and length

The following contributions are accepted (word counts include abstracts, tables and references):

Original research: 3200-4000 words
Reviews: 2400-3200 words
Case Studies: 1800 words plus 3 photographs
Scientific Letters: 1200-1800 words
Letters to the Editor: 400-800 words
Syndromic vignettes in anaesthesia: 2400-3200 words

Title page

All articles must have a title page with the following information and in this particular order:

1. Title of the article.
2. Surname initials, qualifications and affiliation of each author.
3. Correspondence to: title, full names, postal address, e-mail address and telephonic contact details of the corresponding author.
4. Five keywords.

Abstract

All articles must include an abstract. The structured abstract for an Original Research article should be between 450 and 600 words and should consist of four paragraphs labelled Background, Methods, Results, and Conclusions. It should briefly describe the problem or issue being addressed in the study, how the study was performed, the major results, and what the authors conclude from these results. The abstracts for other types of articles should be no longer than 250 words and need not follow the structured abstract format. No reference numbers are allowed in an abstract.

Keywords

All articles should include keywords. Up to five words or short phrases should be used. Use terms from the Medical Subject Headings (MeSH) of *Index Medicus* when available and appropriate. Key words are used to index the article and may be published with the abstract.

Acknowledgements

In a separate section, acknowledge any financial support received or possible conflict of interest. This section may also be used to acknowledge substantial contributions to the research or preparation of the manuscript made by persons other than the authors.

References

Cite references in numerical order in the text, in superscript format (Format > Font > Click superscript), after the full stop or comma. Please do not use brackets and do not use the foot note function of MS Word. In the References section, references must be typed double-spaced and numbered consecutively in the order in which they are cited, not alphabetically.

The style for references should follow the format set forth in the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (<http://www.icmje.org>) prepared by the International Committee of Medical Journal Editors. Abbreviations for journal titles should follow *Index Medicus* format. Authors are responsible for the accuracy of all references. Personal communications and unpublished data should not be referenced. If essential, such material should be incorporated in the appropriate place in the text.

List all authors when there are six or fewer; when there are seven or more, list the first three, then "et al." When citing URLs to web documents, place in the reference list, and use the following format: Authors of document (if available). Title of document (if available). URL. (Accessed [date]).

The following are sample references:

1. Jun BC, Song SW, Park CS, Lee DH, Cho KJ, Cho JH. The analysis of maxillary sinus aeration according to aging

process: volume assessment by 3-dimensional reconstruction by high-resolution CT scanning. *Otolaryngol Head Neck Surg.* 2005 Mar;132(3):429-34.

2. Polgreen PM, Diekema DJ, Vandenberg J, et al. Risk factors for groin wound infection after femoral artery catheterization: a case-control study. *Infect Control Hosp Epidemiol* [Internet]. 2006 Jan [cited 2007 Jan 5];27(1):34-7. Available from: <http://www.journals.uchicago.edu/ICHE/journal/issues/v27n1/2004069/2004069.web.pdf>

A comprehensive reference guide can be found at:
<http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=citmed.TOC&depth=2>

Tables

Tables should be self-explanatory, clearly organised, and supplemental to the text of the manuscript. Each table should be headed by a clear descriptive title and numbered in Roman numerals (I, II, etc) in order of its appearance as called out in the text. Tables must be inserted in the correct position in the text. Authors should place explanatory matter in footnotes, not in the heading. Explain in footnotes all non-standard abbreviations.

For footnotes use the following symbols, in sequence: *, †, ‡, §, ||, **, ††, ‡‡

Figures

All figures must be inserted in the appropriate position of the electronic document. Symbols, lettering, and numbering (in Arabic numerals e.g. 1, 2, etc. in order of appearance in the text) should be placed below the figure, clearly and large enough to remain legible after the figure has been reduced in size. Figures must have clear descriptive titles placed below the figure.

Photographs and images

If photographs of patients are used, either the subject should not be identifiable or use of the picture should be authorised by an enclosed written permission from the subject. The position of photographs and images should be clearly indicated in the text. Electronic images should be saved as either jpeg or gif files. All photographs should be scanned at a high resolution (300dpi, print optimised). Please number the images appropriately.

Permission

Permission should be obtained from the author and publisher for the use of quotes, illustrations, tables, and other materials taken from previously published works, which are not in the public domain. The author is responsible for the payment of any copyright fee(s) if these have not been waived. The letters of permission should accompany the manuscript and can be uploaded as supplementary files. The original source(s) should be mentioned in the figure legend or as a footnote to a table.

Review and action

Manuscripts are initially examined by the editorial staff and are usually sent to independent reviewers who are not informed of the identity of the author(s). When publication in its original form is not recommended, the reviewers' comments (without the identity of the reviewer being disclosed) may be passed to the first author and may include suggested revisions. Manuscripts not approved for publication will not be returned.

Ethical considerations

Papers based on original research must adhere to the Declaration of Helsinki on "Ethical Principles for Medical Research Involving Human Subjects" and must specify from which recognised ethics committee approval for the research was obtained.

Conflict of interest

Authors must declare all financial contributions to their work

or other forms of conflict of interest, which may prevent them from executing and publishing unbiased research. [Conflict of interest exists when an author (or the author's institution), has financial or personal relationships with other persons or organisations that inappropriately influence (bias) his or her opinions or actions.]* *Modified from: Davidoff F, et al. Sponsorship, Authorship, and Accountability. (Editorial) *JAMA* 2001; 286(10)

The following declaration may be used if appropriate: "I declare that I have no financial or personal relationship(s) which may have inappropriately influenced me in writing this paper."

Submissions and correspondence

All submissions must be made online at www.sajaa.co.za and correspondence regarding manuscripts should be addressed to: Prof Christina Lundgren at editor@sajaa.co.za

Electronic submissions by post

Authors with no e-mail or internet connection can mail their submissions on a CD to: SAJAA, PO Box 14804, Lyttelton Manor, 0140, Gauteng, South Africa.

An indemnity and copyright form must accompany the submission and can be requested from the Publisher at (012) 664 7460.

Tips on preparing your manuscript

1. Please consult the "Uniform requirements for manuscripts submitted to biomedical journals" at www.icmje.org
2. Please consult the guide on Vancouver referencing methods at: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=citmed.TOC&depth=2> 3. The submission must be in UK English, typed in Microsoft Word or RTF with no double spaces after the full stops, double paragraph spacing, font size 10 and font type: Times New Roman.
4. All author details (Full names, qualifications and affiliation) must be provided.
5. The full contact details of corresponding author (Tel, fax, e-mail, postal address) must be on the manuscript.
6. There must be an abstract and keywords.
7. References must strictly be in Vancouver format. (Reference numbers must be strictly numerical and be typed in superscript, not be in brackets and must be placed AFTER the full stop or comma.)
8. It must be clear where every figure and table should be placed in the text. If possible, tables and figures must be placed in the text where appropriate. If too large or impractical, they may be featured at the end of the manuscript or uploaded as separate supplementary files.
9. All photographs must be at 300dpi and clearly marked according to the figure numbers in the text. (Figure 1, Table II, etc.)
10. All numbers below ten, without percentages or units, must be written in words.
11. Figure numbers: Arabic, table numbers: Roman
12. The submission must be reviewed by a language expert proficient in UK English.

Thank you for your submission.