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The quality of life of anaesthetists in a department of anaesthesiology

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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, 2019

Declaration

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

06 September 2019

Abstract

Background

The measure of quality of life (QOL) for an individual has emerged as an important marker of health. The aim of the study was to describe the QOL of anaesthetists in the Department of Anaesthesiology at the University of the Witwatersrand.

Methods

A prospective, descriptive contextual research design was used for this study. An adjusted 30 question, self-administered questionnaire (WHOQOL-BREF) was distributed during departmental academic meetings and returned anonymously.

Results

One hundred and twenty five questionnaires were completed with a sample realisation of 83.3%, representing 60.1% of anaesthetists in the department. The overall scores for each domain were physical (67.9), psychological (61.2), social relationship (65.5) and environmental domian (63.6), with 60.5% of anaesthetists reporting being pleased or extremely pleased with their health, whilst 76.0% of the anaesthetist reported a good or very good QOL. Registrars scored significantly lower (p=0.0008) in the physical domain compared to medical officers and consultants. Medical officers scored significantly lower in the psychological domain (p=0.0371) when compared to consultants. Junior anaesthetists scored significantly lower in the physical (p=0.0003) and psychological (p=0.0104) domains than senior anaesthetists. Female anaesthetists scored significantly lower in the physical domain (p=0.0159) than males.

Conclusion

This study demontrates that anaesthetists in the department have QOL similar to medical doctors in similar studies. Junior anaesthetists have lower physical and psychological domain scores than senior anaesthetists. Female anaesthetists have lower physical domain QOL than males.

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Abbreviations

HrQOL	Health related quality of life
M.O	Medical Officer
QOL	Quality of life
SF-36	Short Form Health Survey (36)
SQLP	Subjective Quality of Life Profile
Wits	University of the Witwatersrand
WHO	World Health Organization
WHOQOL	World Health Orgnization Quality of life
WHOQOL- 100	World Health Organization Quality of Life 100 Questionnaire
WHOQOL-BREF	World Health Organization Quality of Life Short Form Questionnaire

Statement

The Research Report consists of a literature review, draft article, study proposal and appendices. The study proposal is included for background reference and is not for examination.

The formatting of this Research Report complies with the University of the Witwatersrand's Style Guide for Theses, Dissertations and Research Reports. The formatting of the draft article may differ from the rest of the Research Report in order to comply with the author guidelines of the South African Journal of Anaesthesia and Analgesia (SAJAA), the journal to which it is intended to be submitted.

Section 1: Review of the literature

1. Introduction

This literature review will review literature on the concept quality of life (QOL) in health. The review will look at the history and develoment of QOL. It will look at the different measures of QOL including the World Health Organization Quality of Life Group (WHOQOL) and their development of WHOQOL-100 Scale and the abbreviated WHOQOL instrument, (WHOQOL-BREF). It will look at existing literature in QOL amongst medical doctors and anaesthetists in terms of the different domains of the WHOQOL-BREF.

1.1.2. History of the concept quality of life in health

In 1964 Lyndon B. Johnson at Madison Square Garden, New York, made this remark with regard to QOL: "These goals cannot be measured by the size of our bank balances they can only be measured in the quality of lives that our people lead" (1). The concept and definition of quality of life has been a topic of debate and dispute between philosophers.

QOL as a concept began to evolve in the 1960s and 1970s as medicine began to evolve and new technologies arose (1). It was initially considered a useful adjunct to describe the traditional concept of health and functional status (2) . Early on QOL was seen as being useful in incorporating the patient's point of view into clinical practice (1, 3). It was noted that the ideal health assessment would include a measure of the person's physical health, a measure of physical, social and psychological function and a measure of QOL (2).

In the 1980s, consequentialist philosophers used QOL to formulate moral judgment, particularly in the justification of infanticide for severe congenital anomalies. In the 1990s, welfarist philosophers associated QOL with health and happiness (1). QOL from a health perspective often referred to health related QOL (HrQOL) gained more momentum and began advancing in the late 1990s (4). There is however developing agreement that the QOL construct is more comprehensive than merely health status,

and includes aspects of the environment that may or may not be affected by health or perceived health (4).

Bodies such as the International Society for QOL Research focus their research primarily on HrQOL research although they assume a general QOL label (4). The lines between general QOL and HrQOL are blurring, with the traditions having overlapped and influenced each other throughout their histories (4). Currently developing methodologies on QOL cross disciplinary lines and mark notable advances in the study and measure of QOL, and will influence investigators and bring forth more intermingling of traditions (4). The future of QOL assessment will likely concentrate on the accurate depiction of how health influences and is influenced by the body and the mind within a social and cultural context (4).

1.1.3. The measure of quality of life

Most measures of health status had been developed in a single setting, which made translation into different settings and cultures almost impossible (5). Medicine had also been evolving from the mechanistic trend, concerned with disease eradication and symptoms clearance, to a more holistic element that included humanistic elements (3). To develop a measure of QOL that was both reliable cross-culturally and valid, a broad range of factors, that are integral aspects of QOL, had to be included. A description of what factors constitute QOL of an individual will enable the measurement of QOL.

Dijkers (5) proposed classifying approaches of assessing QOL into objective and subjective approaches. The objective approach evaluates the characteristics that can be impartially measured by an external evaluator (5, 6). This approach functions under the assumption firstly that all individuals have the same areas that are important in their lives or that they aspire to the same goals and secondly that happiness or satisfaction in life is directly proportional to the degree to which an individual achieves those standards or goals (5, 6). QOL measuring instruments based on the objective approach are limited as they over-estimate the impact of health and underestimate the non-medical aspects (5). The subjective approach to measuring QOL makes the assumption that only the individual can determine QOL (5, 6). This

approach considers an individual's emotions or feelings or makes evaluations in the context of their expectations and achievements (6).

According to Dijkers the Short Form Health Survey (36) (SF-36) (5) is an example of an objective measure of QOL. The SF-36 consists of eight items that quantify function in eight domains namely vitality, physical function, bodily pain, general health perception, physical role functions, emotional role functions, social functions and mental health (5). The SF-36 reflects the perspective of the outsider's subjective opinion and makes no attempt to individualise the assessment in any way (5). The SF-36 addresses mainly domains of physical health and not the psychosocial. It reflects the perspective of the outsider, making an objective assessment rather the insider's subjective point of view and makes no attempt to individualise the assessment in any way (5).

The Subjective Quality of Life Profile (SQLP) developed by Dazard et al (5) provides an example of a subjective measure of QOL. The rationale for its development was that both objective and subjective aspects of everyday life are important to an individual, QOL encompasses more than just health status and the fact that investigators cannot determine which domains of life are important to the QOL of an individual (5). The subjects provide the following information for 27 SQLP core items: assessment of their objective status on a four-point scale, ratings of their satisfaction on a five-point scale, rating of the importance of each item on a three-point scale, their expectations of change in the coming months on a five-point scale and their rating of the importance of the expected change on a three-point scale (5). In addition to these, items that elicit global ratings on one's life and future are completed (5). Although the SQLP has been seen to provide a comprehensive view on an individual's subjective view of QOL, it is rather time consuming for the subjects and examiner, and the authors do not provide any means of summarising it. The WHOQOL-100 and WHOQOL-BREF provide examples of subjective and objective QOL measures (7).

1.1.4. Development of WHOQOL

The World Health Organization (WHO) (3) initiated the development of an instrument for QOL assessment based on the fact that the focus on measuring health had been broadened to include more than the traditional indicators of morbidity and

mortality. Included in the new measure of health are the impact of disease and impairment on daily activities and behaviour, perceived health, as well as disability and functional status (3). There were well established means of measuring disease severity and frequency, but not so for measuring well-being and QOL. The WHO's interest in QOL and its measurement stems from the need for an international measure of this dimension of health and its commitment to continued promotion of a holistic approach to health and health care (3). The WHO defines QOL as "an individual's perception of their position in life, in the context of the culture and value system in which they live, and in relation to their goals, expectations, standards and concerns" (3). This is a broad concept, incorporating many aspects of an individual's being that include the physical state, psychological state, level of independence, social relationships, personal beliefs and the relationship to striking features of the environment (3). The WHOQOL Group then followed to say "in measuring health and its effects one need-not only look at the changes to the frequency and severity of the disease, but also estimate the well-being of an individual, and this can be estimated by measuring the improvements in the QOL" (9).

The WHO, through 15 collaboration centres around the world developed a cross-cultural instrument for measuring QOL- namely The WHOQOL-100 (3, 8, 9). The different aspects of QOL and the different ways of asking about QOL were drafted on the basis of statements made by patients with a range of diseases, individuals without disease and health professionals (9). The instrument was rigorously tested to assess its validity and reliability in different field centres and is continuously tested to assess it responsiveness to change and validated for different uses (3).

The WHOQOL group initiated the development of an instrument to assess QOL based on these considerations and the changing paradigm of health care. The WHOQOL measuring instrument was developed over a number of stages (3). The first stage clarified the concept of QOL and developing an agreed definition of QOL across different cultures and an approach to an international QOL definition, the second stage involved developing a pilot instrument and drafting questions that explored QOL across different cultures, the third stage was the administration of the pilot instrument in a standardised manner, the fourth stage of development involved field-testing and the establishment of the psychometric properties of the WHOQOL-100

and the fifth stage involved analysis of data from the WHOQOL-100 and the development of the WHOQOL-BREF (3). The WHOQOL-100's development involved considerable research and validating for over seven years in order to ensure its reliability and accuracy in measuring issues that are important to a person's QOL (9). The WHOQOL instruments are continuously being developed to assess QOL in a variety of situations and more specific populations such as those suffering specific diseases, the elderly and refugees (7).

The WHOQOL-100 produces scores in relation to particular facets of QOL, scores relating to larger domains and scores relating overall QOL and general health (3, 8). The WHOQOL-100 reflects issues that were felt to be important to QOL. Six broad domains of QOL and 24 facets, with up to six items included in each facet, as well as four general items covering overall QOL and health, producing 100 items in the assessment which are all rated on a five-point Likert scale (5, 8). Domains and facets incorporated within the tool include: physical health, psychological health, level of independence, social relationships, the environment and the spiritual domain (5, 8). Refer to Figure 1 for the domain and facets of the WHOQOL-100.

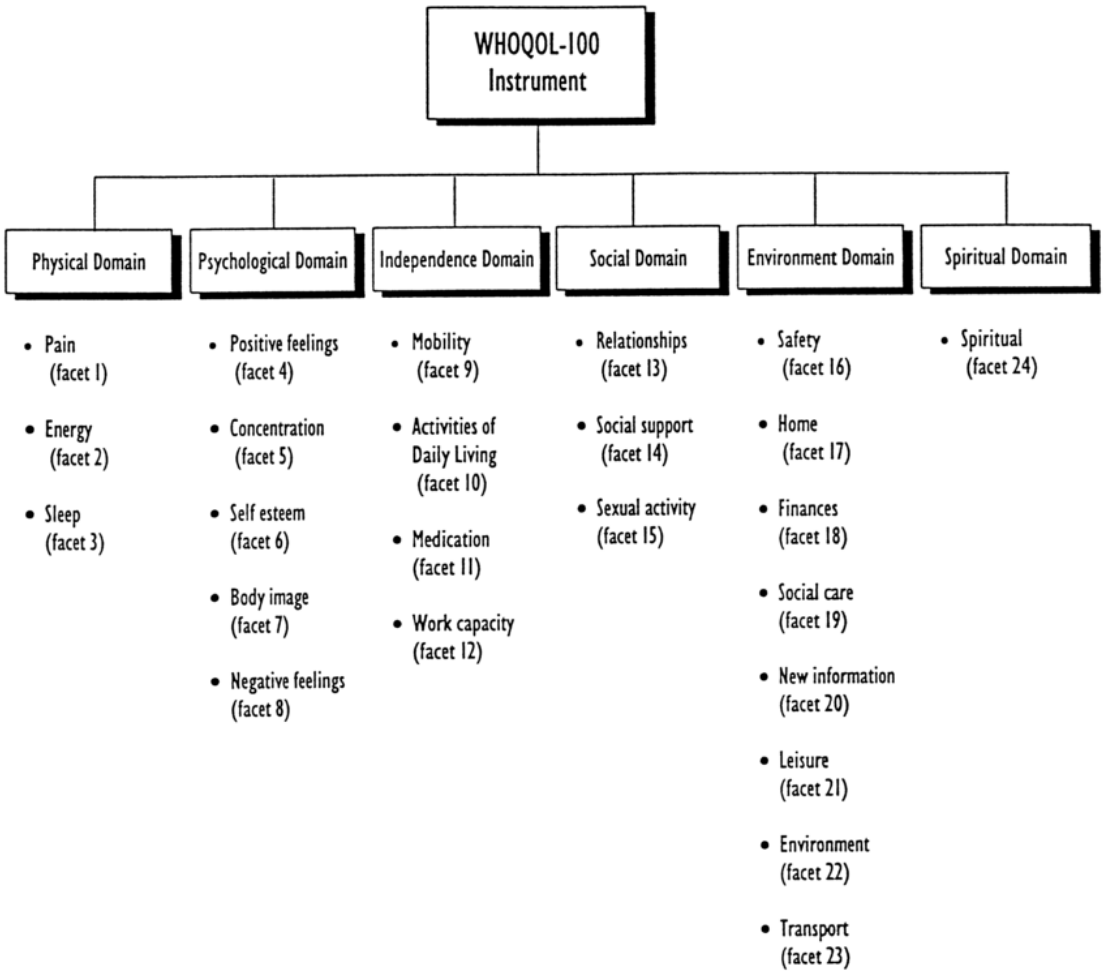

Figure 1: WHOQOL-100 domains and facets (5)

1.1.5. Development of the WHOQOL-BREF

The brief WHOQOL Scale (WHOQOL-BREF), a shortened version of the WHOQOL-100, is utilised in situations where time is limited, where respondent's burden should be minimised and where the need for a detailed multi-faceted assessment is not required (8). WHOQOL-BREF was developed using data from 15 collaboration centres collected for the WHOQOL-100 field trial. Results from the initial developmental work on data extracted from WHOQOL-100 field trial indicated that although the WHOQOL-100 was based on a theoretical model with six domains, there was good evidence to support a four-domain model in the WHOQOL-BREF (8, 9). The items for the WHOQOL-BREF were selected for their ability to explain a substantial proportion of variance within their parent facets and domain, for their relationship with their WHOQOL model of QOL and for their discrimination ability (8, 9).

The WHOQOL-BREF contains two items from the overall QOL and general health facets, and one item from each of the 24 facets included in the WHOQOL-100 (9). The WHOQOL-BREF produces domain scores only and not individual facet scores (8). Domain 1 and 3, and also domain 2 and 6 were merged thereby creating four domains of QOL (8). The domain scores of the WHOQOL-BREF were seen to have correlation scores >0.9 with the WHOQOL-100 domain scores (8).

The WHOQOL-100 made use of four types of Likert interval scales to reflect intensity, capacity, frequency and evaluation (8). The WHOQOL-BREF uses similar response scales, but has a five Likert style responses scales: "very poor to very good" (evaluation scale), "very dissatisfied to very satisfied" (evaluation scale), "none to extremely" (intensity scale), "none to complete" (capacity scale) and "never to always" (frequency scale) (10). The mean scores in each domain provide an indication of the individual's satisfaction with each aspect of their life, relating it with QOL (10).

Results from the WHOQOL-BREF field trial that set out to "examine its psychometric properties in terms of item response distribution, internal consistency, discriminant validity and constant validity" provided supportive evidence for its cross-cultural validity (8). The WHOQOL-BREF has several strengths that make it a good tool for assessing QOL. It is based on a cross- cultural sensitive concept and has been translated into most of the world's top languages, making it a suitable tool for collaborative multi-national research (3, 8, 9). There are no cut-off points above or below which QOL can be evaluated as poor or good, which is a limitation of WHOQOL-BREF, in that no direct comparison can be made with similar studies.

Figure 2 delineates the four domain of the WHOQOL-BREF, the physical, the psychological, social relationship and environmental domain with the constituent 24 facets derived from the WHOQOL-100.

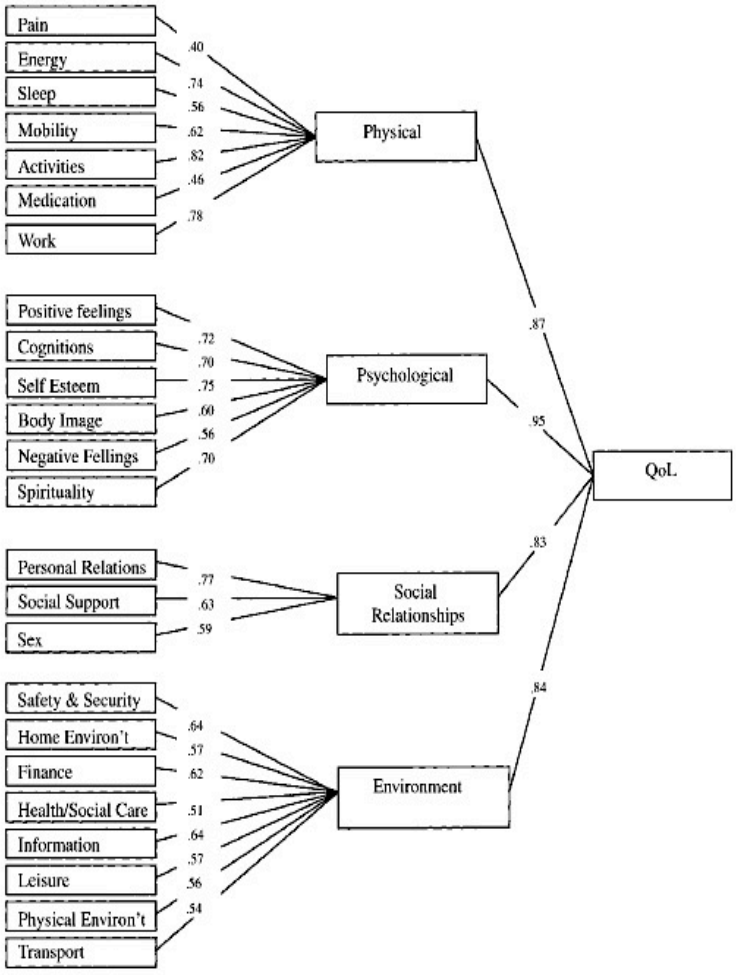

Figure 2: WHOQOL-BREF domains and constituents facets. (8)

1.1.6. Factors affecting the QOL of anaesthetists

The progressive advancement of perioperative medicine as well as the advent of newer equipment, drugs, duties and responsibilities and expectations of the anaesthetist have rapidly increased over the years (11). Anaesthesia as a practice is stressful and requires from the anaesthetist a high level of vigilance and a constant state of alertness (12).

The perioperative period places high cognitive as well as physical stress on the anaesthetist. “Stress encompasses a wide range of psychological and physical perturbations that negatively affect health, relationships, quality of life and well-being” (13). The degree of stress is multifactorial and dependent on the type and quality of work, the relationship with the surgical team as well as the individuals

support received from colleagues and family (5). High levels of stress are associated with anxiety and depression and stress and anxiety are associated with a low QOL (14). Studies on work related stress and QOL have shown an association where exposure to adverse psychosocial work environment, high effort, low reward and high overcommitment was associated with poor QOL (14). These high levels of stress place the anaesthetists at risk of burnout, chronic fatigue, substance use disorder and dependence and suicide (15). They have a significant impact on the QOL of the anaesthetists.

The anaesthetist is exposed to a range of exogenous contaminants, the health related effects of which are unknown. The rapidly changing nature of anaesthetic practice have been associated with blood pressure fluctuations in the acute setting which have been associated with the development of chronic hypertension and subsequent cardiovascular disease (15, 16). Abrasions, lacerations and other cut injuries from glass vials are common minor injuries in everyday anaesthetic practice. Incorrect positioning during airway securing and administration of neuraxial anaesthesia are harmful for back muscles and have the potential for causing disc problems in high-risk individuals (11). The stress associated with the practice of anaesthesia, if not monitored and controlled, can result in negative health consequences including headaches, stomach ache, gastric ulcers and even myocardial infarcts (15). Alexander et al, (17) compared mortality in anaesthesiologists, internists and physicians and found that exposure to the operating room did not increase the risk of death from cancer. They concluded that although anaesthetists are chronically exposed to trace gases, chronic low dose radiation, and psychological stresses that are different from other specialities, this did not result in increased rates of death from malignancies. (17).

Among other factors known to contribute to poor QOL among doctors in medicine are long and excessive working hours (12). Long working hours result in chronic fatigue, loss of energy, sleep and mood disorders, reduced productivity in the work place, memory difficulty and difficulty in interpersonal relations (15, 18, 19). Sleep deprivation, which is associated with long hours has been seen to significantly alter the clinical activity of physicians (19, 20). The American College of Graduate Medical Education has implemented progressive work-hour restrictions for residents in an

effort to address potentially unsafe working conditions (18). The Recife trial (12) which utilised the WHOQOL-BREF questionnaire revealed a elevated percentage of anaesthesiologists (44.6%) with a high negative or undefined perception of QOL. Long working hours were seen as strongly influencing to their perception of QOL (12). They reported that high levels of stress that cause disruptions in several aspects of life, can cause not only physical and psychological changes but also personal and environmental relations (12). A Uruguayan study that used the WHOQOL-BREF in their analysis of anaesthetists' QOL revealed a 53.1% negative perception of their QOL and also reported low QOL scores, and among contributing factors were long and excessive hours (21).

The ever-expanding and evolving scope of practice for the anaesthetist implies that the anaesthetist also has to act as a specialist in emergency care, intensive care medicine as well as the management of acute and chronic pain. Senior anaesthetists in training institutions are obligated to partake in teaching, research and administrative activities (22). These conflicting demands are regarded as risk factors for overwork and development of chronic stress (23). Stressors related to tasks undertaken as well as social stressors including personal animosities, a poor social climate and conflicts arising from relating with superiors and colleagues are environmental factors considered important in predicting strain and poor QOL (23).

Environmental factors, although a key component affecting an individual's QOL, have been found to have the least role in affecting the QOL of anaesthetists (12). Anaesthetists are challenged with high work related risks due to both exogenous and endogenous factors (12). Exogenous factors the anaesthetist is exposed to daily include environmental contaminants caused by inhalation of anaesthetics and disinfectants. Infectious agents such as bacteria and viruses also pose a daily threat to the anaesthetist's health (11). The incidence of which vary from hospital to hospital and country to country, the risk being higher in developing countries where many airborne and blood-borne diseases are prevalent. The increased period of exposure and poor ventilation within operating theatres place the anaesthetist at a higher risk of acquiring these infections (11). The anaesthetist is at increased risk of acquiring blood-borne infections whilst performing invasive procedures. Endogenous factors are represented by psychological and emotional stimuli such as those triggered by

stress and anguish (12). The Recife trial found the enviromental domain to have the lowest scores and to be the most contributory in the low perception of QOL amongst anaesthetists in their department (12).

Anaesthetists, especially in the junior years of training spend a lot of time acquiring approval and esteem from their seniors, often falling victim to overcommitment. The initiation of an anaesthetic registrar program may have an effect on healthy behaviour, which may manifest as a component of stress termed “stress deprivation” which is described as involving less sleep or adopting irregular sleeping schedules, reduction in physical level of activity or hobbies, poor nutrition and a reduction in personal or family time (24). Anaesthetists report moderate to no opportunity for leisure explaining high work demands, being overworked as restricting to their physical and emotional wellbeing (21).

In anaesthetic training, the support provided by seniors not only aids in developing professional competence but also helps junior doctors learn to manage stress. (15). Stressors facing senior anaesthetists differ from those of their junior counterparts. A study in South India that aimed at determining the level of job satisfaction among anaesthetists revealed that senior anaesthetists reported being overwhelmed and overworked due to poor professional support during their private practice when compared to their trainees (15).

Junior doctors were found to have clinically significant lower QOL scores for general health, vitality, mental health and social functioning when compared to the normative scores of studies done on the general public (20, 25). The poorer QOL of junior doctors has a negative impact on work performance and patient safety (11, 25). In addition to the increasing workloads, increasing responsibility coupled with clinical inexperience all add to the stressors on junior staff. Perceptions by senior doctors of the hard working conditions for junior doctors as merely a “rite of passage”, makes them more indifferent to the junior doctor’s plight.

The Recife trial had predominantly more female anaesthetists than males, reported that female anaesthetists had siginificantly lower scores in the general evaluation of QOL and in the psychological and social relationship domain (12). They attributed the results to be related to the accumulation of tasks by modern women, since the

WHOQOL-BREF domains evaluate negative feelings, self esteem, body image, spirituality, personal relationship, social life and sex life (12). In addition female anaesthetists have been shown to score lower than their male counterparts in the psychological and social relationship domain (10, 12, 20). A similar study on occupational stress and QOL of magistrates of labour courts found lower QOL scores in females, where a feeling of being overworked and increasing interference with family life were seen as major contributing factors (12).

The health and QOL of anaesthetists is affected by the ever increasing professional and social burdens both in the workplace and their personal lives (11). Substance use disorder and dependence and dependence in anaesthesia have taken to new levels and are of great concern (11). Predisposing factors include individual susceptibility, long hours of monotonous work, personal problems, marital discord and the easy access to sedatives and psychoactive drugs (11).

The problem of substance use disorder and dependence may be difficult to identify with the affected individual often able to still perform their allotted duties with little impairment in performance. The disease may manifest much later with offences against the law and drug prescription irregularities (26). In a survey on substance use disorder and dependece among physicians, Booth et al (27) approximate that ten to fourteen percent of all doctors will become substance dependent over their lifetime, with the incidence in anaesthetists being 2,7 times greater than other physician groups. In the United States of Amaerica (USA) anaesthetists presentation to substance use disorder and dependence programs is 2,5 times greater than other physician groups (27). The psychological well-being during registrar training is associated with the trainee's capacity for empathy and patient care, and it has been postulated that stressors may counter the goals of training to promoting professionalism and high standards in patient care (13).

During the training of an anaesthetist the impact of stress on the well-being of the trainee presents from different stressors. The initial period of training represents a extreme degree of psychological, intellectual, procedural, technical, managerial and logistical stress (13). These factors compounded by changes in the working

environment and sleeping patterns predispose the trainee to the development of burnout (28).

1.1.7. Summary

The QOL of anaesthetists in South Africa is largely unknown and there is little published literature available on the QOL of other medical specialities. The literature from other developing nations reveal the uniformity of challenges faced in the daily practice of the anaesthetist. Literature reveals a generalised poor QOL among anaethestists with many of the factors being related to the intrinsic practice of the specialty, and not necessarily, the availability of resources.

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reconstruction by high-resolutional CT scanning. Otolaryngol Head Neck Surg. 2005 Mar;132(3):429-34.

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10. All numbers below ten, without percentages or units, must be written in words.
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Section 3: Draft article

The quality of life of anaesthetists in a department of anaesthesiology

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Key words: Quality of life, WHOQOL-BREF, Anaesthetists,

Abstract

Background

The measure of quality of life (QOL) for an individual has emerged as an important marker of health. The aim of the study was to describe the QOL of anaesthetists in the Department of Anaesthesiology at the University of the Witwatersrand.

Methods

A prospective, descriptive contextual research design was used for this study. An adjusted 30 question, self-administered questionnaire (WHOQOL-BREF) was distributed during departmental academic meetings and returned anonymously.

Results

One hundred and twenty five questionnaires were completed with a sample realisation of 83.3%, representing 60.1% of anaesthetists in the department. The overall scores for each domain were physical (67.9), psychological (61.2), social relationship (65.5) and environmental domian (63.6), with 60.5% of anaesthetists reporting being pleased or extremely pleased with their health, whilst 76.0% of the anaesthetists reported a good or very good QOL. Registrars scored significantly lower ($p=0.0008$) in the physical domain compared to medical officers and consultants. Medical officers scored significantly lower in the psychological domain ($p=0.0371$) when compared to consultants. Junior anaesthetists scored significantly lower in the physical ($p=0.0003$) and psychological ($p=0.0104$) domains than senior anaesthetists. Female anaesthetists scored significantly lower in the physical domain ($p=0.0159$) than males.

Conclusion

This study demontrates that anaesthetists in the department have a QOL similar to medical doctors in similar studies. Junior anaesthetists have lower physical and psychological domain scores than senior anaesthetists. Female anaesthetists have a lower physical domain QOL compared to males.

Introduction

Quality of life (QOL) in modern medicine emerged in the 1960s and 1970s as medicine began to evolve and medical technology advanced.[1] Initially, QOL was seen merely as an adjunct to the traditional concept of health and functional status, but it was later noted that in order to derive the ideal health assessment, one needs to include a measure of the individual's physical health and a measure of physical, social and psychological function and of QOL.[1, 2] Controversy still exists as to the definition of QOL, but the World Health Organization's Quality of Life (WHOQOL) Group defines QOL as "an individual's perception of their position in life, in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns".[3]

The perception of health and QOL has been the subject of wide-ranging research and investigation, but research focusing on the QOL among health care workers is scarce.[4] Hospitals and health care units are characterised by high levels of work related stress, a factor known to increase the risk of low QOL.[5] Medical doctors experience work related stressors similar to other service professionals, but they also have environmental factors that set them apart.[6] The stressors that have risen from socioeconomic changes, the expectations of the medical doctor and the societal views on the practice of medicine, together with the change in role played by the medical doctor within the community, have effected a mood of depression and distress amongst medical doctors.[6] This erosion of the historic medical doctor-patient relationship has contributed to a feeling of despondence by the medical doctor.[6]

The practice of medicine has, in addition, other intrinsic properties such as frequent contact with pain and suffering, and the handling of physical and emotional intimacy, that in combination also place a psychological burden on practicing medical doctors.[7]

The intensive nature of the anaesthetists' speciality requires anaesthetists to spend all their professional life in an alert state whilst exposing them to additional stressful situations from sleep deprivation from night calls, as well as a harsh working environment that incorporates noise pollution (from surgical equipment and anaesthetic equipment), radiation exposure, extreme temperature changes and poorly designed theatre environments.[8] The administration of an anaesthetic involves continuous critical care and demands that the anaesthetist sustain an intense and prolonged vigilant focus on the management of the patient.[6] Anaesthetists like all medical doctors encounter stressors similar to other disciplines of medicine, but are also faced with challenges specific to their speciality.[6,9] The practice of anaesthesia whilst becoming safer for the patient, is becoming more stressful for the practitioner.[6] The constant expectations for good clinical outcomes, even in high-risk circumstances, with the increasingly litigious claims imposed, are added pressures on the anaesthetists.[10]

There is an increasing awareness of the importance of QOL among anaesthetists. Prolonged and excessive levels of stress compounded by inadequate coping mechanisms, are predictors of poor QOL, and lead to decreased job satisfaction, impaired decision making and even suicide among anaesthetists.[8] The aim of the study was to describe the QOL of anaesthetists in the Department of Anaesthesiology at the University of the Witwatersrand (Wits).

Methods

Approval to conduct the study was obtained from the Human Research Ethics Committee (Medical) and the Graduate Studies Committee at Wits. A prospective descriptive contextual research design was used for this study.

The staff complement of the department consists of 208 anaesthetists, which includes juniors and seniors. In this study junior anaesthetists comprise medical officers and registrars and senior anaesthetists are the consultants. Convenience sampling was used. A minimum sample of 125 representing 60% of the department was regarded as acceptable.[11] The entire department was invited to participate.

Permission to use and adapt the World Health Organization's abreviated QOL scale (WHOQOL-BREF) was obtained from the WHOQOL Group. This is an anonymous self-administered questionnaire where participants express how they have experienced each item in the preceding two weeks on a five-point Likert scale. It consists of 26 questions, with two questions on the general QOL and the degree of satisfaction with one's own health. The other 24 questions cover four domains, namely physical health, psychosocial health, social relationships and the environment. The following questions were added to the questionnaire: professional designation, age category, as well as usage of legal mood enhacing substances and the use of the department's existing wellness program. Although the WHOQOL-BREF questionnaire requires the participants to record their date of birth, permission was granted to omit the date of birth question from the questionnaire to ensure anonymity. The questionnaire does not allow for quantification of QOL into good or low QOL.[12] Consent was implied upon the return of the questionnaire. The physical domain deals with activities of daily living, dependence on medication, chronic illnesses, sleep and rest patterns.[13]

The psychological domain deals with issues relating to self esteem, body image, spirituality and generalised feelings.[14] The social relationship domain interrogates issues relating to personal and sexual relationships and the social support attained from these relationships.[14] The environmental domain deals with issues relating to the interactions with the environment, safety, social care structures as well as health care, finances, leisure activities and transportation.[14]

The questionnaires were distributed during the department's academic meetings. Anaesthetists personally placed the completed questionnaire in a sealed data collection box. If completing this questionnaire caused distress, participants were encouraged to contact the department's Wellness Committee or the Wits Campus Health and Wellness Centre. Questionnaires with more than 20% of the data missing were excluded from the study.

Data were captured onto a spreadsheet using Microsoft® Excel® for Mac 2011 (2010 Microsoft Corporation, USA). Statistica version 12 (Statsoft, USA) was utilised to analyse the data in consultation with a biostatistician. The guidelines of the WHOQOL Group which consisted of domain specific formulae were utilised to manually transform the raw data to a range between 4 – 20.[12] A second transformation was used to convert the domains to a 0 - 100 scale, scaling the domains in a positive direction with higher scores denoting a higher QOL.[12] The transformation also allows for comparisons to be made between domains of unequal

numbers of items.[14] Categorical variables were described using frequencies and percentages. The Likert scale data were analysed at the interval scale level and reported using means and standard deviations. The unpaired Student t-tests and Analysis of variance tests (ANOVA) were used for the comparisons between the groups. The correlation was perfomed with Pearson's correlation coefficient test. A p-value of <0.05 was considered statistically significant.

Results

One hundred and fifty questionnaires were handed out and 127 questionnaires were returned, with 2 being excluded from the study, as less than 20% of the questionnaire had been completed. This resulted in a sample realisation of 83,3%, representing 60.1% of anaesthetists in the department. The characteristics of the anaesthetists are shown in Table I.

Table I: Characteristics of anaesthetists

Characteristic	Number	Percentage
Sex		
Male	38	30.4
Female	87	69.6
Age group		
24 − 30	32	25.2
31 − 35	63	50.4
36 − 40	20	16.0
41 − 45	4	3.2
46 − 50	0	0
>50	5	4.0
Marital Status		
Single	50	40.0
Married	72	57.6
Divorced	3	2.4
Widowed	0	0
Professional designation		
Medical officers	22	17.6
Registrars	61	48.8
Consultants	42	33.

Six (4.8%) anaesthetists reported suffering from acute illnesses within the 2 weeks prior to or during the time of completion of the questionnaire. The conditions included 4 (66.7%) upper respiratory tract infections, 1 (16.7%) acute gastroenteritis and 1 (16.7%) report of psychological pressure.

The anaesthetists' degree of satisfaction with their health is shown in Table II. One consultant failed to complete the satisfaction with health question and is excluded from these results.

Table II: Anaesthetists' degree of satisfaction with their health

Degree of satisfaction with health	Overall (n) (%)	Medical officers (n)(%)	Registrars (n)(%)	Consultants (n)(%)
Extremely displeased	9 (7.3)	1(4.5)	7(11.5)	1(2.4)
Displeased	18 (11.5)	0	11(18.0)	7(16.7)
Neither pleased nor displeased	22 (17.7)	6(27.3)	13(21.3)	3(7.1)
Pleased	65 (52.4)	11(50.0)	26(42.6)	28(66.7)
Extremely pleased	10 (8.1)	4(18.2)	4(6.6)	2(4.8)

The self-evaluation of QOL is shown in Table III. The majority of the anaesthetists, 83 (66.4%), evaluated their QOL as good. There was a poor correlation between degree of satisfaction with health status and self-evaluated QOL scores (r= 0.013). Twelve (19.7%) registrars and 6 (14.3%) consultants reported a poor or very poor QOL, with no medical officers reporting a poor or very poor QOL.

Table III: Anaesthetists' self-evaluation of QOL

QOL	Overall n (%)	Medical officers (n)(%)	Registrars (n)(%)	Consultants (n)(%)
Very poor	1 (0.8)	0	1(1.6)	0
Poor	17 (13.6)	0	11(18.0)	6(14.3)
Neither poor nor good	12 (9.6)	3(13.6)	8(13.1)	1(2.4)
Good	83 (66.4)	18(81.8)	38(57.4)	27(64.3)
Very good	12 (9.6)	1(4.6)	3(4.9)	8(19.1)

The overall mean (SD) domain scores of the anaesthetists are shown in Table IV

Table IV: Anaesthetists' QOL domain scores

Domain	Overall Mean±SD	Medical officers Mean±SD	Registrars Mean±SD	Consultants Mean±SD	p value
Physical	67.9±14.0	67.4±13.9	63.7±12.5	74.2±14.3	0.0008
Psychological	61.2±14.7	58.2±14.9	59.2±12.8	65.9±16.3	0.0371
Social relationship	65.5±21.5	64.8±23.8	62.2±21.1	68.7±20.6	0.2757
Environmental	63.6±14.0	65.5±14.8	61.1±13.3	66.6±13.7	0.0819

In the comparison of domain scores between professional designations, registrars scored significantly lower (p=0.0008) in the physical domain in comparison to consultants and medical officers, with no significant difference between medical officers and consultants. In the psychological domain, consultants scored significantly higher (p=0.0371) than medical officers, but not significantly different to registrars. Table V shows that junior anaesthetists scored significantly lower in the physical domain (p=0.0003) and psychological domain (p=0.0104) than senior anaesthetists.

Table V: QOL domain scores between junior and senior anaesthetists

Domian	Juniors Mean±SD	Seniors Mean±SD	p value
Physical	58.9±13.3	74.2±14.3	0.0003
Psychological	58.8±13.3	65.9±16.3	0.0104
Social relationship	62.9±21.7	68.7±20.6	0.1254
Environment	62.0±13.9	66.6±13.7	0.0793

Female anaesthetists scored significantly lower (p=0.0159) scores in the physical domain than male anaesthetists. This is shown in Table VI.

Table VI: QOL domain scores between male and female anaesthetists

	Males Mean±SD	Females Mean±SD	p value
Physical	72.3±15.1	65.8±13.0	0.0159
Psychological	64.5±15.9	59.6±13.8	0.0827
Social relationship	65.0±23.3	65.0±60.6	0.9935
Environment	65.8±13.7	62.4±14.1	0.2095

The overall usage of legal mood enhancers was 28 (30.4%) of the department. The use of legal mood enhancing substances was highest among consultants, 17 (40.5%), followed by registrars at 17 (27.9%) and medical officers at 4 (18.2%). Results revealed no statistical significant difference in legal mood enhancing substance usage between senior and junior anaesthetists (p=0.139). The overall usage of the department's wellness program was 16.8% of the department. Eleven consultants (26.2%), 9 (14.8%) registrars, and 1 (4.5%) medical officer reported having made use of the department's wellness program.

Discussion

Overall the anaesthetists' perceptions of their QOL was good with 66.4% of anaesthetists within the department having perceived their QOL as good and 9.6% as very good. The current study revealed poor correlation between anaesthetists' perception of their health status and their perceived QOL. In this study 4.8% of the sample reported having suffered an acute, mostly self-limiting illness in the period preceding completion of the WHOQOL-BREF questionnaire, with 60.5% of the sample having reported either being pleased or extremely pleased with their current health status. Calumbi et al used the WHOQOL-BREF and

reported an elevated percentage of anaesthesiologists (44.6%) with a negative or undefined perception of their QOL.[15] The authors also found a high correlation between long working hours, dissatisfaction with their health and low perception of QOL.[15] Of interest in future studies would be evaluating the presence of chronic illnesses in anaesthetists and assessing the impact they have on their QOL.

The overall domain scores for this study revealed mean scores of 67.9 for the physical domain, 61.2 for the psychological domain, 65.5 for social relationships and 63.6 for the environmental domain. The mean domain scores from Skevington et al's preliminary WHOQOL-BREF data ranged from 81.0 for the physical domain, 75.0 for the psychological domain, 71.5 for the social domain and 67.5 for the environmental domain in the general population.[14] The results of the WHOQOL-BREF preliminary studies were designed to form a benchmark against which other results can be matched. Andrade et al evaluated the stress levels of anaesthetists relating to their QOL and the degree of satisfaction with their health, working hours, gender and age group.[13] The authors revealed mean scores of 70.3 for the physical domain, 66.7 for the psychological domain, 65.6 for the social domain and 63.8 for the environmental domain.[13] The Sergipe study was a study in anaesthetists that produced very similar results except for the psychological domian.

The domain scores between males and females showed no significant difference in the mean scores within the psychological, social and environmental domains. The mean scores of the physical domain were however statistically significantly lower in females (65.8) than males (72.3), (p=0.0159). Work family conflict has been seen to affect more female physicians whilst being associated with burnout and emotional exhaustion.[16]

Calumbi et al also had a predominantly female anaesthetist population.[15] Female anaesthetists in the Recife trial scored significantly lower compared to males in the psychological and social relationship domain.[15] These scores in their population of female anaesthetists were attributed to increasing tasks that professional women take on.[15] In this study there was no significant difference in the psychological and social domain. Although this study only looked at QOL factors that lie within the four domains of the WHOQOL-BREF, it can be deduced that female anaesthetists in the department scored higher mean scores in all domains of the WHOQOL-BREF and have a good QOL when compared to similar studies.[13] Vutyavanic et al in a Thailand study on the QOL of physicians reported female physicians having good QOL scores in their setting with mean scores in the physical domain of 57,9 and psychological domain scores of 57,2 respectively compared to previous studies.[17] These scores were however lower than mean scores attained in this study (65.8 for the physical and 59.6 for the psychological domain). Work related stressors compounded by shouldering other household and child rearing responsibilities that are traditionally imposed on women result in higher depreciation of QOL among female physicians.[16]

juniors had significantly lower physical domain scores than seniors in this study. Junior psychological domain scores were lower than seniors, with medical officers having significantly lower scores when compared to seniors. Juniors may have scored poorly in this domain, due to their relative professional inexperience when compared to senoiors, leaving juniors less competent in dealing with occupational stressors.

Medical officers perceived their QOL to be better than registrars and consultants perceived theirs. The medical officer group scored higher than registrars in all domains except the psychological domain and had higher scores in their perception of QOL. These scores in junior anaesthetists can be attributed to the stress of adapting to the new environment, added responsibilities and contact with urgent care facilities.[18] It would be interesting in future studies of this type to evaluate the differences between junior and senior registrars and determine at which point in the training, trainees QOL begins to deteriorate.

Registrars scored less than other groups in the environmental domain. The rigorous training that registrars endure during their training greatly exposes them to environmental stressors, which could contribute to the low environmental scores. Registrar training is known to be a physically demanding period for any medical speciality. This is a period where trainees have to rapidly develop skills to grapple clinical responsibilities as well as academic duties. This period also presents a highly competitive period, where the position can be overvalued and idealised leaving a sense of frustration when expectations are not met.[18] Nyssen et al demonstrated that although stress levels between the general public and anaesthesia registrars were not significantly different, 40% more registrars suffered burnout syndrome with the rates being even higher among the junior registrars. [19]

Conclusion

The results from this study are not unique and resemble those of similar studies on the QOL of anaesthetists.[13,15.]The demanding registrar workload may be contributory to their reduced QOL scores and lower perception of QOL. Registrars' lower physical socres and medical officers' lower psychological scores when compared to consultants, represent a cause for concern and interventory programs should be instituted to address these. This study thus forms a benchmark for future studies within the department to form comparisons and for the evaluation of interventory strategies.

Conflict of interest

The authors declare that we have no financial or personal relationships which may have inappropriately influenced us in writing this paper.

Acknowledgement

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Section 4: Proposal

The quality of life of anaesthetists in a department of anaesthesiology

Ramonkung Mogale

0402514e

Supervisor	Juan Department of Anaesthesiology	Scribante
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4.1 Introduction

Quality of life (QOL) in modern medicine emerged in the 1960's and 1970's as medicine began to evolve and medical technology advanced (1). Initially QOL was seen merely as an adjunct to the traditional concept of health and functional status, but was later noted that in order to derive the ideal health assessment, one needs to include a measure of the individual's physical health and a measure of physical, social, psychological function and of QOL (1, 2). Controversy still exists as to the definition of QOL, but the World Health Organisation's Quality of Life Group (WHOQOL) defines QOL as "an individual's perception of their position in life, in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns" (3).

To develop a measure of QOL that was both reliable cross-culturally and valid, a broad range of factors, that are integral aspects of QOL had to be included. A description of what factors constitute QOL of an individual will enable one to assess and measure QOL. Dijkers (4) proposed classifying approaches of assessing QOL into objective and subjective approaches. The objective approach evaluates the characteristics that can be impartially measured by an external evaluator (4, 5). This approach functions under the assumption that firstly all individuals have the same areas that are important in their lives or that they aspire to the same goals, and secondly that happiness or satisfaction in life is directly proportional to the degree to which an individual achieves those standard or goals (4, 5). QOL measuring instruments based on the objective approach are limited as they over-estimate the impact of health and underestimate the other non-medical aspects (4). The subjective approach to measuring QOL makes the assumption that the individual can only determine QOL (4, 5). This approach considers an individual's emotions or feelings or makes evaluations in the context of their expectations and achievements (5).

The Short Form (36) health survey (SF-36) is an example of an objective measurer of QOL, and is the most commonly utilised of the objective tools for measuring QOL (4). The SF-36 consists of eight items that quantify function in 8 domains (vitality, physical function, bodily pain, general health perception, physical role function, emotional role function, social function and mental health) (4). The SF-36 reflects the

perspective of the outsider's subjective opinion and makes no attempt to individualise the assessment in any way (4). The SF-36 addresses mainly domains of health, thus from the point of view of our study, the SF-36 is not the most appropriate tool.

The WHO's interest in QOL and its measurement stem from the need for an international measure of this dimension of health and its commitment to the continued promotion of a holistic approach that included humanistic elements (3). Within the constitution of the WHO health is defined as "a state of physical, mental, and social well being and not merely the absence of disease" (3). The WHOQOL then followed by saying in the measuring of health and its effects, one needs to look not only at the changes to frequency and severity of the disease, but also to estimate the well-being of an individual by measuring the improvements in the QOL (3).

The perception of health and QOL has been the subject of wide-ranging research and investigation, but research focusing on the QOL among health care workers is scarce (6). Hospitals and health care units are characterized by high levels of work related stress, a factor known to increase the risk of low QOL (7). Medical doctors experience work related stressors similar to other service professionals, but they also have environmental factors that set them apart (8). The stressors that have risen from socioeconomic changes, the expectations of the medical doctor and the societal views on the practice of medicine, together with the change in role the medical doctor within the community, have effected a mood of depression and distress amongst doctors (8). This erosion of the historic physician-patient relationship has contributed to a feeling of despondence by the practitioner (8).

The practice of medicine has in addition other intrinsic properties such as frequent contact with pain and suffering, and the handling of physical and emotional intimacy, that in combination also place a psychological burden on practicing doctors (9).

There is a perception that intensivists are particularly exposed to higher levels of stress due to the intensive nature of their profession. The intensive nature of the anaesthetists' speciality requires anaesthetists to spend all their professional life in an alert state whilst exposing them to additional stress situations from sleep deprivation from night calls, as well as a harsh working environment that

incorporates noise pollution (from surgical equipment and anaesthetic equipment), radiation exposure, extreme temperature changes and poorly designed theater environments (10). The administration of an anaesthetic involves continuous critical care and demands that the practitioner sustain an intense and prolonged vigilant focus on the management of the patient (8). Anaesthetists like all physicians encounter stressors similar to other disciplines of medicine, but are also faced with challenges specific to their specialty (8, 11). The practice of anaesthesia whilst becoming safer for the patient, is becoming more stressful for the practitioner (8). The constant expectations for good clinical outcomes, even in high-risk circumstances, with the increasingly litigious claims imposed, also add pressure on the practitioner.

A key characteristic of the "General Adaptation Syndrome" is that regardless of the initiating nature of the stressor our bodies always react with physical manifestations (8). Prolonged, excessive and poorly controlled stress will manifest itself in deleterious sequelae. These include physical illness, emotional deterioration, behavioural aberrations and intellectual dysfunction (8). Therefore learning about work related stress and its impact on the QOL along with possible management strategies should form an integral part of medical training.

4.2 Problem statement

Anaesthetists, like all health care workers are faced with daily obstacles that challenge their QOL (12). Due to the intense nature of the specialty, anaesthetists spend all their professional life in an alert state. They are often faced with additional stressors such as situations of sleep deprivation due to night calls, harsh working environments that incorporates noise pollution (surgical equipment and anaesthetic equipment), radiation exposure, extreme temperature changes or poorly designed theaters (10).

Previous studies have shown that being an anaesthetist is stressfull and disruptive to various aspects of their lives, causing not only physical and psychological changes but also disruptions in their personal and environmental relationships (8, 13, 14).

The Department of Anaesthesiology at the University of Witwatersrand (Wits) offers supportive structures such as the mentorship program for the trainees and a Wellness Committee composed of members of the department, albeit with limited training in wellness. These programs have been instituted to support the QOL of staff in the department. However the QOL of anaesthetists in the Department of Anaesthesiology at the University of Witwatersrand (Wits) with regards to their physical health, psychological health, social health and environmental factors is currently not known.

4.3 Aim and objectives

4.3.1 Aim

The aim of the study is to describe the QOL of anaesthetists in the Department of Anaesthesiology at Wits.

4.3.2 Objectives

The primary objective of the study is to describe the QOL of anaesthetists in terms of

- The physical health domain
- The psychological domain
- The social relational domain
- The environmental domain

The secondary objectives are to compare:

- the QOL between senior and junior anaesthetists
- the QOL between male and female anaesthetists
- usage of legal mood enhancing drugs between junior and senior anaesthetists
- usage of the department's Wellness Committee between junior and senior anaesthetists

4.4 Research assumptions

The following definitions will be used in the study**.**

Anaesthetist: is a qualified doctor working in the Department of Anaesthesiology including medical officers, registrars and consultants**.**

Medical officer: is a qualified doctor practising under specialist supervision**.** Medical officers with more than 10 years of anaesthetic experience are career medical officers and are regarded as consultants.

Registrar: is a qualified doctor who is registered with the Health Professional Council of South Africa as a trainee anaesthetist**.**

Anaesthesiologist: is a specialist anaesthetist with a specialist qualification.

Consultant: is an anaesthesiologist or a career medical officer**.**

Junior anaesthetist: junior members of the anaesthetic staff including medical officers and registrars.

Senior anaesthetist: senior anaesthetic staff members who are consultants.

Quality of life: according to the WHO is defined as an "individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person's physical, psychological state, level of independence, social relationships and the relationship to salient features of their environment" (2). QOL in this study will be measured using the WHOQOL-BREF questionnaire.

4.5 Demarcation of study field

The study will be conducted in the Department of Anaesthesiology, affiliated to the Faculty of Health Sciences of the University of the Witwatersrand. The staff complement of the department consists of 225 anaesthetists, which include consultants, registrars and medical officers. The following hospitals are affiliated to the department.

- Charlotte Maxeke Johannesburg Academic Hospital, a 1200 bed central hospital.

- Chris Hani Baragwanath Academic Hospital, a 2888 bed central hospital.
- Helen Joseph Hospital, a 500 bed tertiary hospital.
- Rahima Moosa Mother and Child Hospital, a 338 bed regional hospital.
- Wits Donald Gordon Medical Centre a public/private Hospital with 190 beds.

4.6 Ethical considerations

Approval to conduct the study will be obtained from the Human Research Ethics Committee (Medical) and the Graduate Studies Committee at Wits.

The researcher will explain the study and anaesthetists will be invited to take part in the study, If they agree they will receive an information letter (Appendix 1) and questionnaires (Appendix 2a & 2b). The study will use self-administered questionnaires. The WHOQOL-BREF questionnaire will be voluntary with consent being implied upon full completion and return of the questionnaire. An additional questionnaire (Appendix 2b) will be administered to establish the professional designation and age category of the anaesthetist.

Anonymity can be ensured, and will be maintained in this study. The WHOQOL-BREF questionnaire requires the participants to record their date of birth. The WHOQOL Group has granted permission to omit the date of birth question from the questionnaire (Appendix 3). The raw data needs to be submitted to the WHOQOL Group upon completion of the study. Questionnaires will be distributed in a departmental academic meeting and will be placed in a sealed data collection box immediately upon completion. Confidentiality will be ensured as only the researcher and supervisors will have access to the raw data which will be stored securely for six months after completion of the study. The raw data will be stored in a locked cabinet and the analysed data stored in an access-controlled electronic data form.

If completing this questionnaire causes distress to any participants, the following contact numbers for the department's Wellness Committee and the university's wellness department can be utilised.

Upon completion of the study, if the QOL of the anaesthetists is found to be poor, the information will then be conveyed to the Wellness Committee and the Head of the Department of Anaesthesiology.

The study will be conducted according to the principles of the Declaration of Helsinki (15) and the South African Guidelines for Good Clinical Practice (16).

4.7 Research methodology

4.7.1 Research design

Research design refers to the overall strategy undertaken to integrate all components of the study in a sensible manner so that the research questionnaire is answered. It lays out the plan for data collection, measurement and data analysis (17).

A prospective, contextual, descriptive research design will be followed in this study.

A prospective study is one where the researcher identifies a population and follows them over a particular time and determines an outcome (18). This study is prospective as data is collected at the time the study takes place.

A contextual study is one which refers to a specific population or a "small scale world" according to de Vos et al (19). This study will be contextual as it will only be done in the Department of Anaesthesiology.

Descriptive studies, implies a study "in which phenomenon are described, or the relationship between variables is examined; no attempt is made to determine cause-and-effect relationships" (18). This study aims to describe the QOL of anaesthetists within the department, without any intervention.

4.7.2 Study population

The study population will consist of all anaesthetists in the Department of Anaesthesiology.

4.7.3 Study sample

Sample size

The Department of Anaesthesiology at Wits consists of 22 medical officers,112 registrars and 74 consultants. The entire department is encouraged to participate. A 60% (125) response rate will be considered adequate.

Sampling method

In this study a convenience sampling method will be used. Convenience sampling, also known as “availabilty sampling” describes a non-probability method of sampling that allows data collection from a population that is conveniently available for the study (20).

4.7.4 Inclusion and exclusion criteria

All anaesthetists who complete and return a questionnaire at departmental academic meetings will be included in the study.

Questionnaires with more than 20% missing data will be excluded from the study (3).

4.7.5 Data collection

Questionnaire development

The World Health Organisation Quality of Life (WHOQOL) questionnaire (WHOQOL-BREF) for assessing quality of life will be utilised in this study (Appendix 2a). This is a self-administered questionnaire where participants express how they have experienced each item in the preceding two weeks on a 5 point Likert scale. It consists of 26 questions, with two questions on the general QOL and the degree of satisfaction with one’s own health. The other 24 questions cover four domains, namely physical health, psychosocial health, social relationships and the environment (3, 21, 22). Permission to use this questionnaire has been granted by the WHO Information, Evidence and Research Department. Appendix 2b is an additional questionnaire used for establishment of professional designation and the age categories of the participants.

Data collection

The researcher will approach the chairman of the departmental academic meeting for permission to address the attendees. The study will be explained and the anaesthetists will be invited to take part. The questionnaire and information letter will be distributed to all present in the meeting. The researcher will be present to answer any questions. It will take no more than 15 minutes to complete the questionnaire. All questionnaires will be collected and placed immediately into a sealed box. If completion of this questionnaire causes distress to any participants, the contact numbers for the wellness team are readily available in the department. The Wits University Campus Health and Wellness Center can also be contacted on (011) 717 9111/9113. The Department of Anaesthesiology encourages all candidates to make use of ICAS (International Counselling and Advisory Services) on (011)380 6800 for all wellness related problems.

4.7.6 Data analysis

The data will be captured onto a spreadsheet using Microsoft® Excel 2011. Statistica version 12 (Statsoft, USA) will be the statistical program utilised to analyse the data. Descriptive and inferential statistics will be used.

Categorical variables will be described using frequencies and percentages. The Likert scale data will be analysed at the interval scale level and reported using means and standard deviations if normally distributed. The guidelines of the WHOQOL Group will be utilised to transform the data and perform statistical calculations. The Student t-tests or Mann-Whitney tests will be used for the comparissons between the groups. A p-value of <0.05 will be considered statistically significant.

4.8 Significance of the study

The scope of practice of anaesthetists is ever expanding, with anaesthetists being tasked not only with administering the anaesthetic, but also being expected to act as specialists in emergency care, intensive care units and pain management (23). These factors along with the need for keeping up to date with the most recent standards of

practice, all place additional stress on the practicing anaesthetist and may subsequently have a negative effect on the anaesthetist's QOL.

There is an increasing awareness of the importance of QOL among health care providers. Prolonged and excessive levels of stress compounded by inadequate coping mechanisms are predictors of poor QOL, which leads to decreased job satisfaction, impaired decision making and even suicide among anaesthetists (24). In addition a good QOL among health care providers leads to a higher quality of service for their patients (25).

The results of this study will give a better understanding of the QOL of an anaesthetist with regards to the physical, the psychological, their social relationships and the environmental factors affecting them. Assessing the QOL of anaesthetists will aid in developing supportive measures aimed at improving the personal and professional QOL of anaesthetists in the department.

4.9 Validity and reliability of the study

According to Botma et al (26) the validity of a study refers "to the degree to which a measurement represents a true value" and reliability "represents the consistency of the measure achieved".

The validity and reliability of the study will be ensured by the following measures.

- Using an appropriate study design.
- Using the validated WHOQOL-BREF questionnaire.
- Ensuring confidentiality thus encouraging honest responses to the questions.
- The researcher being present during data collection to address any queries.
- Checking every tenth data entry point on the spread sheet to ensure accuracy.
- Data analysis being done in consultation with a biostatistician.

4.10 Potential limitations

The potential limitations for this study are that the study will only be conducted in one department, in one institution. This means that the results may not be generalisable to other anaesthetic departments.

The sample size for this study is relatively small and may not be adequately powered to find significant differences between the groups being compared in the secondary objectives if these differences do exist. Convenience sampling will also be used for this study. This sampling method can lead to bias as some elements may be under or over estimated.

Section 5:

5.1.1 Time frame

Year	2016		2017			2018			
Activity	Nov	Dec	Jan	Feb	Mar	Feb	Mar	Apr	May
Proposal and literature review									
Proposal submission									
Ethics approval									
Post-grad approval									
Data collection									
Data analysis									
Draft article									
Submission									

5.1.2 Budget

The Department of Anaesthesiology will supply the paper and bear the cost of the printing for this study.

ITEM	NUMBER	COST	TOTAL
PRINTING	1000	R1/ page	R1000
BINDING	4	R200	R800
STATIONARY		R250	R250
TOTAL			**R2050**

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5.3 Appendices

Appendix 1: Information sheet

Dear Colleagues

Hello, my name is Ramonkung Mogale and I am a registrar in the Department of Anaesthesiology at Wits. I kindly invite you to participate in my M Med study titled "The quality of life of anaesthetists in a department of anaesthesiology".

As anaesthetists you are faced with challenges in your daily practice that have an impact on your quality of life. This study aims to describe the quality of life of anaesthetists in the Department of Anaesthesiology, using the WHO Quality of Life Group's abbreviated questionnaire (WHOQOL-BREF).

Your participation in this study is totally voluntary and no incentive or compensation will be granted on completion of the questionnaire. Your consent will be implied upon completion of the questionnaire. Although the original WHOQOL-BREF questionnaire requests the date of birth, such information has been omitted with prior permission from the WHOQOL Group. For the purpose of this study the age groups will be utilised. The raw data may be requested by the WHO Quality of life group and included in their regional assessments of quality of health. Your identity will not in any way be shared if this data is requested for such purposes. Confidentiality will be maintained as no identifying data will be requested from you and only myself and the supervisors will have access to the raw data. Questionnaires are numbered for data collection purposes only. Upon completion of the questionnaire, all folded questionnaires should be placed in the sealed box.

The questionnaire should not take longer than 15 minutes to complete. Whilst completing the questionnaire, participants are encouraged not to share or discuss the information with other participants as this may influence results.

If completing this questionnaire causes you distress please contact our departmental Wellness Committee. The Wits University Campus Health and Wellness Center can also be contacted on (011) 717 9111/9113

Thank you for your assistance. Any questions or queries with this study are to be directed at:

- Ramonkung Mogale (researcher): 076273400
- Ethics committee chairman – 011 717 1234

Regards

Ramonkung Mogale

Appendix 2a: WHOQOL-BREF Questionnaire

Appendix 2b: Professional designation

1.Please mark with an X

Medical Officer	
Registrar	
Consultant	

2. Age Group.

24-30	
31-35	
36-40	
41-45	
46-50	
>50	

3. Have you ever used any legal mood enhancing substances?

YES	NO

4. Have you ever made use of the Wellness programs in the department, including the mentorship program?

YES	NO

Section 6: Annexures

6.1 Ethics approval

6.2 Graduate Studies Comittee

6.3 Turnitin report