Evaluation of a mentorship program 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 Masters of Medicine in the branch of Anaesthesiology

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Declaration

I, Ndeufika Twahafifwa Nakamwe 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.

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09 May 2021

Abstract

Background: Mentorship is a process whereby a younger individual develops and re-examines their professional and personal skills under the guidance of a senior colleague. In academic medicine it may be used to bridge the gaps between classroom theory and clinical practice. Mentorship is pivotal to the success of any academic institution or department.

Aim: To describe the mentors' and mentees' evaluation of the mentorship program in the Department of Anaesthesiology at the University of the Witswatersrand.

Setting: A prospective, contextual, descriptive research study conducted in the Department of Anaesthesiology, affiliated to the Faculty of Health Sciences of the University of the Witwatersrand.

Methods: Convenience sampling of mentors and mentees attending departmental academic meetings was done. Two questionnaires, one for mentees consisting of 20 questions and one for the mentors consisting of 12 questions, were handed out. Data from returned questionnaires was entered onto a spreadsheet and analysed using differential and inferential statistics.

Results: Mentees in the department of anaesthesiology perceived the mentorship program as beneficial and positive to their development, the majority of mentors on the other hand felt their mentoring was not effective.

Conclusion: It is recommended that a formal mentorship program policy is established which clearly outlines what is expected of the mentors and mentees, and ensures a more uniform mentoring experience.

Acknowledgements

I would like to thank my family for supporting me. I would also like to thank my supervisors who have encouraged and advised me throughout this process.

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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 Southern African Journal of Anaesthesia and Analgesia (SAJAA), the journal to which it is intended to be submitted.

Section 1: Review of the literature

1.1 Introduction

The Standing Committee on Postgraduate Medicine in the United Kingdom described mentorship as a process during which a younger individual develops and re-examines their professional and personal skills under the guidance of a senior colleague (1).

Edinen et al (2) define mentorship as a process whereby a senior learned colleague advises and guides a junior colleague to grow and develop their career. Additionally, the mentor also aims to nurture the mentee's interest in the field of interest.

The concept of mentorship has its origin in Greek mythology. Legend has it that during the Trojan war, the Greek king Odysseus left his son Telemachus with a wise elder friend called Mentor. In the absence of his farther, Mentor would teach and guide Telemachus. Since then, the word mentor is defined as "a person who offers support and guidance to another" (3).

The relationship between Sir William Osler (the first professor of medicine at The John Hopkins University) and Harvey Cushings is the first documented mentor-mentee relationship in medicine (4). Osler and Cushings became great friends and Cushings adopted many of Osler's traits including the love for books. Cushings had such profound admiration for Osler that after the passing of Osler he published his biography (5).

1.2 Models of mentorship

One to one mentoring is the conventional type of mentoring where each mentor is allocated a single mentee, usually in a highly structured relationship. These relationships are usually long term or lifelong (6, 7).

Group mentoring is when a single mentor guides multiple mentees, who typically have a common goal. This model of mentoring is effective in environments where mentors are scarce. Mentees and mentors stand to benefit from group sharing of ideas and knowledge (6, 7).

Team mentoring involves multiple mentors responsible for a single mentee. It is often for a limited time, focusing on group functionality rather than psychosocial bonding. High demand is placed on the mentee to co-ordinate the group (6, 7).

Peer mentoring is when a junior faculty member mentors a fellow junior colleague. There are usually informal one to one or group interactions (7).

E-mentoring also known as virtual mentoring is when a mentor guides a junior colleague over the internet. This type of mentoring is helpful to institutions with multiple centres all over the world (6, 7).

Reverse mentoring, a junior faculty mentor with more knowledge on a subject guides a senior faculty member. With rapidly evolving technology in work spaces, this is very effective at bringing senior members up to speed. The effectivity of this type of mentoring requires awareness of barriers such as a higher rank and status (6, 7).

Situational mentoring is usually a short term relationship. It is characterised by a senior colleague offering guidance to address an immediate situation (6).

Supervisory mentoring, occurs when guidance is offered by a leader whose primary role is not mentoring (6).

Informal mentorship can be defined as a mentorship relationship that is initiated by the mentee, on their own accord, without or with little help from the institution. In its' purest form, this relationship develops naturally, there are no formal agreements between mentor and mentee. Often the dynamics and progression of the relationship are dictated by the mentee (7, 8).

Formal mentorship on the other hand is initiated by the institution. The institution derives the mentorship policy, training of mentors and in some instances, facilitates matching of mentees to mentors (3, 9). Mentorship was formalised mainly for two reasons. Firstly, to encourage protégées towards a career path, as a mentee is likely to follow a career path like that of the mentor. Secondly, it assists minority groups, such as women and other underrepresented groups, to find mentors. Minority groups generally find it difficult to find mentors in an informal system (3).

Contemporary mentorship programs often have formal and informal characteristics. For example, an institution would have a formal mentorship program, but would allow mentees to self-select suitable mentors. Alternatively, a department may allocate mentors to new entrants in the department but allow for change of mentors, as soon as new entrants have acquainted themselves well with senior staff (3). Table 1.1 compares the two mentoring models.

Table 1.1 Comparison of informal and formal mentorship as demonstrated by Patel et al (3)

Informal mentoring	**Formal mentoring**
Associated with a low rate of success, however flexible, with high levels of satisfaction.	Much harder to execute as a defined policy would require personnel, communication and tracking tools as well as sound administrative processes.
No formal mentor training required.	Formal training and support required.
Likely to worsen exclusion of minority groups, as dominant individuals and groups who are well represented in the department are likely to get the best mentors.	Exclusion of minority groups unlikely as they are likely to be catered for in departmental mentorship standards of operation.
An atmosphere of trust and mutual respect likely to prevail from the beginning as the two individuals are usually well acquainted.	Dynamics of the relationship are usually only established once the relationship starts.
Likely to be beneficial for short term mentoring.	More appropriate for long term programs.
No clear goals and objectives.	The two individuals usually have clear goals.
Mentors and mentee self-select, therefore the relationship likely to function on a personal level.	Pre-determined pairing of individuals, personality mismatches are probable.

It is suggested by Subramanian (10) that mentorship has four phases:

- “Initiation – understanding motivations for mentoring, clarity of expectation and role
- Cultivation – setting ground rules, boundaries, goals and criteria for success and schedule of meetings
- Engagement – focus on learning, thoughtful and timely feedback
- Separation – celebrating progress, evaluation of journey together. “ (10)

At its core mentoring is about the relationship the mentor and mentee build together and how they use this relationship to attain their goals.

1.3 Roles in the mentorship program

1.3.1 Mentor’s role

The goal of mentorship is to enable the mentee to attain knowledge, skills and attitudes that are relevant to their career (8). Even in institutions with formal mentorship programs, the mentor should tailor it, to meet the particular mentee’s special needs (8). Major roles of the mentor would include teaching, guiding and providing inspiration. The mentor will have to ensure that they obtain the necessary expertise in mentoring. Additionally, the mentor should be adequately skilled in the mentee’s field of interest to fulfil the teaching component of the mentorship relationship. It might be required of the mentor to provide protected mentoring time for the mentee, depending on the nature of the mentoring program at the institution. Ideally, a mentor should be someone with good morals and an acceptable work ethic (3).

To ensure harmonious but effective mentoring, the mentor should respect the mentee’s individuality and input. At the same time, the mentor should be able to challenge and constructively criticise the mentee. Finally, the mentor has to provide honest and timeous feedback to the mentee (3).

1.3.2 Mentee’s role

There is evidence in the literature to suggest that mentee’s who select mentors are more content with their mentors compared to those assigned mentors (8). Yamada

et al (11) demonstrated this through their survey of radiology residents. One of the initial roles for the mentee is to initiate interactions with a potential mentor (11).

According to Patel et al (3), for an effective mentee-mentor relationship, the mentee should play an active role. The success of this relationship rests upon both the mentor and mentee. Therefore, the mentee should show full commitment to the relationship through their actions. To guide these actions, the mentee should establish clear goals of the relationship. The mentee should keep appointments and make the necessary preparations for scheduled discussions. Ultimately the mentee is responsible for their own development and learning (3). Ideally, the mentee should take a leading role in procedures, initially under supervision and then gradually wean the supervision. The mentee should constantly be thinking of ways to improve on previous performances (8).

Another important aspect of mentorship in academic medicine is to bridge the gaps between classroom theory and clinical practice. It is the responsibility of the mentee to identify these gaps, address them (by applying information covered in classrooms to real life situations) and ask for guidance from their mentors should they encounter any hindrances (8).

1.3.3 Institution's role

It is imperative for the institution or department to ensure an environment that is conducive to effective mentorship (12). Mentorship is often overlooked in favour of clinical and administrative work. The institution can play a major role to remedy this (13). Aspects of a favourable mentoring environment are illustrated in Table 1.2 (8).

Table 1.2 Examples of the Interactional foundations and developmental behaviours present in the optimal mentoring environment as demonstrated by Davis et al (8)

Aspects of the optimal mentoring environment	**Examples**
Interactional foundation	
Emotional safety	• Mentor is non-judgemental • Mentor refrains from curt or forceful admonishments • Mentor gives residents time to think act and respond
Responsiveness	• Mentor makes time for the resident • Mentor presents ongoing and retrospective feedback
Support	• Mentor conveys empathy • Mentor protects the resident
Protégé-centeredness	• Mentor helps the resident identify and achieve his or her own goals • Mentor tailors teaching to what the resident needs to learn
Respect	• Mentor treats resident as a future colleague • Mentor is willing to accept the residents' ideas and contributions
Informality	• Mentor meets with the resident outside work-related settings • Mentor has a relationship with the protégé that they initiated outside a formal mentoring program

Developmental behaviour	
Exercising independence	• Resident takes a lead role in procedures • Resident repeats procedures with increasingly reduced supervision
Reflecting	• Resident thinks about how to improve future actions in light of prior performance • Resident develops self-awareness
Synthesising	• Resident integrates multiple areas of medicine • Resident combines clinical experience and classroom knowledge
Extrapolating	• Resident uses an existing skill in a different way • Resident applies information presented at rounds or colloquia to new patients

The institution is responsible for the formulation of a comprehensive mentoring policy guided by general principles of effective mentoring and the characteristics and needs of the institution. The institution should also provide an incentive for mentors to participate in the mentoring program (7, 8).

1.4 Advantages and disadvantages of mentorship

1.4.1 Mentor

Although most literature proposes a mentee centred mentorship program, mentors also benefit from a well-orchestrated program. Mentorship affords the mentor (often a senior colleague) an opportunity to build a legacy (4). Through mentoring mentors are able to improve their leadership skills and are generally more satisfied with their work compared to colleagues that do not part take in mentoring activities (8, 14). Successful mentorship often results in success in research, networking opportunities and growth for the mentor. At some institutions, mentors are prioritised over their

non-mentoring colleagues for promotions (13, 15). In a survey by Barker et al (16) of mentors at the Department of Plastic Surgery at the Ohio State University Medical Centre, 80% of the mentors identified a chance to meet the younger generation, job contentment and a chance to give back to community, as areas in which they derive personal satisfaction from participating in the mentorship program. A further advantage is that mentorship affords the mentor an opportunity to comprehend barriers experienced at the lower end of the organisation (6).

Mentorship is not without disadvantages, as identified by Coates (4), spending increased time on mentoring could be taxing to the mentor emotionally and physically, and potentially hinder the progression of the mentor's career. Personal conflicts may arise, because of perceived or genuine favouritism towards the mentee, among co-workers. The mentor is likely to be dissatisfied and lose self-confidence, should the mentee's performance not meet expectations (4).

1.4.2 Mentee

Traditionally mentorship programs are designed on the premise of developing and growing the mentee guided by the wisdom of the mentor. Studies have identified increased productivity, better career planning, increased likelihood of getting a job or getting promoted in a current job, reduced career related stress and a likelihood of pursuing an academic career as some of the benefits for the mentee from a mentorship relationship (2, 9). The support and guidance provided by the mentors has shown to be associated with good outcomes in research, because mentored individuals have been shown to allocate more time to research and successfully complete research programs, as compared to non-mentored individuals (14). Individuals that went through a mentorship programme are more likely to mentor other individuals in the future and have been shown to be more confident (15, 17). A mentee is likely to be disadvantaged if their ambitions are perceived to be a threat to the mentor. As ambitions differ among mentors and mentees. (4).

1.4.3 Institution or specialty

Research has indicated that mentored individuals are likely to remain in their current employment; subsequently the institution retains valuable skills (4, 17). A study at

the University of California showed that 85% of mentees remained with their institution and 76% remained in academic medicine (17). According to Coates (4) mentorship improved morale, increased productivity and institutional efficiency.

1.5 Barriers to mentorship

Mentorship has an significant role in the development of staff in academic medicine, however, multiple challenges exists that could hinder mentoring if not addressed (1). The number of willing and skilled mentors is limited in the academic setting, making it difficult for mentees to identify suitable mentors (2). In academic medicine lecturers or supervisors involved in assessment and grading of students' academic performance may find it difficult dealing with the bias of being a mentor and assessor, further decreasing the number of potential mentors (3). Minority groups such as certain races and genders, might find it difficult to identify a senior colleague with similar values in the institution or discipline (4). Most institutions do not provide formal training in mentorship skills to aspiring mentors, further reducing the pool of suitable mentors (5).

1.6 Mentorship in academic medicine

The success of any mentorship program relies heavily on an environment that is conducive to optimal mentorship (8). Davis et al (8) undertook a literature review, with the purpose of developing a framework for the ideal mentoring setting for medical residents. The authors reviewed the literature addressing mentoring and its environment, as well as the resultant effect on knowledge, skills and attitude development. Characteristics of a good mentorship programme were identified and used to formulate a curriculum for training mentors. It is proposed that an optimal mentoring relationship model is based on six reciprocal foundations: "emotional safety, support, mentee-centeredness, informality, responsiveness, and respect''. This would allow mentees to develop the following behaviours: "exercising independence, reflecting, extrapolating, and synthesizing" (8).

Lin et al (1) surveyed residents and faculty from three Otolaryngology-head and neck surgery programs at Johns Hopkins University, University of North Carolina and Medical College of Wisconsin with regard to their views of their mentoring

relationships. The authors asked the trainees to describe their perceptions of the departmental mentorship program. Mentors were also invited to describe their mentorship relationships, evaluate the program in terms of available resources and provide areas of development to improve their skills. ‘Career planning’ was identified by most mentors and mentees as the subject commonly discussed in mentoring interactions. Most of the mentees (95%) indicated that their mentors were readily available and on the contrary, only 46% of mentors indicated that they have enough time to mentor. Most mentors indicated that they would benefit from further training in planning, emotional well-being and giving feedback.

Yamada et al (11) surveyed the Department of Radiology at Beth Israel Deaconess Medical Centre to evaluate whether there were differences in the mentorship experience between mentees that selected their own mentors and those that did not (11). Of the 25 residents that participated in the survey, 14 had selected their mentors and 11 were assigned mentors (11). The group that selected their own mentors were happier with their mentorship relationships and were likely to consider the self-selected mentor as the primary mentor (11).

Flint et al (18) surveyed 3655 orthopaedic residents to obtain their opinion on the value of their mentorship experience. Five hundred and six (14%) residents responded (18). The residents indicated that when there was a formal mentoring program in place they were more satisfied with their mentoring experience(18). Similar to the Yamada et al (11) study, the residents who had chosen their mentors were more content.

Park et al (19) evaluated undergraduate medical students who had experienced both formal and informal mentorship programs. Informal mentorship was found to be common among this group, however having an informal mentor did not mean that students were dissatisfied with the formal mentorship program and career guidance was found to be the main reason for seeking informal mentors (19).

Stubbs et al (20) evaluated the mentorship program of the faculty of Family Medicine at the University of Toronto and derived variables associated with a good mentorship relationship. Overall, respondents’ experience of the mentorship program was positive. Characteristics found to be associated with good mentorship were: “overall

positive faculty ratings of their local department, positive faculty ratings of infrastructure support at their primary practice setting, greater frequency of mentorship, being a junior faculty member, and working in a family practice teaching unit" (20).

At King Edward Medical University, Sheikh et al (9) evaluated the mentorship programs and searched for factors associated with satisfactory mentorship. Congested mentor schedules, a lack of understanding between mentors and mentees and inadequate communication were identified by mentees as causes of dissatisfaction with the program. Factors that were found to be beneficial included: more time spent with mentors, defined targets and a knowledgeable, friendly and cooperative mentor (9).

1.7 Mentorship in anaesthesiology

Trainees in anaesthesiology are regularly exposed to high levels of stress in the work place, some form of support in the form of mentorship would help trainees cope better with this stress (21). However, reviewing the literature, limited data exists regarding mentorship in anaesthesiology, compared to other medical disciplines. Most of the mentoring programs in anaesthesiology, are based on data from other medical disciplines. In a review article of mentorship in anaesthesiology, Flexman and Gelb (22) states that the lack of research into the state of mentorship demonstrates that anaesthesia lags behind other discipline in implementing mentorship programs (22). It is with this background that academics in anaesthesiology have been encouraging studies on the subject of mentorship in anaesthesiology (15).

Gonzalez and Donnelly (23) surveyed anaesthetic residency program directors to ascertain the popularity of formal mentorship programs. Additionally, the authors evaluated the current mentorship programs at these institutions and directors identified focus areas for mentorship. Of the 45 (34%) out of the 131 residency program directors that responded, 88% indicated that they have a formal mentorship program. More than 60% of the programs have been established for over 10 years. Most faculty programs (42%) assigned a resident to a faculty mentor, 22% selected their own mentors and the others use a combination of both for pairing. In 32% of

these programs the frequency of mentor-mentee meeting was determined by the mentor-mentee pair, 13% by the program and in 55% there was input from both the mentor-mentee pair and the program. There was a lack of formal program evaluation, with 79% and 84% of the programs not being evaluated by residents and faculty, respectively. Only a third of the programs provided formal training to mentors and only 5% paid their mentors for mentoring. Career planning, professionalism and balancing personal, career and family time were indicated as important focus areas for mentoring (23).

Zakus et al (24) surveyed program directors of anaesthesiology residency programs accredited by the Royal College of Physician and Surgeons of Canada (RCPSC), and all the residents registered with these programs, from the 13th November 2012 to 1st April 2013. The objective of the survey was to determine the state of mentorship in anaesthesiology in Canada. This was done via two web based questionnaires (one for the program directors and the other for the residents). Thirteen (76%) program directors and 203 (39%) residents responded. The authors found that 54% of the programs were formal, with a median existence of 3,5 years. Of the residency programs without mentorship programs, 50% expressed a desire to start mentorship programs. Ninety-four percent of the residents who responded agree that mentorship was important, however only 74% have a mentor. Most of the mentors were male, middle level or senior colleagues. Half the mentors where allocated to the mentees through a formal program. Most (86%) were satisfied with their mentors. There was no difference in the level of satisfaction between those who selected their mentors and those who were allocated mentors (24). However, the low response rate among residents may have caused a sampling bias. In addition, programs whose directors did not respond were not surveyed, and it is likely that these programs do not have mentorship programs. Another limitation is that the mentees were not surveyed (24).

In another study by Farag et al (25), assessing a mentorship program of an academic anaesthesiology department, 52 anaesthesiologists at the department of general anaesthesiology of The Cleveland Clinic were surveyed. Their aim was to determine if the residents' perceptions of mentorship as a tool of improving professional growth, changed with the implementation of a formal mentorship

program. The residents were surveyed prior to and post implementation of the formal mentorship program and their responses compared to see whether the implementation of a formal mentorship program had altered their perceptions (25). The study found that implementation of the mentorship program had no impact on residents' perception of mentorship as an important tool for promoting career growth. However, the results suggested that the mentor-mentee relationship was likely to succeed if designated time was allocated for mentees and mentors to engage in mentorship activities (25).

1.8 Literature Discussion

It is evident from the reviewed literature that mentorship is pivotal to the success of any academic institution or department (13, 22). Implementing a mentorship program should be determined by guidelines in the literature, but more importantly, such a program should be tailored to meet the unique needs of the institution. Formal mentorship provides a solid foundation for mentoring, but it should be flexible enough to meet the needs of the mentee and mentor. There is little literature on mentorship in anaesthesiology, which necessitates extrapolation of data from other medical departments, but as further research is conducted in this field, there will be enough evidence to guide mentorship in anaesthesiology.

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Section 2: Author's guidelines

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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). Please do not use brackets or do not use the foot note function of MS Word.

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The following are sample references:

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

Polgreen PM, Diekema DJ, Vandeberg J, Wiblin RT, Chen YY, David S, 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.

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Figure numbers: Arabic, table numbers: Roman

Section 3: Draft article

Evaluation of a mentorship program in a department of anaesthesiology

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Key words: registrar, consultant, mentee, mentor, mentorship

Abstract

Background: Mentorship is a process whereby a younger individual develops and re-examines their professional and personal skills under the guidance of a senior colleague. In academic medicine it may be used to bridge the gaps between classroom theory and clinical practice. Mentorship is pivotal to the success of any academic institution or department. This study aims to describe the mentors' and mentees' evaluation of the mentorship program in the Department of Anaesthesiology at the University of the Witwatersrand. It is a prospective, contextual, descriptive research study conducted in the Department of Anaesthesiology, affiliated to the Faculty of Health Sciences of the University of the Witwatersrand.

Methods: Convenience sampling of mentors and mentees attending departmental academic meetings was done. Two questionnaires, one for mentees consisting of 20 questions and one for the mentors consisting of 12 questions, were handed out. Data from returned questionnaires was entered onto a spreadsheet and analysed using differential and inferential statistics.

Results: Mentees in the department of anaesthesiology perceived the mentorship program as beneficial and positive to their development, the majority of mentors on the other hand felt their mentoring was not effective.

Conclusion: A mentorship program policy document would outline clearly what is expected of the mentors and mentees, and ensure a more uniform mentoring experience.

Introduction

The Standing Committee on Postgraduate Medicine in the United Kingdom described mentorship as a process whereby a younger individual develops and re-examines their professional and personal skills under the guidance of a senior colleague. [1]

The term and concept of mentorship have its origin in Greek mythology. Legend has it that during the Trojan war, the Greek king Odysseus, left his son Telemachus with a wise older friend called Mentor. In the absence of his father Mentor would teach and provide guidance to Telemachus. Since then, the word mentor has been used and is defined as “a person who offers support and guidance to another” [2]. In medicine, the relationship between Sir William Osler (the first professor of medicine at the Johns Hopkins University) and Harvey Cushings is the first documented mentee-mentor relationship. [3]

Traditionally mentorship is provided on a one to one basis. In this model, one mentor meets with one mentee at a time, the mentor pays individualised attention to the mentee resulting in good rapport building. However, this model of mentorship is not always viable and it warrants the employment of alternative models. Examples of alternative mentoring models include; group, team, peer, reverse, situational, supervisory, informal and formal mentoring. [4, 5]

Effective mentorship requires dedication from the mentor, the mentee and the institution. [2] Key roles for the mentor include teaching, guiding and inspiring the mentee. The mentor should ensure that they acquire skills in different areas of mentoring. Ideally, a mentor should be someone with good morals and an acceptable work ethic. [2]

According to Yamada et al [6] mentees who elect mentors themselves were more satisfied with their mentorship relationship. Ideally, mentees should select their own mentors. The mentee should establish clear goals for the relationship, keep appointments and make the necessary preparations for scheduled discussions. [2]

The institution's role in ensuring effective mentorship include: establishing a conducive environment [7], providing protected mentoring time and initiating a formal mentorship program [8]. Furthermore, to encourage mentorship, the institution could provide some form of incentive to the mentors. [5, 9]

Mentorship affords the mentor an opportunity to: build a legacy [3], grow personally and professionally and derive more satisfaction from work. [8] However, mentoring might also be taxing for the mentor emotionally and physically. [3] Mentored individuals, on the other hand, tend to: be more productive, plan their careers better, get new jobs or promotions and successfully complete research projects. [10, 11] Institutions with effective mentorship programs are likely to retain the employee and subsequently retain valuable skills. [3, 12] Multiple challenges that could hinder mentoring include; a limited pool of suitable mentors [1], difficulty finding mentors for minority groups [2], lack of formal training for mentors and limited dedicated mentoring time. [1]

According to Flexman and Gelb [13] anaesthesiology lags behind other medical disciplines in implementing mentorship programs, hence the lack of literature on mentorship in anaesthesiology. [13, 14] In a survey of 13 anaesthesiology program directors in Canada, Zakus et al [15], in 2015, found that only 54% of the mentorship programs were formal, with a median existence of 3,5 years.

The benefits of an effective mentorship program are demonstrated in the literature. [9, 13, 16] Continuously evaluating an incumbent mentorship program is essential to ensuring that the mentorship offered is effective.

Methods

Approval from the Human Research Ethics (Medical) Committee and other relevant authorities was obtained. A prospective, contextual, descriptive research design was used in this study.

The study population consists of all anaesthetists involved with mentorship in the Department of Anaesthesiology. The sample size was determined by the response

rate. In this study a convenience sampling method was used. Only mentors and mentees that attended departmental academic meetings were included in the study.

Following an extensive literature review, a questionnaire from the Faculty of Otolaryngology residency program at Johns Hopkins University, was deemed the most appropriate to use for the study. Permission to use and adapt this questionnaire was obtained from the corresponding author. The questionnaire consists of two parts, one for the mentees and one for the mentors. The mentee questionnaire consists of 20 questions and the mentor questionnaire consists of 12 questions.

Questionnaires were handed out at departmental academic meetings. The study was explained and mentors and mentees were invited to complete the questionnaire. Those that agreed received an information letter and a questionnaire. The author was present during the completion of the questionnaire and answered any questions that arose. The completed questionnaire were returned in an envelope and put into a sealed box to ensure anonymity of their responses.

Data obtained from questionnaires was entered onto an Excel spread sheet and analysed in consultation with a biostatician using descriptive and inferential statistics. Categorical variables were described using frequencies and percentages. Comparison between mentees and mentors on similar variables from the respective questionnaire were made using Chi^2 or Fishers Exact tests. P values of <0.05 are considered statistically significant.

Qualitative data were divided into three broad categories for analysis purposes: positive response (if the response was strongly agree or agree), negative response (if the response was strongly disagree or disagree) and neutral.

Results

A total number of 110 questionnaires were handed out to registrars and 60 to consultants with a return rate of 67% (74) among registrars and 57% (34) among consultants.

The characteristics of mentees and mentors are highlighted in Table 3.1 and 3.2 respectively. Most of the mentees that participated in the study were in their 3rd or fourth year of study (62.1%). Most mentees were between the ages of 31- 35 years (62.2%). More than two thirds were female (68.9%). Mentors were mostly between the ages of 31-50 years (85.3%). Over 70% were female and most had spent between 1-10 years as consultants in the department (73.6%).

Tables 3.3 and 3.4 outline the relationship between mentees and, mentors in the department. Seventy-three of the 74 (98.6%) registrars that responded had a formal mentor within the department. Most of the mentees that responded except for one reported having a formal mentor allocated by the departmental mentorship program. A majority, 85.1% of the mentees reported that they didn't choose their mentor, conversely 66.2 % thought it was important that they choose their own mentors.

Only 25.7% had informal mentors and these mentors were usually parents (4.4%). All the consultants that responded had at least one mentee in the department. Mentees were sometimes allocated a mentor that was the same sex (58.1%) and race (55.4%) as them. The majority (62.2%) of mentees did not think having a mentor of the same sex was beneficial to their mentoring experience, and 55.4% did not think a mentor of the same race was beneficial.

Table 3.5 describes the frequency of meetings reported by mentee and mentors and shows that most of the mentees, 50 (67.6%) indicated to meeting their mentors at least twice every year or less often, with the majority 30 (35.1%) meeting twice a year. On the other hand half of the mentors indicated to meeting their mentees once a month. Although 66.2% of the mentees agreed that their mentors were accessible, only 32.4% of mentors concede that they have enough time to mentor.

The areas of mentoring identified by mentors and mentees are highlighted in Table 3.6. Mentees (87.8%) identified research as the area in which the least mentoring is offered, 55.9% of the mentors responded that they offered no research related mentoring ($p>0.001$). Both mentors (73.0%) and mentees (77.0%) agreed that a lot of time was spent on academics. Mentors did not however spend that much time discussing professionalism (24.0%) or clinical judgement (26.0%) with mentees.

Mentees inversely felt that clinical judgement was an area where they received a lot of input (59%).

Table 3.7 looks at the mentees perception of the mentors qualities that make them suitable for mentoring. Sixty-five percent of mentees felt their mentors' demonstrated content expertise in their areas of need. A significant number of mentees (75.6%) felt their mentors are approachable. Only 48.0% of mentees felt that their mentors suggested appropriate resources.

Among the mentors that responded, 80.5% did not have formal training as mentors and 67.0% believed training would help them be more effective. Having role models and enjoying mentorship were identified by 50.0% of mentors as helpful at making them effective mentors. Mentors identified personal integrity (41.0%) and role modeling (58.0%) as the skills they think are needed to become good mentors.

Table 3.1: Mentee Characteristics

Characteristics	Number (n)	Percentage(%)
Age in Years		
<25	0	0
25 – 30	19	25.7
31 – 35	46	62.2
36 – 40	7	9.4
>40	2	2.7
Gender		
Male	23	31.1
Female	51	68.9
Year of training		
First	14	18.9

Second	10	13.5
Third	24	32.4
Fourth	22	29.7
More than four	4	5.4

Table 3.2: Mentor Characteristics

Characteristic	Number(n)	Percentage (%)
Age in Years		
31 – 40	21	61.8
41 – 50	8	23.5
51 – 60	5	6.7
61 – 70	0	0
>70	0	0
Gender		
Male	9	26.5
Female	25	73.5
Number of years as a consultant		
<1	4	11.8
1 – 5	16	47.1
6 – 10	9	26.5
10 – 15	3	8.8
16 – 20	1	2.9
>20	1	2.9

Table 3.3: Mentees' description of the mentor – mentee relationship

	Number (n)	Percentage (%)
Have a formal mentor?		
Yes	73	98.6
No	1	1.4
Have an informal mentor?		
Yes	19	25.7
No	55	64.3
Relationship with informal mentor?		
Parent	9	47.4
Teacher	3	15.8
Friend	3	15.8
Other	4	21.0
Same race as mentor?		
Yes	41	55.4
No	33	44.6
Same gender as mentor?		
Yes	43	58.1
No	31	41.9

Table 3.4: Mentees' description of the mentor - mentee relationship (cont)

	Number (n)	Percentage (%)
Did you choose your mentor?		
Yes	11	14.9
No	63	85.1
Should you be able to choose your own mentor		
Yes	49	66.2
No	25	33.8
How long have you had a mentor?		
<1	20	27.0
1 – 3	37	50.0
4 – 6	15	20.3
>6	2	2.7
Not applicable	0	0
Do you think having a mentor of the same race is beneficial to your mentoring?		
Yes	28	37.8
No	48	62.2
Do you think having a mentor of the same gender is beneficial to your mentoring?		
Yes	33	44.6
No	41	55.4

Table 3.5: Frequency of meetings as reported by mentors versus mentees

Frequency of meetings	Reported by Mentor	Reported by Mentees
Twice a month	2.9%	2.7%
Once a month	2.9%	12.2%
Once every three months	50.0%	17.6%
Twice a year	11.8%	35.1%
Other	32.4%	32.2%

Table 3.6: Areas of mentoring as reported by mentor versus mentees

Areas of Mentoring	Proportion of Mentors Selection	Proportion of Mentee's Selection	P value
Research	12%	44%	0.0004
Clinical judgement	26%	59%	0.0012
Work life balance	30%	71%	0.0001
Professionalism	24%	47%	0.0255
Emotional well-being	34%	65%	0.0034
Academics	73%	77%	0.8149

Table 3.7: Proportion of mentee agreement on values of mentor qualities

My mentor….	Proportion of mentees in agreement
Is approachable	76%
Is supportive and encouraging	67%
Motivates me to improve my work	54%
Challenges me to extend my abilities	43%
Provides constructive critiques of my work	55%
Is helpful in providing direction and guidance	55%
Is accessible	66%
Demonstrates content expertise	76%
Answers my questions satisfactorily	58%
Acknowledges my contributions	61%
Suggests appropriate resources	48%

Discussion

Davis et al undertook a literature review with the aim of identifying characteristics of a good mentorship program, their findings varied and in some cases were contradictory across different mentorship programs. [8] This emphasised that even though there are commonalities amongst good mentorship programs, perceptions of the program by the role players plays an equally important role in ensuring a conducive environment for effective mentoring. Olubukola and Bishr [17] suggest that there are many studies which show that good mentorship creates professionals with greater job satisfaction, more confidence and better career development. [17] This background encouraged us to conduct a study evaluating the mentors and mentees perception of the mentorship program in the Department of Anaesthesiology at Wits.

Participation in the study of mentors and mentees was over 50% and provides a good overview of the state of the mentorship program in the department. In this study only one person was not allocated a mentor. This suggests that there is a solid formal mentorship program in the department where all mentees are allocated a mentor.

Almost 60% of mentees are the same gender as their mentor and 55.4% of mentees are paired with a mentor of the same race. However 62.2% of mentees did not think that it would be beneficial to have a mentor of the same race and 55.4% of mentees did not feel that it would be advantageous to have a mentor of the same gender. Jackson et al [18] support this idea; they suggest that a mentor- mentee relationship consisting of people of different backgrounds can be looked at as a chance for both parties to mature in their outlook and thinking.[18] On the other hand underrepresented minority racial groups may not have access to mentors that can help them advance their careers. [18] This underpins the importance of identifying these groups and ensuring their needs are met and also requires us to acknowledge the delicate balance that needs to be established in a mentor – mentee relationship when taking gender and race into account.

Gender and race remain contentious issues. In the Wits anaesthesia department 68.9% of mentees are female and 73.5% of mentors are female. Though in this study gender seems not to be a stumbling block to the mentee – mentor relationship,

a study by Leslie et al [19] argues that gender is important in a mentoring relationship, especially for females and trainees from minority groups with children or intending to have children.[19] It is deemed as important as; male mentors may have difficulty criticising women, [20] male mentors may not be able to understand and direct female mentees when it comes to work – life balance, e.g., juggling career and family and deciding on when to have children. [21] Koopman et al [20] states that women and men in academic medicine encounter different work experiences and therefore women would get more from having a mentor that is also a woman. A more sinister reason for avoiding gender differences between mentors and mentees is the possibility of sexual harassment. [18, 20] William et al [22] further highlight the controversy among mentors and mentees when it comes to race and gender. Their study showed that females and minorities were more likely to see the importance of gender congruency for creating good relationships. [22] They suggest that race and gender are less important if mentees get to choose their own mentors. [22] What seems crucial, and what this study shows, is that even though mentor and mentee may have differences in experience, how they perceive their world, culture and background, it is their dedication to achieving their shared goals and aspirations that makes the relationship successful. [17]

Two surveys by Yamada et al and Flint et al suggest that mentees that self-selected mentors were more satisfied with these relationships. [10, 23] Our survey did not establish if the 10.5% mentees that chose their own mentors were happier with their mentorship relationships compared to those that had mentors allocated by the department. However, 66.0% percent of our mentees indicated that they would prefer to self-select their mentors. The department could intervene by allowing mentees more freedom to select their own mentors. Hauer et al [24] underscore the role of the, mentee in ensuring the success of the relationship with the mentee. It is implied that mentees should control the direction of the relationship. [24] Therefore it would be reasonable for mentees to self-select their mentors. Many studies have shown that assignment of mentors and mentees without input from the affected parties may make mentors feel like they are being pushed into a relationship and this could be detrimental to both people involved. [18, 20, 21] Self-selection of mentors is deemed more effective in allowing an easy relationship to develop as the

interpersonal relationship between mentor and mentee is important to the success of the interaction.[18, 20, 21]

The results indicate that 67.6% of the mentees met their mentors twice a year or more, mentors felt that they met with mentees at least once a month. This is an interesting discrepancy and shows that there may be a poor structure in the program in terms of how many meetings to have a year, what to discuss and for how long. Some mentors may feel that a 5-minute discussion in the corridor counts as meeting your mentee, but the mentee may feel that they want a formal discussion at a designated place for a certain amount of time and vice versa. Rabatin et al [25] point out that it is up to mentees to guide the nature and structure of meeting by giving the mentor the direction of discussion, deciding and agreeing on goals and providing feedback on if things have worked or not. [25] Mentees also need to self-reflect and find areas where there are problems that mentors can help them think about and develop solutions to the problems. [25]

Only 32.4% of the mentors agree to having enough time to mentor, on the contrary 66.0% of the mentees thought their mentees were accessible. This is another result which shows that perhaps the consultants feel that they should be spending more time with mentees but work constraints do not allow them to. Wenzel and Gravenstein [26] noted that a consultant with all the skills that make him/her an ideal mentor is also more likely to have more responsibility in the department and therefore would require “strong departmental support and commitment’ in order to fulfil the role successfully. A study by Williams et al [22] revealed that residents and faculty members agreed that the one major stumbling block in mentor mentee relationship in their department was time. [22] Work pressures may lead to poor outcomes during meetings; mentors may rush through discussions and not really reflect on the needs of the mentee, the issues the mentee has may not be adequately addressed. A majority (82.0%) of the mentors have more than one formal mentee and mentors probably believe with more time they could offer even more effective mentoring. This is further emphasised by the fact that only 50.0% of mentors agreed that their mentoring has significance for the development of their mentees. Due to the nature of the clinical work required by mentors and mentees the benefit of mentoring is not realised and less time is allocated for it. [22]

Mentors and mentees agreed that academics is the area in which the greatest quantity of mentoring is offered, suggesting a more academically oriented mentorship program. According to both mentors and mentees research is a poorly looked at area of mentorship. A mentorship program policy document would outline clearly what is expected of the mentors and mentees, and ensure a more uniform mentoring experience.

The Indian Society of Anaesthesiologists (ISA), realising the importance of mentorship programs have developed a mentoring academy that aims to enhance the value of mentorship programs. [27] The elements of their academy include:

- “Principles of mentoring workshops for mentors
- Mentor coaching sessions
- One on one mentoring sessions for mentees
- Monthly webinars on non-academic skills
- Discussion dashboards and forums
- Specially designed mobile app
- Two day leadership workshops for mentees.” [27]

When looking at areas where improvement can be made to our own program this components could be useful and maybe constructing a similar mentorship academy may be advantageous.

According to Zakus et al, the number of willing and skilled mentors is limited in the academic setting and most institutions do not provide formal training in mentorship skills to the few aspiring mentors, making it difficult for mentees to identify suitable mentors. [6] Our survey revealed that 85% of our mentors did not have formal training in mentoring and quite a significant majority 67% believed training would make them more effective mentors.

Conclusion

Overall mentees in the department of anaesthesiology perceived the mentorship program as beneficial and positive to their development, the majority of mentors on the other hand felt their mentoring was not effective. Both mentors and mentees identified education as the area in which most mentoring is offered. Mentees generally felt their mentors were accessible, while mentors felt there was not enough time to mentor. The program could be improved by providing a more detailed structure and defined goals for mentees and mentors as well a formal training for mentors to help facilitate their work.

Conflict of interest

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

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Section 4: Proposal

Evaluation of a mentorship program in a department of anaesthesiology

Ndeufika Twahafifwa Nakamwe

1242287

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4.1 Introduction

The Standing Committee on Postgraduate Medicine in the United Kingdom described mentorship as a process where a younger individual develops and re-examines their professional and personal skills under the guidance of a senior colleague (30).

The term and concept of mentorship has it is origin in Greek mythology. Legend has it that during the Trojan war the Greek king Odysseus, left his son Telemachus with a wise older friend called Mentor. In the absence of his father Mentor would teach and provide guidance to Telemachus. Since then the word mentor has been used and is defined as “a person who offers support and guidance to another” (31). In medicine the relationship between Sir William Osler (the first professor of medicine at Johns Hopkins University) and Harvey Cushings is the first documented mentee-mentor relationship (32).

Traditionally mentorship is provided on a one to one basis. In this model, one mentor meets with one mentee at a time, the mentor pays individualised attention to the mentee resulting in good rapport building. However, this model of mentorship is not always viable and warrants employment of alternative models. Examples of alternative mentoring models include; group, team, peer, reverse, situational, supervisory, informal and formal mentoring (33, 34).

Effective mentorship requires dedication from the mentor, the mentee and the institution. Key roles for the mentor include teaching, guiding and inspiring the mentee. The mentor should ensure that they acquire skills in different areas of mentoring. Ideally a mentor should be someone of good morals and acceptable work ethic (31).

According to Yamada et al (35) mentees who self-select mentors are more content with their mentorship relationship. Thus, ideally mentees should select their own mentors. Additionally the mentee should establish clear goals for the relationship, keep appointments and make the necessary preparations for scheduled discussions (31).

The institution's role in ensuring effective mentorship include: establishing a conducive environment (36), providing protected mentoring time and initiating a formal mentorship program (37). Furthermore, to encourage mentorship the institution could provide some form of incentive to the mentors (34, 38).

Mentorship affords the mentor an opportunity to: build a legacy (32), grow personally and professionally and derive more satisfaction from work (37). However, mentoring might also be taxing to the mentor emotionally and physically (32). Mentored individuals on the other hand tend to: be more productive, plan their careers better, get new jobs or a promotion and successfully complete research projects (39, 40). Institutions with effective mentorship programs are likely to retain employee and subsequently retain valuable skills (32, 41).

Multiple challenges that could hinder mentoring include; a limited pool of suitable mentors (30), difficulty finding mentors for minority groups (31), lack of formal training for mentors and limited dedicated mentoring time (30).

According to Flexman et al (42) anaesthesiology lags behind other medical disciplines in implementing mentorship programs, hence the lack of literature on mentorship in anaesthesiology (42, 43). In a survey of 13 anaesthesiology program directors in Canada, Zakus et al (44), in 2015, found that only 54% of the mentorship programs were formal, with a median existence of 3,5 years.

4.2 Problem statement

The critical role that mentorship plays in the personal and professional development of health professionals is demonstrated in the literature (45). Studies have shown that residents who received mentorship exhibit a higher level of satisfaction and confidence compared to residents who did not (39, 40). Mentored professionals are also more likely to succeed and initiate research projects in their fields. Furthermore, academic institutions with mentorship programs are more likely to retain staff members (1).

Therefore, a mentorship program with a clear standard operating procedure, should be implemented and supported to create an environment suitable for individual and institutional growth and research in any academic field or department.

4.3 Aim

The aim of this survey is to describe the mentors' and mentees' evaluation of the mentorship program in the Department of Anaesthesiology at Wits.

4.4 Objectives

The main objectives of this survey are to:

- evaluate the mentors' experience of the mentorship program
- evaluate the mentees' experience of the mentorship program.

The secondary objectives of this survey are to compare mentors and mentees' evaluation of the mentorship program regarding:

- areas in which mentorship is provided
- time dedicated to mentorship
- frequency of mentoring related meetings.

4.5 Research assumptions

The following definitions will be used in the study.

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

Consultant: an anaesthetist who has completed the required South African Colleges of Medicine examinations, or equivalent, and all other criteria to become a specialist in anaesthesiology.

Mentee: a younger less experienced individual under the guidance of a senior colleague (mentor). In this study the mentee will be a registrar.

Mentor: a person (usually senior) who helps and advices another person (usually junior). In this study the mentor will be a consultant.

Mentorship: a relationship in which an experienced and knowledgeable individual guides his or her follower, the mentee, in the right path in order to attain academic, professional and research excellence; including career satisfaction in the field of medicine (39).

4.6 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 is 65 consultants, 112 registrars and 22 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 190 bed public/private hospital.
- Klerksdorp/Tsepong Hospital Complex, a 600 bed regional hospital.

4.7 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. Those agreeing will be given an information sheet (Appendix A) and a questionnaire (Appendix B). Participation is voluntarily and refusal to participate will not compromise the anaesthetists in any way. Completion of the questionnaire will imply consent.

Anonymity will be insured as data will be collected without identifying information. Questionnaires will be numbered for data collection purposes only.
Completed questionnaire will be returned into a sealed data collection box.

Confidentiality will be insured as only the researcher and supervisors will have access to the raw data. Data will be stored securely for six years after completion of study.

The results of this study will be communicated to the Head of Department.

This study will be conducted according to the principles of the Declaration of Helsinki (46) and the South African Guidelines for Good Clinical Practice (47).

4.8 Data collection

4.8.1 Research design

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

In prospective studies a selected population is followed over a period of time to observe a certain outcome (48). The experience of mentors and mentees will be obtained at the time the study takes place.

A contextual study is one which focuses on a particular grouping or population (49). This study is contextual as the mentorship program in the Department of Anaesthesiology will be evaluated.

According to Brink (48) a descriptive study is a study “in which phenomena are described, or the relationship between variables is examined; no attempt is made to determine cause-and-effect relationship”. In this study, we endeavour to evaluate the mentorship program.

4.8.2 Study population

The study population consists of all anaesthetists involved with mentorship in the Department of Anaesthesiology.

4.8.3 Study sample

Sample method

In this study a convenience sampling method will be used. Convenience sampling means that easily accessible subjects will be included in the study (50). In this study, only mentors and mentees attending departmental academic meetings will be included in the study.

Sample size

The sample size will be determined by the response rate. However, a minimum of 60% of the mentees and mentors will be targeted.

Inclusion and exclusion criteria.

The inclusion criteria for this study are:

- all registrars (mentees) in the department
- all consultants who are mentors
- those present at departmental academic meetings during data collection period
- those who agree to complete and return the questionnaire.

There are no exclusion criteria for this study.

4.8.4 Collection of data

Questionnaire

Following extensive literature review, a questionnaire (Appendix B) from the Faculty of Otolaryngology residency program at Johns Hopkins University, was deemed the most appropriate.
Permission to use this questionnaire was obtained from the corresponding author (Appendix C). Minor changes were made to the questionnaire to adapt it for the department's context.

The questionnaire consists of two parts, one for the mentee and one for the mentor. The mentee questionnaire consists of 20 questions and the mentor questionnaire consists of 12 questions.

The following additional information will be requested from the mentees:

- age group
- gender
- same gender as mentor
- same race as mentor.

The following additional information will be requested from the mentors:

- age group
- gender
- number of mentees being mentored.

Department of Anaesthesiology mentorship program

The Department of Anaesthesiology has a mentorship program with formal and informal characteristics. The goals of the mentee-mentor relationship are not clearly defined, as there is no departmental policy to guide the program. In this program a mentee selects their own mentor or a mentor is assigned by the Clinical Head of each site at the beginning of their training.

A formal mentorship program is one initiated by the institution. The institution devices the mentorship policy, training of mentors and in some instances, facilitates matching of mentees to mentors (31, 40). An informal mentorship program on the other hand, can be defined as a mentorship relationship that is initiated by the mentee, on their own accord, with or without little help from the institution. In its' purest form this relationship develops naturally, there are no formal agreements between mentor and mentee. Often the dynamics and progression of the relationship are dictated by the mentee (34, 38).

4.8.5 Data collection process

Data will be collected following approval from the Graduate Studies Committee and the Human Research Ethics (Medical) Committee. The researcher will approach the chairs of departmental academic meetings. The study will be explained and the mentees and mentors will be invited to take part in the study. Those who will agree will receive an information letter and a questionnaire. The questionnaire is self-administered and will take approximately 10 minutes to complete. The researcher will be present during the completion of the questionnaire to answer any questions. Completed questionnaires will be returned, in an envelope, into a sealed box.

4.8.6 Data analysis

Data obtained from questionnaires will be entered onto a Microsoft® Excel spread sheet and analysed using descriptive and inferential statistics. The program Statistica version 12 (Statsoft, USA) will be used. Categorical variables will be described using frequencies and percentages. Comparison between mentees and mentors on similar variables from the respective questionnaire will be made using Chi^2 or Fishers Exact tests. P values of <0.05 will be considered statistically significant.

4.9 Significance of the study

The benefits of an effective mentorship program are demonstrated in the literature (38, 42, 51). Continuously evaluating an incumbent mentorship program is essential to ensuring that the mentorship offered is effective.

Results of this study will offer a better understanding of the current mentorship program in the department. Based on the results of this study changes may be made to the mentorship program to ensure more effective mentorship. This may contribute to the registrar's well-being.

4.10 Validity and reliability of the study

According to Botma et al (52) 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 following measures will be taken to ensure validity and reliability of the study:

- using an appropriate research design
- using a previously published questionnaire
- ensuring anonymity and confidentiality to encourage honest responses
- checking every 10th data entry on to the spread sheet for accuracy
- analysing data in consultation with a biostatistician

4.11 Potential limitations of the study

The study is being done contextually and therefore may not be generalizable to other mentorship programs.

Convenience sampling “provides little opportunity to control bias” (48) and may result in over or under estimation of certain elements.

The sample size may be small as it depends on attendance and willingness to participate. This may result in under powering of the comparisons being made in the secondary objectives.

4.12 Project outline

	Oct 2016	Nov 2016	Jan 2017	Cardiac Rotation	July 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017
Proposal and literature review									

Proposal submission to ethics and postgraduate committee									
Data Collection									
Data analysis									
Preparation of draft article									
Submission									

4.13 Financial plan

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

	Price	Number	Total
Printing	R 1/page	1000	R 1000
Binding	R 200/copy	3	R 600
Total			**R 1600**

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4.15 Appendices

Appendix A: Information letter

Dear colleagues

Hello, my name is Ndeufika, I am a registrar in the Department of Anaesthesiology at Wits.

I am inviting you to participate in a survey titled “Evaluation of a mentorship program in a department of anaesthesiology”. The findings of this study will be submitted to the Faculty of Health Sciences for evaluation to fulfil my obligations towards my MMed degree.

The aim of the study is to describe the mentors’ and mentees’ evaluation of the mentorship program in the Department of Anaesthesiology at Wits. Mentorship plays a critical role in the development and growth of an academic. Currently we have a mentorship program, with no clear standard operating procedure. To my knowledge this has never been formally evaluated. Determining mentors’ and mentees’ evaluation of the mentorship program will require you to complete a self-administered questionnaire. Evaluate your mentor or mentee within the department whom you have chosen or was allocated to you. This should not take you more than 10 minutes to complete.

Participation is voluntarily and refusal to participate will not compromise you in any way. Completion of the questionnaire will imply consent.

Anonymity will be insured as data will be collected without any identifying information. Questionnaires will be numbered for data collection purposes only. Confidentiality will be insured as only the researcher and supervisors will have access to the raw data. Data will be stored securely for six years after completion of the study.

Please place the complete or non-complete questionnaire in the envelope provided and return to the box provided.

We hope that analysis derived from this study will aid us in improving our mentorship program.

Should you have any questions regarding the questionnaire the researcher will be available during completion of the questionnaire.

Any queries regarding this study can be directed to:

- Ndeufika Nakamwe (researcher) **cell:** 0825635521 email:eenhana@yahoo.co.uk
- Human Research Ethics Committee on **tell:** 011 717 1234 **email:** hrec-medical.researchoffice@wits.ac.za, **Physical address**: Faculty of Health Sciences, Phillip Tobias Building, Office 301, 3rd Floor Cnr York Road and 29 Priness of Wales Terrace, Parktown, 2193. **Postal address**: Research Office, Private Bag 3, Wits 2050.

Thank you very much for your time

Appendix B

Mentee Survey

Please evaluate your mentor within the department whom you have chosen or was allocated to you.

<table>
<tr><td rowspan="2">Age in years</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td><25</td><td>25-30</td><td>31-35</td><td>36-40</td><td>>40</td></tr>
<tr><td>Gender</td><td colspan="2">_____Male</td><td colspan="2">_____Female:</td><td>Other:</td></tr>
<tr><td>If you are a registrar indicate your year of training.</td><td>__1</td><td>__2</td><td>__3</td><td>__4</td><td>__>4</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td>Do you have a mentor?</td><td colspan="3">_____Yes</td><td colspan="2">_____No</td></tr>
<tr><td>Do you have another “informal” mentor outside the department?</td><td colspan="3">_____Yes</td><td colspan="2">_____No</td></tr>
<tr><td>If yes what is your relationship with your informal mentor e.g. parent, teacher</td><td colspan="5"></td></tr>
<tr><td rowspan="4">Are you and your mentor of the same race?</td><td colspan="3">_____Yes</td><td colspan="2">_____No</td></tr>
<tr><td rowspan="2">If yes, do you think having a mentor of the same race benefits your mentorship relationship?</td><td>_____Yes</td><td rowspan="2">If no, do you think having a mentor of the same race as yourself would benefit your mentorship relationship?</td><td>_____Yes</td></tr>
<tr><td>_____No</td><td>_____No</td></tr>
<tr><td colspan="3">_____Yes</td><td colspan="2">_____No</td></tr>
</table>

Are you and your mentor of the same gender?	If yes, do you think having a mentor of the same gender benefits your mentorship relationship?	_____Yes _____No	If no, do you think having a mentor of the same gender as yourself would benefit your mentorship relationship?	_____Yes _____No
Did you choose your own mentor?	_____Yes		_____No	
Do you feel you should choose your own mentor?	_____Yes		_____No	

How long have you had your mentor for	1	2	3	4	5
	< 1 years	1-3 years	4-6 Years	>6years	N/A
How often do you meet your mentor?	1	2	3	4	5
	Twice a month	Once a month	Once every three months	Twice a year	Other:
If other please specify:					

In what area does your mentor provide guidance? (check all that apply)	1	2	3	4	5	6	7
	Research	Clinical judgement	Work life balance	Professionalism	Emotional well-being	Academic progress	Other:
If other please specify:							

My mentor is accessible	1	2	3	4	5
	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
My mentor demonstrates professional integrity	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
My mentor demonstrates	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree

content expertise in my area of need					
My mentor is approachable	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree

Appendix B

(continued)

My mentor is supportive and encouraging	1	2	3	4	5
	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
My mentor provides constructive and useful critique of my work	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
My mentor motivates me to improve my work productivity	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
My mentor is helpful in providing direction and guidance on professional issues (e.g., networking)	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
My mentor answers my questions satisfactorily (e.g., timely responses, clear, comprehensive)	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
My mentor acknowledges my contributions appropriately (e.g. committee	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree

contributions, awards)					
My mentor suggests appropriate resources (e.g. experts, electronic contacts, source material)	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
My mentor challenges me to extend my abilities (e.g. risk taking, trying new professional activity, drafting a section of an article)	Strongly agree	Somewhat agree	Neutral	Somewhat agree	Strongly agree
Any additional comments on the mentorship program					

Appendix B

Mentor Survey

Age in years	1	2	3	4	5		
	31 – 40	41 – 50	51 – 60	61 -70	>70		
Gender	1	2	3				
	Male	Female	Other				
How long have you been a consultant? (In years)	1	2	3	4	5	6	
	<1	1 - 5	6 – 10	11 - 15	16 – 20	>20	
	Registrars			Consultants			
Indicate your current number of formal mentees							
What is the maximum number of registrars you could mentor at a time?							
	1	2	3	4	5	6	7

I provide mentorship in the following areas: (check all that apply)	Research	Clinical judgement	Work-life balance	Professionalism	Emotional well-being	Career planning	Other (specify)

How often do you meet your mentee	Twice a month	Once a month	Once every three months	Twice a year	Other
	If other please specify:				

As a mentor, I have had training in how to provide mentorship in the following areas: (check all that apply	1	2	3	4	5	6	7	8
	Research	Clinical judgement	Work-life balance	Professionalism	Emotional well-being	Career planning	I have not received any training	Other (specif

								y) :

If other please specify:					
As a mentor, I feel like I have appropriate time to dedicated to being a mentor	1	2	3	4	5
	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
I am an effective mentor	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
I would be a more effective mentor with formal training in how to provide mentorship	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Somewhat disagree

I feel my mentorship plays an important role on a personal and career development of my mentee	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Some what disagree
What has been helpful for you to be an effective mentor? (rank your response accordingly 1-4)	1	2	3	4	5
	Having role models	Enjoying mentorship	Similar clinical /personality match	Departmental / Institutional support	Other (specify):
If other please specify:					
What skills do you think are needed	1	2	3	4	5	6
	Communication /Feedback	Accessibility	Professional integrity	Role modelling	Motivation	Other

to become a good mentor? (Rank your top 3)						
If other please specify:						
Any additional comments on the mentorship program						

Appendix C

Permission to use Questionnaire

Inbox

x Ndeufika Nakamwe <ndeufika@gmail.com>

Nov 14 (4 days ago)

to medreg

I am Dr Ndeufika Nakamwe a resident in Anaesthesiology at the University of the Witwatersrand, Johannesburg, South Africa.

I would like to ask permission from Professor Sandra Y. Lin for permission to use the questionnaire she used in her study titled: Otolaryngology training programs: Resident and faculty perception of the mentorship experience in 2013.
I have been trying to contact her on the email provided but to no avail. Are you able to assist in any way?
Thank you

MEDREG

Dr. Nakamwe, We have forwarded your request/message along to Dr. Lin. Thanks,

Nov 14 (4 days ago)

Sandra Lin <slin30@jhmi.edu>

Nov 14 (4 days ago)

to me

Yes you have my permission to use my questionnaire.

Best of luck on your project,
SL

Sandra Y. Lin, MD
Professor and Vice Director

Johns Hopkins School of Medicine

Dept of Otolaryngology-Head & Neck Surgery phone 410-614-6243

Section 5 Annexures

5.1 Ethics approval

R14/49 Ndeufika Twahafifwa Nakamwe et al

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

CLEARANCE CERTIFICATE NO. M170111

NAME: (Principal Investigator)	Ndeufika Twahafifwa Nakamwe et al
DEPARTMENT:	Anaesthesiology
PROJECT TITLE:	Evaluation of a Mentorship Program in a Department of Anaesthesiology
DATE CONSIDERED:	27/01/2017
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Helen Perrie
APPROVED BY:	Professor P Cleaton-Jones, Chairperson, HREC (Medical)
DATE OF APPROVAL:	29/03/2017

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

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary in Room 301, Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in January and will therefore be due in the month of January each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

5.2 Graduate Studies approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

06 April 2017
Person No: 1242287
PAG

Dr NT Nakamwe
Unit 98 Sunset
Bouleva Road
Complex 1 Civin Road
Sonnveld
1541
South Africa

Dear Dr Nakamwe

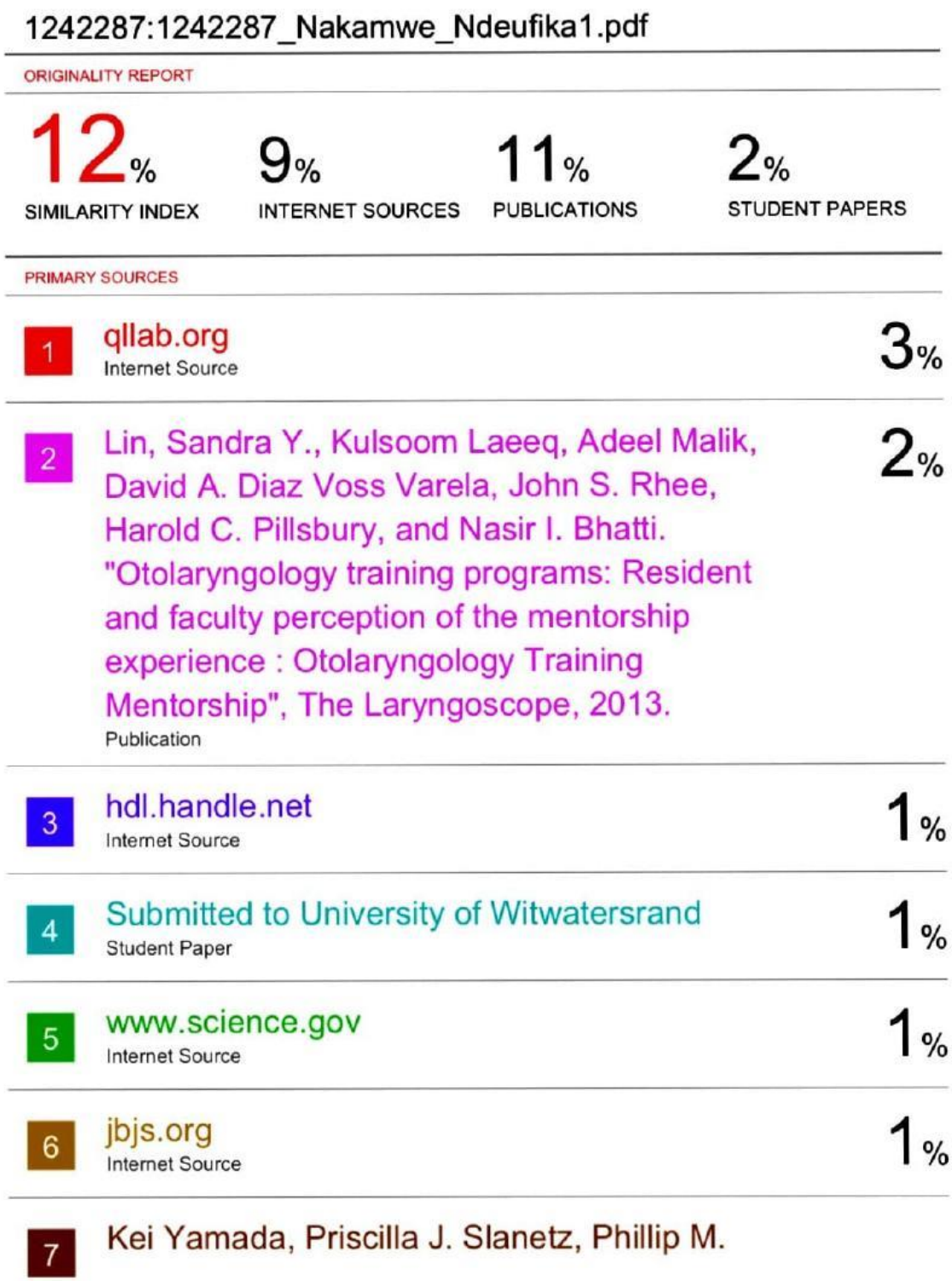
Master of Medicine: Approval of Title

We have pleasure in advising that your proposal entitled *Evaluation of a mentorship program in a department of anaesthesiology* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

5.3 Turnitin report



1242287:1242287_Nakamwe_Ndeufika1.pdf

ORIGINALITY REPORT

12%	9%	11%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	qllab.org Internet Source	3%
2	Lin, Sandra Y., Kulsoom Laeeq, Adeel Malik, David A. Diaz Voss Varela, John S. Rhee, Harold C. Pillsbury, and Nasir I. Bhatti. "Otolaryngology training programs: Resident and faculty perception of the mentorship experience : Otolaryngology Training Mentorship", The Laryngoscope, 2013. Publication	2%
3	hdl.handle.net Internet Source	1%
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