

# Career choice of anaesthetists in a department of anaesthesiology at a tertiary institution in South Africa

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**Background:** Choosing a career in anaesthesiology depends on factors that are inherent to the profession as well as factors related to the individual. Awareness of these factors is necessary for recruitment based on the needs of the specialty and the expectations of the individual.

**Methods:** A prospective, contextual, descriptive study design was conducted using convenience sampling. A self-administered questionnaire was used to describe the factors associated with choosing anaesthesiology as a career. This questionnaire was obtained from the USA and was modified for the South African context. It was used with permission from the original authors. The questionnaire was completed by anaesthetists at the University of the Witwatersrand, South Africa. The results of the questionnaire were described as categorical data and chi-squared tests were used for comparisons. A  $p$ -value  $< 0.05$  was considered statistically significant.

**Results:** Anaesthesiology was chosen as a career by 38.5% of participants while working as a medical officer. The main factor that influenced this choice was dealing with one patient at a time, which was chosen by more than half of the participants. Of the 130 participants, 94.6% were satisfied with their career choice and 89.2% would choose anaesthesiology as a career again.

**Conclusion:** The three-to-five-year period after medical school is crucial for doctors to develop an interest in anaesthesiology. The main factor that influenced them to choose anaesthesiology as a career, was dealing with one patient at a time and most participants were satisfied with their career choice of anaesthesiology. This information can guide recruitment into anaesthesiology, especially among medical students. This study provides a foundation for further research to investigate these factors, as well as possible reasons for gender differences (which were not explored in this study).

**Keywords:** career choice, career path, anaesthetists, anaesthesiologists, anaesthesiology

## Introduction

Career choice is defined as the selection of a type of profession.<sup>1</sup> It depends on an individual's personal preferences, abilities, aspirations and expectations of the profession.<sup>2</sup> These are shaped by certain factors that influence the individual prior to choosing a career.

Numerous factors that influence the choice of anaesthesiology as a career have been described. Previously, personality and intrinsic aspects of the job were marked as important influences in choosing anaesthesiology as a career.<sup>3,4</sup> Recent literature, however, revealed a manageable lifestyle and better working conditions as more important.<sup>5,6</sup> Other key influences noted were undergraduate and postgraduate exposure to the specialty, as well as role models within the specialty.<sup>3,6</sup> Additional factors identified were related to the intrinsic nature of anaesthesiology: "hands-on", practical, immediate gratification with the work (immediate results), and the applicability of physiology and pharmacology.<sup>4,6-8</sup> Differences between gender have been identified, with females increasingly opting for specialties allowing for part-time work.<sup>3,9</sup>

Studies on choosing anaesthesiology as a career have been conducted in developing countries,<sup>10-13</sup> including African countries such as Rwanda<sup>14</sup> and Ghana,<sup>15</sup> that have a severe shortage of anaesthetists. The findings of these studies are similar to those in developed countries.<sup>6-8,16</sup> Studies have found that increased exposure to anaesthesiology at an undergraduate level as well as during an internship, improved the likelihood of someone choosing anaesthesiology as a career.<sup>13,14</sup>

A limited number of studies that describe factors that influence the choice of anaesthesiology as a career in South Africa were identified. A study conducted among medical students in 2017 at a South African university found that anaesthesiology was ranked fourth in popularity as a future career.<sup>17</sup> The study also revealed that increasing exposure to anaesthesiology at an undergraduate level can improve the perceptions of medical students.<sup>17</sup> Another study found that lifestyle factors are important when considering a specialty as a career.<sup>18</sup> Gardner et al.<sup>9</sup> found that anaesthesiology is chosen as a career because of its academic appeal or career opportunities.

The factors influencing the choice of anaesthesiology as a career in South Africa, have not been investigated. The aim of this study was to describe the career choice of anaesthetists

in the Department of Anaesthesiology at the University of the Witwatersrand (Wits).

## Methods

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

The study population consisted of all anaesthetists working in the Department of Anaesthesiology at Wits in Johannesburg, South Africa. The convenience sampling method was used and the sample size was realised by the response rate. Questionnaires were administered to the entire accessible population. The total staff complement of the department was 208. A minimum response rate of 60% (125) was considered acceptable.<sup>19</sup>

Following a literature review, a self-administered questionnaire that was developed by Wass et al.<sup>8</sup> in 1999 and most recently used in 2014<sup>7</sup> was identified. This questionnaire was deemed the most appropriate due to its use among anaesthetists who had already made their career choice. Permission was obtained from the original authors to use and adapt the questionnaire. Parts of the questionnaire were modified to contextualise it to the South African setting. The questionnaire was then reviewed

by three anaesthesiologists to achieve face and content validity, after which minor adjustments were made. The questionnaire contained three parts. Part A consisted of demographic questions. Part B comprised eight questions pertaining to career choice. Part C contained three questions that focused on the career path of the anaesthetist.

Anaesthetists were informed of the study and invited to participate at academic meetings. Those willing to participate were given an information sheet and the questionnaire. The principal researcher was available to answer any queries. The completed questionnaires were returned into a sealed data collection box which was placed at the exit of the venue. Blank and incomplete questionnaires (where the questions pertaining to factors influencing choice of career were not completed) were included in the response rate calculation but not in the statistical analysis of Part B.

Data was captured into a Microsoft Excel spreadsheet and analysed in consultation with a biostatistician using Stata version 15 (StataCorp, College Station, TX, USA). Descriptive and inferential statistics were used. Categorical data were described using numbers and percentages. For the Likert scale data, major and minor positive were grouped together as were major and minor negative. The choice of neutral was removed from the

Table I: Participant characteristics

| Professional designation                              | Medical officer<br>n (%) | Registrar<br>n (%) | Consultant<br>n (%) | Total<br>n (%) |
|-------------------------------------------------------|--------------------------|--------------------|---------------------|----------------|
| <b>Number</b>                                         | 17 (13.1)                | 57 (43.8)          | 56 (43.1)           | 130 (100)      |
| <b>Age (n = 130)</b>                                  |                          |                    |                     |                |
| 25–35                                                 | 14 (82.4)                | 48 (84.2)          | 14 (25.0)           | 76 (58.5)      |
| 36–45                                                 | 3 (17.6)                 | 8 (14.0)           | 23 (41.0)           | 34 (26.1)      |
| 45–55                                                 | 0 (0)                    | 1 (1.8)            | 9 (16.1)            | 10 (7.7)       |
| 56+                                                   | 0 (0)                    | 0 (0)              | 10 (17.9)           | 10 (7.7)       |
| <b>Gender (n = 130)</b>                               |                          |                    |                     |                |
| Male                                                  | 8 (47.1)                 | 16 (28.1)          | 22 (39.3)           | 46 (35.4)      |
| Female                                                | 9 (52.9)                 | 41 (71.9)          | 34 (60.7)           | 84 (64.6)      |
| <b>University of undergraduate training (n = 130)</b> |                          |                    |                     |                |
| Witwatersrand                                         | 5 (29.4)                 | 30 (52.6)          | 32 (57.1)           | 67 (51.5)      |
| Cape Town                                             | 1 (5.9)                  | 3 (5.3)            | 4 (7.1)             | 8 (6.2)        |
| KwaZulu-Natal                                         | 3 (17.6)                 | 2 (3.5)            | 3 (5.4)             | 8 (6.2)        |
| Pretoria                                              | 3 (17.6)                 | 12 (21.1)          | 9 (16.0)            | 24 (18.6)      |
| Free State                                            | 2 (11.8)                 | 2 (3.5)            | 1 (1.8)             | 5 (3.9)        |
| Stellenbosch                                          | 0 (0)                    | 2 (3.5)            | 1 (1.8)             | 3 (2.3)        |
| Walter Sisulu                                         | 0 (0)                    | 3 (5.3)            | 1 (1.8)             | 4 (3.0)        |
| Sefako Makgatho                                       | 2 (11.8)                 | 1 (1.7)            | 3 (5.4)             | 6 (4.6)        |
| Other                                                 | 1 (5.9)                  | 2 (3.5)            | 2 (3.6)             | 5 (3.8)        |
| <b>Level of hospital for internship (n = 129)</b>     |                          |                    |                     |                |
| District                                              | 0 (0)                    | 1 (1.7)            | 2 (3.6)             | 3 (2.3)        |
| Regional                                              | 4 (23.5)                 | 7 (12.3)           | 7 (12.7)            | 18 (13.9)      |
| Tertiary                                              | 7 (41.2)                 | 14 (24.6)          | 13 (23.7)           | 34 (26.4)      |
| Central                                               | 5 (29.4)                 | 32 (56.1)          | 27 (49.1)           | 64 (49.6)      |
| Other                                                 | 1 (5.9)                  | 3 (5.3)            | 6 (10.9)            | 10 (7.8)       |

analysis for the comparisons. Comparisons were done using chi-square tests. A  $p$ -value of  $< 0.05$  was considered statistically significant.

Data from questions 1 and 2 in Part C (reasons for choice of location of practice) was categorised based on the description of the answer (i.e. academic interest for self, academic interest for others [teaching at undergraduate and postgraduate level], remuneration, quality of life, other, etc.). Only qualifications that are recognised by a university or the Health Professions Council of South Africa (HPCSA) were included in the analysis of question 3, Part C. Incomplete questionnaires were included in the study for the response rate calculation and in the analysis of Part A and Part C, if these were completed. They were, however, not included in the statistical analysis of Part B of the questionnaire.

The questionnaire can be requested from the principal author if needed.

## Results

A total of 133 questionnaires were distributed and 130 (97.7%) completed questionnaires were returned. This represents 62.5% of anaesthetists in the department. Table 1 shows participant characteristics.

All participants had done internships. However, one (0.8%) participant did not specify the institution. Of the 120 (92.3%)

participants who had been exposed to anaesthesiology during an internship, 87 (72.5%) participants had received two months' exposure. The exposure to anaesthesiology during an internship ranged from 0–7 months. Ninety-eight (76%) participants had performed internships at tertiary and central hospitals.

During community service, 67 (51.5%) participants worked in anaesthesiology. Of those, 62 (92.5%) responses indicated the institution and how much exposure they had. Six (9.7%) participants had worked at a district hospital, 21 (33.9%) at a regional hospital, 29 (46.7%) at a tertiary hospital and five (8.1%) at a central hospital. One (1.6%) participant worked at 1 Military Hospital. Eleven (17.7%) participants had less than six months of exposure and 51 (82.3%) had 6–12 months' exposure. Sixty-three (48.5%) respondents either did not participate in community service or were not exposed to anaesthesiology during community service.

It was indicated by 102 (78.5%) participants that they had given an anaesthetic as a medical officer, of which one (0.9%) did not specify the institution where this time was spent. Some participants had worked at more than one hospital; thus, the total number of hospitals was 120. Five (4.9%,  $n = 101$ ) participants worked at a district hospital, 27 (26.7%) at a regional hospital, 24 (23.8%) at a tertiary hospital, 59 (58.4%) at a central hospital and five (4.9%) worked at 1 Military Hospital or other international hospitals. Of the 102 participants, 90 (88.2%) participants

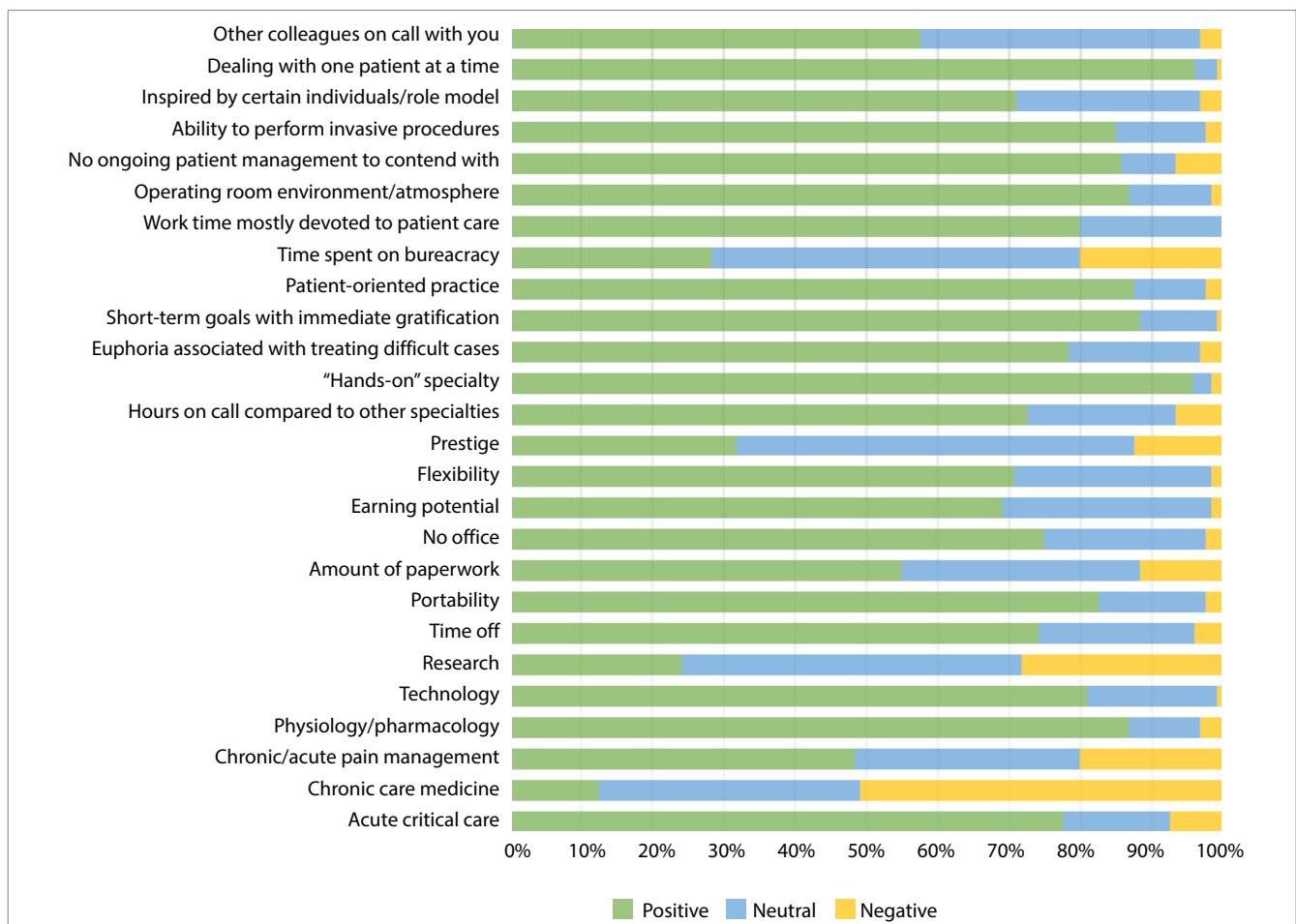


Figure 1: Factors that influence career choice

Table II: When anaesthesiology was definitively chosen as a career

| Professional designation          | Number (%) |
|-----------------------------------|------------|
| Medical officer                   | 50 (38.5)  |
| Intern                            | 38 (29.2)  |
| Community service medical officer | 24 (18.5)  |
| Medical student                   | 11 (8.5)   |
| Registrar in another field        | 4 (3.0)    |
| General practitioner              | 2 (1.5)    |
| Specialist in another field       | 1 (0.8)    |

specified how many months of exposure they had experienced; 12 (13.3%) had 1–6 months, 40 (44.4%) had 7–12 months, 23 (25.6%) had 13–24 months and 15 (16.7%) had more than 25 months of experience. Table II shows when the 130 participants definitively chose anaesthesiology as a career.

Figure 1 shows the factors that influenced career choice and was completed by 120 (92.3%) participants.

Participants were asked to choose three factors that they felt were the most influential in selecting anaesthesiology as a career. Factors were chosen from those they considered as a positive influence in a previous question. The number of times a factor was chosen was added up and the ten most frequently chosen factors were tabled. Four female participants did not answer the question. Table III shows the top ten factors selected by participants. Twenty-four of the 26 factors presented to the participants were chosen. Six (4.8%) participants responded with lifestyle as an option which is encompassed by eight individual factors. No other factors were added by participants.

A total of 123 (94.6%) participants said they were satisfied with their career choice, with one (0.8%) participant answering “sometimes” and six (4.6%) indicating that they were not satisfied. Of the male participants, 44 (95.7%) were satisfied, compared to 79 (94.0%) female participants. Anaesthesiology as a career would be chosen again by 116 (89.2%) participants: 42 (91.3%) males and 74 (88.1%) females.

Table III: Top factors influencing the selection of anaesthesiology as a career

| Factors                                                         | Male n = 46<br>n (%) | Female n = 80<br>n (%) | Total n = 126<br>n (%) |
|-----------------------------------------------------------------|----------------------|------------------------|------------------------|
| Dealing with one patient at a time                              | 24 (52.2)            | 46 (57.5)              | 70 (55.6)              |
| No ongoing patient management to contend with                   | 16 (34.8)            | 21 (26.3)              | 37 (29.4)              |
| “Hands-on” specialty                                            | 11 (23.9)            | 22 (27.5)              | 33 (26.2)              |
| Physiology/pharmacology                                         | 11 (23.9)            | 12 (15.0)              | 23 (18.3)              |
| Patient-oriented practice                                       | 6 (13.0)             | 16 (20.0)              | 22 (17.5)              |
| Operating room environment/atmosphere                           | 5 (10.9)             | 17 (21.3)              | 22 (17.5)              |
| Acute critical care                                             | 8 (17.4)             | 13 (16.3)              | 21 (16.7)              |
| Short-term goals with immediate gratification of one’s own work | 7 (15.2)             | 13 (16.3)              | 20 (15.9)              |
| Inspired by certain individual/role model                       | 5 (10.9)             | 11 (13.8)              | 16 (12.7)              |
| Hours on call compared to other specialties                     | 6 (13.0)             | 10 (12.5)              | 16 (12.7)              |

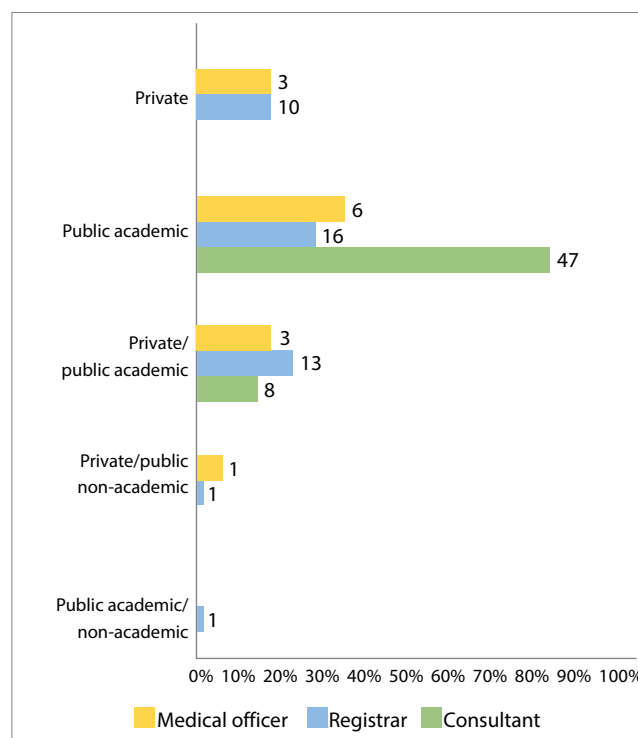


Figure 2: Place of work upon qualification

Figure 2 shows the setting where the participant worked (or would like to work) upon qualification. Eighteen participants did not answer the question: one (1.8%) consultant, 15 (26.3%) registrars and two (11.8%) medical officers. No participants chose to work at a public non-academic setting. One registrar (1.8%) and two medical officers (11.8%) chose “Other” as an option; one was undecided while two specified private–public partnership.

The most cited reason by consultants (23; 41.8%) and medical officers (7; 46.7%) on their choice of workplace upon qualification was personal career improvement. Registrars cited teaching/paying it forward (12; 35.7%) followed by personal career improvement (11; 26.2%).

Figure 3 shows the different postgraduate qualifications that the participants have done or would like to do. “Other” included qualifications that were non-medical. This question was

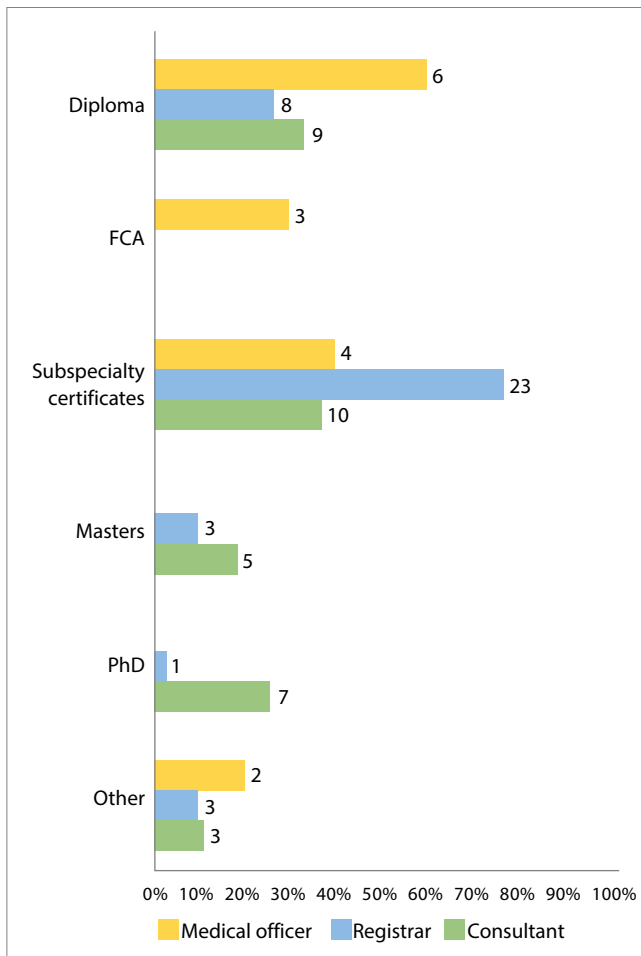


Figure 3: Postgraduate qualifications that participants indicated they have done or would like to do

answered by 27 (48.2%) consultants, 30 (52.6%) registrars and 10 (58.8%) medical officers.

A comparison of factors that influenced career choice between male and female participants was performed with chi-squared tests. The only significant difference was found with regards to chronic care medicine, where more females viewed it as a negative factor ( $p$ -value = 0.01). Only questionnaires that were filled in completely were used for this analysis; therefore, questionnaires of one (2.2%) male and nine (10.7%) female participants were excluded.

## Discussion

This is the first South African study to our knowledge that has focused on career choice in anaesthesiology for medical doctors. This study was conducted among anaesthetists working in university-affiliated hospitals (central, tertiary and regional level public hospitals) in the Department of Anaesthesiology at Wits. Anaesthesiology as a career was chosen while working as a medical officer by 38.5% of participants, followed by during an internship (29.2%) and then working as a community service medical officer (18.5%). Studies in the UK have shown that anaesthesiology as a career was chosen increasingly at three,<sup>5,16,20</sup> and five years<sup>5,20</sup> after graduating from medical school. This conforms with the results of this study, because in South Africa a doctor can only become a medical officer three

years after graduation from medical school. A study in India, however, showed that most participants chose this career at the end of internship.<sup>13</sup> Interestingly, very few participants (8.5%) in our study chose anaesthesiology while being a medical student. This may be due to insufficient exposure to the discipline during undergraduate training. This concurs with other studies which reported that increased exposure to the discipline led to it being chosen as a future career.<sup>3,5,6,11-13,16</sup> In addition, studies performed solely among medical students showed that anaesthesiology was infrequently indicated as a career choice, which was attributed to insignificant exposure during undergraduate training.<sup>14,15,17,21,22</sup> Increasing undergraduate exposure to anaesthesiology should be considered to improve the visibility of the discipline among medical students.

A notable finding in our results was that 76% of participants had performed an internship at a tertiary or central hospital, 54.8% had been in anaesthesiology at tertiary or central hospitals during community service, and 82.2% had some exposure during their time as a medical officer at tertiary or central hospitals. The higher standard of anaesthesiology care provided at these hospitals might be a reason these participants chose anaesthesiology as a career.

The top five factors reported in this study as most influential in choosing anaesthesiology are dealing with one patient at a time (55.6%), no ongoing patient management to contend with (29.4%), "hands-on" specialty (26.2%), physiology/pharmacology (18.3%) and patient-oriented practice (17.5%) or operating room environment (17.5%). These factors are related to the practice of anaesthesiology. This is consistent with prior studies that found factors related to the intrinsic nature of the discipline are the most influential in choosing anaesthesiology as a career.<sup>3,4,6-8,13,23,24</sup> A study by Gardner et al.<sup>9</sup> reported academic appeal and career opportunity as the most influential reasons for career choice among South African anaesthetists. These factors were not included in the questionnaire for this study, but none of the respondents indicated these as additional factors when asked to add any other factors.

Of note, two factors were not chosen at all: other colleagues on call with you and research. Anaesthetists in the hospitals where this study was conducted always have someone else available for advice and assistance. This is possibly the reason why having other colleagues on call with you was not considered an influential factor. Research was seen by 24.2% of respondents as a positive influence; however, no participants had chosen research as one of their top three influences in choosing anaesthesiology as a career. This finding is in keeping with other studies that reported lower numbers of residents showing an interest in conducting research.<sup>7,24-27</sup> Time constraints have been cited as the most common reason for not pursuing research in these studies. The low level of interest in research found in our study is concerning and warrants further investigation.

Prestige and earning potential were not found to be substantial influences in choosing a career in anaesthesiology, as were other



lifestyle factors such as time off and hours on call. This correlates with findings from developed countries.<sup>3,4,6-8,16,24</sup> In contrast, studies from India<sup>13</sup> and Pakistan<sup>23</sup> found earning potential and remuneration to be highly influential factors. Tyagi et al.<sup>13</sup> and Khan and Hamdani<sup>23</sup> did not elaborate on their findings, but it may possibly be due to different remuneration systems in those countries.

Being inspired by an individual or role model was cited by only 12.7% of participants as a positive influence. There is conflicting literature on this notion. Some studies report it to be an influential factor.<sup>3,6</sup> However, other studies have not found it as influential as expected.<sup>4,13,23</sup> Gardner et al.<sup>9</sup> found that significantly more males stated a role model as an influence in choosing anaesthesiology as a career. No significant differences were observed between male and female participants in our study.

Chronic care medicine is not generally associated with anaesthesiology. Although anaesthetists must be aware of the various chronic disease states and their impact on patients, they are not directly involved in the long-term management of any disease. Anaesthesiology is predominantly involved in the acute perioperative setting. A significant difference between male and female participants was only found with regards to chronic care medicine, where more females viewed it as a negative factor. This factor was not mentioned to have a substantial influence on career choice in other studies.<sup>7,8,24</sup> The statistically significant difference between male and female participants in our study could not be explained.

Of the 130 participants, 94.6% was satisfied with their career choice and 89.2% would choose anaesthesiology as a career again. This result conforms to other studies that have high rates of satisfaction with anaesthesiology as a career.<sup>8,9,24,28</sup> Satisfaction with career choice between male and female participants were comparable and correlates with the findings of other studies.<sup>9,28,29</sup>

Of the 56 consultant anaesthesiologists that participated, 83.9% worked in the public academic setting upon qualification. The group cited personal career improvement as the prime reason for their choice of work setting. This can include research and subspecialty training. Nineteen (33.9%) consultants indicated that they would like to or have studied towards other diplomas or subspecialty certificates. Five (8.9%) stated that they would like to or have achieved a master's degree while seven (12.5%) reported that they would like to or have attained a doctoral degree. The registrar group chose to work between private practice and the public academic setting, either alone or together. Reasons for these choices, in order of majority, were teaching of others, personal career improvement and money/income-related. Twenty-three (40.4%) registrars indicated that they would like to do a subspecialty certificate and only one (1.8%) wanted to do a PhD. An American study found that 46% of trainees went into subspecialty fellowship training after qualification<sup>30</sup> while a Canadian study reported that 57% of trainees wanted to stay in an academic setting.<sup>25</sup> Our findings are consistent with these studies.

No participants chose to work at a non-academic public setting upon qualification. This is worrying as recruitment into the discipline and further education is most needed in these hospitals that are known to be staffed mainly by medical officers.

The Diploma of Anaesthesiology (DA) was not mentioned by any participants in the consultant group although it is well known that most of them do have the qualification. The DA is compulsory for all registrars and medical officers in the department but only four registrars and three medical officers mentioned DA at all. Only three medical officers mentioned Fellowship of the College of Anaesthetists (FCA) as a degree that they would like to complete. No registrars and consultants cited FCA as a degree that they have done or would like to do. This could be attributed to the fact that it is assumed that as a consultant you have an FCA and as a registrar in training, the aim is to obtain an FCA.

This study must be read in the context of certain limitations. Factors affecting career choice were only described in this study. More in-depth evaluation with regards to the factors would be desirable so as to plan strategies in recruiting individuals into the specialty. There is selection bias as the study was conducted among anaesthetists working in public sector hospitals affiliated to a single university. Therefore, the results may not be generalisable to other contexts. There may be recall bias owing to the inclusion of anaesthesiologists who had made this decision many years ago.

## Conclusion

Anaesthesiology is a discipline with low visibility due to its intrinsic nature and this, coupled with South Africa's shortage of anaesthetists, necessitates recruitment to attract individuals to the specialty. The information from this study can guide strategies for senior administrators to improve recruitment into anaesthesiology, especially among medical students. Furthermore, this study provides a foundation for further studies in this field to explore the details around each factor, and possible gender differences that were not explored in this study.

This study described many aspects influencing career choices in anaesthesiology at various levels of seniority in the discipline. We showed that the three-to-five-year period after medical school is crucial for individuals to develop an interest in anaesthesiology. The main factor that influenced the career choice of anaesthesiology was dealing with one patient at a time and an overwhelming majority of participants were satisfied with their career choice of anaesthesiology.

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## Conflict of interest

The authors declare no conflict of interest.

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

## Ethical approval

Ethics approval was obtained from the University of the Witwatersrand, Human Research Ethics Committee (Medical) (Ref number: M180801).

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