The impact of the MMed research requirement on registrar training and specialist registration in South Africa: An internet e-survey

B M Biccard,[1] MB ChB, FFARCSI, FCA (SA), MMedSci, PhD; **R A Dyer,**[1] MB ChB, FCA (SA), PhD; **J Fagan,**[2] MB ChB, FCS (SA); **N Vickery,**[3] MB ChB, FCA (SA); **J L Orrock,**[1,4] MB ChB, FCA (SA)

[1] *Department of Anaesthesia and Perioperative Medicine, Faculty of Health Sciences, University of Cape Town, South Africa*
[2] *Division of Otorhinolaryngology, Faculty of Health Sciences, University of Cape Town, South Africa*
[3] *Barts Health NHS Trust, London, UK*
[4] *Department of Anaesthesia, St John's Hospital, NHS Lothian, Livingston, UK*

Corresponding author: *J L Orrock (janeorrock@gmail.com)*

Background. Since 2011, the Health Professions Council of South Africa (HPCSA) requires completion of a Master of Medicine (MMed) research component by registrars, before specialist registration.
Objective. To determine the impact of the research requirement on training and specialist registration.
Methods. A closed, de-identified cross-sectional e-survey was distributed to College of Medicine of South Africa (CMSA) Fellows passing their specialist examination between 2018 and 2022. The primary outcome was the proportion of registrars completing their MMed and clinical training within the stipulated time. Secondary outcomes were: (*i*) proportion unlikely to complete the MMed during training; (*ii*) factors contributing to MMed completion; (*iii*) publication rates; and (*iv*) whether a structured learning programme was preferred for research methodology. A Likert scale identified factors influencing completion, including administrative aspects (supervision, statistical support, ethics approval process, time allocated for research, funding, and marking timelines), and the influence of the requirement for the performance of research on mental wellness.
Results. The survey invitation was emailed to 3 646 participants; 564 (15.5%) responded, across 26 specialist CMSA disciplines. Overall, 273/564 (51.6%) specialists completed their MMed research component and CMSA examinations within the stipulated registrar training completion time. For secondary outcomes, 230/563 (40.8%) respondents required extension of the stipulated training time. In 291/564 (48.4%), the MMed was not completed during the stipulated training time, with 61/291 (21.0%) respondents not receiving an extension for completion. For 183/563 (32.5%) respondents, MMed submission was required by the university before specialist examination. Of these, 121/183 (66.1%) wrote their examination within the training time; 44/183 (24%) within 6 months of completion; and 18/183 (9.8%) >6 months after completion.
Likert scale responses showed that >50% of respondents considered all the factors being assessed to be a barrier to the conduction of their research, with the exception of good supervision (304/563, 54%). The strongest associations with successful completion of the MMed research were good supervision (54%), access to statistical support (40%), and an uncomplicated and efficient ethics approval process (39.6%).
Overall, 229/564 (40.62%) MMed research components were published. A structured research learning programme was preferred by 413/564 (73.2%) respondents. A total of 335/564 (59.4%) indicated that the MMed did not add value to training.
Conclusion. Nearly half of registrars could not register as specialists when their training was complete, due to non-completion of their MMed research component. All the factors examined were considered to be contributing to non-completion of the MMed by the majority of participants, with the exception of access to good supervision. A structured integrated learning programme, including research methodology, statistics, appraisal of the literature, and scientific writing, should be introduced as an alternative to the requirement for original research, which should no longer be compulsory. Registrars wishing to do original research should be strongly supported.

Keywords: education; postgraduate training; research; medicine; survey.

S Afr Med J 2025;115(8):e2788. https://doi.org/10.7196/SAMJ.2025.v115i8.2788

Since 2011, the Health Professions Council of South Africa (HPCSA) has required the completion of a Master of Medicine (MMed) research component by every registrar in training to register as a specialist in South Africa (SA), in addition to their successful completion of the Colleges of Medicine of South Africa (CMSA) examination requirements for each specialty.[1] Nowhere in the public domain have the goals been formally defined. The aims were likely to improve knowledge of research methodology, statistics, appraisal of the literature, and scientific writing, with the ultimate aim of facilitating more relevant research in SA.[2,3] Many doctors complete their required specialist training time and pass their CMSA fellowship exit examination, but are unable to register as a specialist with the HPCSA because of non-fulfilment of the required MMed research component. The delay in completion of the MMed, and hence specialist registration, has a negative impact on the number of qualified specialists, and may block the appointment of new trainees to training posts to commence specialist training.

In 2017, an editorial suggested and provided reasoning for revision of the MMed degree in its current format.[4] Senior clinician researchers expressed the opinion that, although some excellent

articles on clinically relevant research have been produced by well-supervised, highly motivated registrars, many registrar studies are underpowered, and poorly designed and conducted.[4] Such research results in a major wastage of resources; consequences include potential harm – not only to participants, but also to science and to the public.[5] In the editorial, concerns were also expressed about the capacity to perform these studies in the setting of a very busy registrar training and academic programme, and in the absence of sufficient qualified and experienced supervisors. It is possible that this may also have a negative impact upon the mental health of the registrars, which could detract from their work performance and reduce the quality of patient care.[4]

To better understand how the MMed requirement affects specialist registration in SA, we conducted an internet e-survey on the influence of the MMed degree on registrar training and specialist registration across all specialty disciplines.

Methods

An online, closed e-survey was created using the REDCap (Research Electronic Data Capture) survey tool (Appendix 1: http://coding.samedical.org/file/2361).[6] The survey was developed with input from trainees regarding factors that may influence MMed completion, and was piloted before distribution by several colleagues in the Department of Anaesthesia and Perioperative Medicine, University of Cape Town, who would not be involved in the survey. It was distributed by the CMSA, using the CMSA database. The link for the survey, accompanied by a covering introductory letter (Appendix 2: http://coding.samedical.org/file/2361), was distributed to all fellows of the CMSA who had successfully completed their final specialist examination between 2018 and 2022. The survey was conducted from 29 August to 22 September 2023. There was no advertising of the survey and participation was voluntary, with no incentives offered. Informed consent was included in the introduction, with the option to withdraw from the survey before submission of the responses. No personal or identifying information was collected or stored during the survey. The survey was open for 5 weeks, after which the link was deactivated, and data collection was collated using the REDCap platform.[6] The survey was conducted according to the checklist for reporting results of internet e-surveys (CHERRIES), with some aspects not applicable in this study (appendix 3: http://coding.samedical.org/file/2361).[7]

The primary outcome was the proportion of doctors who successfully completed their MMed and specialist training within the stipulated registrar training time. Secondary outcomes were to determine, firstly, the proportion of registrars who responded that they were unlikely to complete the MMed degree during their registrar training, and the proportion who received an extension of their training time. Secondly, we examined the positive and negative factors contributing to successful completion of the MMed, including various aspects of research administration (supervision, statistical support, ethics approval process, time allocated for research, funding, and marking timelines), and the influence of the performance of MMed research on the mental wellness of the candidate. For this purpose, a 5-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree) was used. Thirdly, we recorded the publication rates of MMed research, and finally, asked whether a structured integrated learning programme was preferred as a tool to better teach research methodology, relevant statistics, the ability to appraise the literature and scientific writing.

Ethics clearance was obtained from the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (ref. no. HREC: 735/2022) and from the Academic Registrar of the CMSA.

Statistical analysis

Categorical variables were summarised as count (%) and continuous variables as median (interquartile range). The 5-point Likert scale responses were treated as ordinal data, with each question response treated as an independent variable. We tested the Likert responses for normality using skewness and kurtosis statistics.[8] As the results were within the boundaries for normally distributed data, we used parametric analysis to determine the point estimate and distribution (95% confidence interval (CI)) of the results for each survey question testing a proposed influence. This was calculated for the sum of a response of agree or strongly agree compared with the sum of the other responses (i.e. neutral, disagree or strongly disagree). We used the mean and 95% CI to rank the influence of questions on the factors contributing to successful completion of the MMed. On the recommendation of a reviewer, a post hoc sensitivity analysis was conducted where the neutral responses were removed from the analysis. Statistical analysis was performed using R version 4.0.2 (2020) (R Foundation for Statistical Computing, Austria), and the R Likert, ggplot 2, and data.table packages (https://cran.r-project.org/web/packages/available_packages_by_name.html).

Results

The invitation with the link for participation in the survey was distributed to 3 646 eligible participants by email. Responses were received from 564 (15.5%) participants across 26 of the specialist disciplines affiliated with the CMSA. The fields of specialisation are shown in Supplementary Table 1 (http://coding.samedical.org/file/2371). Overall, 28.3% of respondents who had completed their specialty examinations were from the College of Anaesthesia and College of Physicians. The year of completion of the CMSA examinations is shown in Supplementary Table 2 (http://coding.samedical.org/file/2371). The results of the survey are shown in Table 1.

For the primary outcome, 273/564 (51.6%, 95% CI: 47.5 to 55.8) specialists completed their MMed research component and CMSA examinations within the registrar training time. For the secondary outcomes, 230/563 (40.8%, 95% CI: 36.9 to 45.0) respondents required an extension of registrar training time beyond that stipulated by the HPCSA. Of the registrars who had not completed their MMed at the end of stipulated registrar training time, 61/291 (21.0%, 95% CI: 16.3 to 25.6) did not receive an extension of their training time to complete the MMed research component.

A total of 183/563 (32.5%) respondents indicated that their university required submission of their MMed before they would be allowed to write the exit specialist examination. Of this group, 121/183 (66.1%) wrote their exit examination within their required registrar training time, 44/183 (24%) within 6 months of, and 18/183 (9.8%) >6 months after completion of their registrar time.

The full 5-point Likert scale on the factors contributing to successful completion of MMed research is shown in Fig. 1. For simplicity, a compressed 3-point scale is shown (disagree, neutral, agree) in Supplementary Fig. 1 (http://coding.samedical.org/file/2360). A large proportion of candidates recorded challenges in all these aspects, including 64% who said that their mental wellness was affected by having to complete the research.

The ranked factors derived from the 5-point Likert scale for the successful completion of the MMed research component are shown in Table 2. The participants rated all the factors with <50% agreement with successful completion of the MMed degree, with the exception of good supervision (54%, 95% CI: 49.9 to 58.1). The three

Table 1. Results of the MMed research projects: stipulations, time to completion, publication success and participants' perceptions

Survey question, *N*=564	Yes, *n* (%)	No, *n* (%)	Incomplete, *n* (%)
Was your MMed complete at the time of completion of your HPCSA required and stipulated registrar training time?	273 (51.6)	291 (48.4)	0
Was your registrar time extended beyond that stipulated by the HPCSA?	230 (40.8)	333 (59.0)	1 (0.18)
Was there a requirement for MMed submission prior to writing your exit specialist examination?	183 (32.5)	380 (67.4)	1 (0.18)
My MMed was accepted for journal publication	229 (40.6)	333 (59.0)	2 (0.35)
Would you prefer a research methodology course as an alternative to the current MMed requirement?	413 (73.2)	150 (26.6)	1 (0.18)
Do you think the MMed has added value to you as a specialist in training in the current format?	229 (40.6)	335 (59.4)	0

MMed = Master of Medicine; HPCSA = Health Professions Council of South Africa.

Table 2. Rating of the factors associated with successful completion of the MMed research component (candidates who strongly agree or agree on the 5-point Likert scale)

Factors associated with completion of the MMed degree	*n*	Percentage (95% CI)
I had good supervision	304/563	54.0 (49.9 - 58.1)
I had access to statistical support	225/563	40.0 (35.9 - 44.0)
The ethics approval process was uncomplicated and efficient	223/563	39.6 (35.6 - 43.7)
The university MMed marking timelines were acceptable	198/559	35.4 (31.5 - 39.4)
It is easy to identify a suitable research topic	155/564	27.5 (23.8 - 31.2)
I had sufficient time with my clinical workload	149/563	26.5 (22.8 - 30.1)
The COVID pandemic had no impact on my MMed	143/561	25.5 (21.9 - 29.1)
I had sufficient funding for the project	135/558	24.2 (20.6 - 27.8)
The MMed did not affect my mental wellness	123/562	21.9 (18.5 - 25.3)
I had sufficient research time	116/563	20.6 (17.3 - 23.9)

MMed = Master of Medicine; CI = confidence interval.

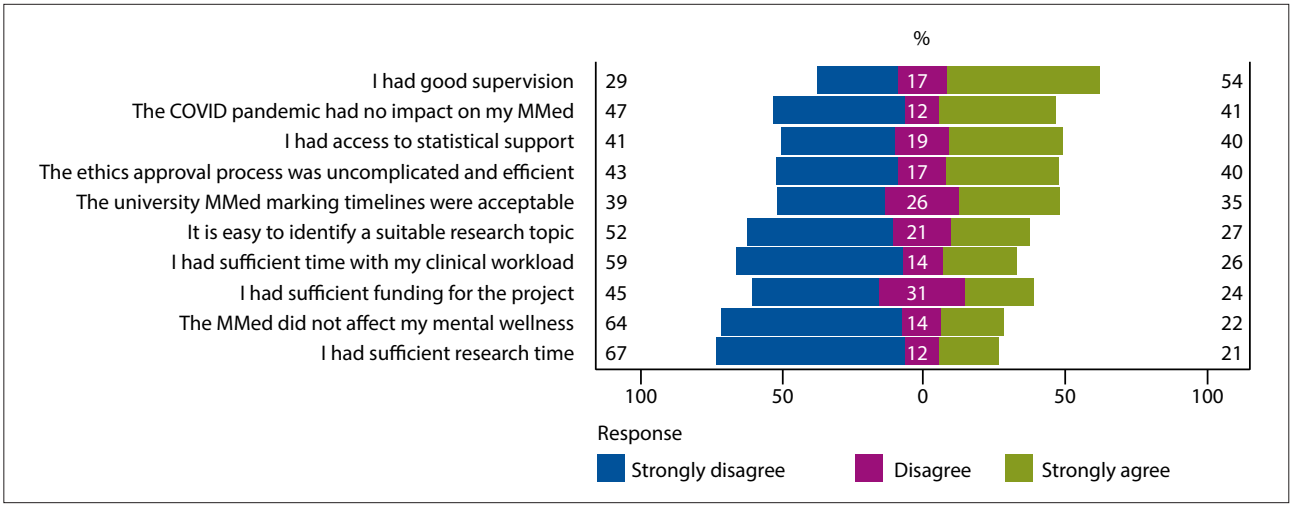

Fig. 1. Rating of factors contributing to successful completion of the MMed degree on a 5-point Likert scale. Percentages on the left are the totals for disagree and strongly disagree and percentages on the right are the totals for agree and strongly agree.

strongest associations with successful completion of the MMed were good supervision (54%), access to statistical support (40%), and an uncomplicated and efficient ethics approval process (39.6%).

The results of the post hoc sensitivity analysis where the neutral responses were removed from the analysis are shown in Supplementary Table 3 (http://coding.samedical.org/file/2371). The post hoc sensitivity analysis was consistent with the main analysis. With the exception of good supervision, the participants rated all the other factors with <55% agreement with successful completion of the MMed degree.

The publication rate of the MMed research in this study was 229/564 (40.6%, 95% CI: 36.6 to 44.8). Overall, 413/564 (73.2%, 95% CI: 69.7 to 77.0) respondents indicated a preference for a structured integrated learning programme as the preferred tool to teach research

methodology, and 335/564 (59.4%, 95% CI: 55.3 to 63.5) did not think that the MMed in the current format had added value to their specialist training.

Discussion

The main findings of the survey are that only a half of registrars completed their MMed research and CMSA examinations within the stipulated training time. Approximately a half of registrars did not complete their MMed project within the prescribed registrar training time. A fifth of these registrars did not receive an extension of their training time to complete the MMed. In addition, many aspects of research administration were substandard. The societal impact of the research output was poor, with only 40% of the MMed research projects published. Almost three-quarters of the registrars expressed a preference for a structured integrated learning module to teach research methodology. Two-thirds of the respondents reported that the MMed affected their mental wellness.

The fact that nearly a half of all registrars cannot meet their research requirements in the prescribed training time to proceed with specialist registration with the HPCSA, has a negative impact on the time to registration of specialists in SA. Although a previous study could not determine if the current research time during registrar training was sufficient to complete the MMed,[9] the data from our survey suggest that nearly half of the registrars could not complete the research MMed within the stipulated registrar training time. Furthermore, 20% of registrars who could not complete their research remained in their posts, limiting the admission of new registrars for specialty training. The remaining 80% of registrars who had not completed their MMed, left the training department to work in an environment that had inadequate academic support for research and scientific writing. This scenario often results in an inability to complete the MMed.

It is possible that the university practice of requiring completion of the MMed prior to writing the CMSA final examinations may impact on specialist registration within the stipulated training time. However, as we did not explicitly interrogate the reason that registrars could not write the CMSA examination within the stipulated time, and/or the reasons for the need to extend registrar time, we could not explore the potential association between completing MMed research before final CMSA examinations and extended registrar training time. A third of registrars could not write their examinations within the stipulated time, and nearly a third of those requiring an extension of training time needed >6 months before undertaking their specialist examination. This also underscores the potential challenges for trainees managing original research alongside a full-time clinical training programme. The Standards Generating Body (SGB) Subcommittee of the Medical and Dental Professions Board (MDPB) identified the inability of many registrars to undertake and complete a relevant research study in 2010,[3] but the subsequent requirement to complete a research study has not addressed this limitation of training. Sadly, only 40% of the research has been published, suggesting limited societal value.

The findings of the completed Likert scale highlighted several critical aspects influencing registrar training and the ability to complete the MMed. A large proportion of candidates reported inadequacies in supervision, statistical support, time allocated for research (particularly in the setting of a demanding clinical workload), and funding, and recorded that the ethics approval process was inefficient and marking timelines unacceptably long. Sixty-four percent of the respondents indicated that their mental wellness was impaired. This situation is detrimental not only for the registrar's overall function as an individual and as part of the team, but also because of the repercussions for patient care. The perceived shortcomings of the current system are important considerations for improvement of the curriculum.

Our results are consistent with those of previous studies. It has previously been reported that the mean (standard deviation) dissertation time from ethics approval to dissertation submission was 31.0 (19.6) months.[10] When one considers the time for proposal and protocol preparation (considered one of the longest stages in the dissertation process[10]), it is unsurprising that nearly 20% of paediatrics registrars have reported not completing the MMed dissertation within the stipulated training time.[10] Difficulties with completion of the MMed research component have been associated with a lack of dedicated time and funding,[11] which nearly 75% of our respondents considered to negatively impact successful completion. Previously, surgical registrars have reported that insufficient time (88%), inadequate research training (32%), inadequate supervision (25%) and inadequate financial support (20%) impacted time to completion of the MMed research dissertation.[12] Our study found similar factors across all disciplines, as well as other previously unreported factors negatively affecting completion, which included ethics approval processes, statistical support, impact of clinical workload, and impact on mental wellness.

While nearly 70% of surgical registrars reported that research is a valuable component of training, the call has previously been made for a dedicated research block (94%)[12] or a structured course in research methodology (64%),[11,12] which 73% of the respondents in our survey believed was preferable to a research dissertation.

The strength of this survey is that it provides valuable information on the ability of registrars to complete the MMed research component within the stipulated registrar training time across all disciplines examined by the CMSA. The finding that approximately half of the registrars could not complete the MMed within the stipulated training time, has negative implications for the time to registration as a specialist with the HPCSA.

A limitation of the study may be the response rate of 15.5% of the 3 646 eligible participants. However, the margin of error is only 3.8%, and the findings are therefore likely generalisable. It is probable that these responses represent the best scenario, as registrars who fared the worst under the current MMed requirements are probably less likely to have responded to the survey. Furthermore, this investigation is the most comprehensive study of the impact of the MMed research component on registrar training and specialty registration in SA, and it covers 26 specialist disciplines affiliated with the CMSA.[10] These findings therefore have importance for the training of all future registrars in SA.

A further limitation is the lack of inclusion of registrars who did not successfully pass their final fellowship examinations. It is likely that for these registrars, the impact of the MMed component would have been more significant, based on the difficulty with the exit examinations. It is difficult to put this work into an international context because there is no requirement for a Master's research component for specialist registration in the UK, USA, Canada or Australasia; hence, there is no relevant international literature. However, a study of specialist trainees who were required to undertake research during their training in Australia and New Zealand provided similar results to our survey, with low completion (50%), methodology that was generally considered poor, and with 74% published. The assessment indicated that the projects were of a low quality and that the colleges should rather focus on research training, as recommended in our survey.[13]

The findings of this study provide important data suggesting that the requirement of an original research component for MMed

specialty training should be re-considered. These data provide information on factors affecting completion of the MMed, and an important preference for a structured integrated research learning programme as an alternative, which is in agreement with previous studies supporting a research methods course.[10,12] It has been shown that registrars who attend a research methodology course have more confidence in completing a research project.[11] We therefore propose that original research should no longer be compulsory, and that a course be introduced consisting of research methodology, statistics, appraisal of the literature, and scientific writing.

Further research is needed to quantify what is required to overcome the barriers to research for registrars who may wish to continue with a research project. We need to define a registrar research environment that is fit for purpose, where we understand the characteristics that define adequate support, both from an administrative and a research expertise perspective. Finally, for registrars who wish to conduct research, we also need to create a registrar training environment that provides sufficient time for research, without compromising clinical training. Our study suggests that these barriers are universal across disciplines and are experienced by the majority of registrars. In summary, the current environment falls far short of the support needed to ensure successful completion of a research dissertation.

Conclusion

This survey confirmed that nearly half of registrars who responded to the survey could not register as specialists with the HPCSA at the end of their registrar training time due to non-completion of the MMed research component. This has dire consequences for providing enough specialists for SA and needs to be urgently addressed. The survey provides detailed information on the shortcomings of the current MMed programme, including administrative challenges and impairment of the mental health of registrars. Therefore the available time for, and potential quality of patient care, are impaired. A structured integrated learning programme, which would be part of the university MMed training, was strongly supported as an alternative to the current requirement for the completion of original research, which should no longer be compulsory. Registrars wishing to do original research should be strongly supported.

Data availability. Data will be disclosed only upon request and approval of the proposed use of the data by the authors. Data requests will not be considered until 2 years after the publication of the study. Data will be de-identified, and will be available with a signed data access agreement.

Declaration. None.

Acknowledgements. The authors acknowledge the following contributors, with thanks: Hanél Duvenage for the formatting of the survey on RedCAP and collation of the results; the CMSA for the distribution of the survey; and Emeritus Professor JF Coetzee for advice on the statistical analysis of the data.

Author contributions. Prof. BM Biccard helped with study conception and design, including the plan for statistical analysis, and analysis and interpretation of the data, drafting the manuscript, critical revision of the manuscript for important intellectual content, statistical analysis, and final approval of the version to be published. Emeritus Professor RA Dyer helped with study conception and design, data analysis and interpretation, drafting the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the version to be published. Emeritus Professor J Fagan helped with study conception and design, data analysis and interpretation, drafting the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the version to be published. The first 3 authors have supervised all aspects of a total of 75 MMed research degrees. Dr N Vickery helped with study design, details of the statistical plan, data analysis and interpretation, drafting the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the version to be published. Dr JL Orrock helped with study conception and design, data collection, analysis and interpretation, drafting the manuscript, critical revision of the manuscript for important intellectual content, and final approval of the version to be published.

Funding. The study was funded by the Department of Anaesthesia and Perioperative Medicine, University of Cape Town.

Conflicts of interest. None.

1. Health Professions Council of South Africa. Form 57 – application for registration: Independent practice – (medical practitioner). https://www.hpcsa.co.za/?contentId=44 (accessed 28 October 2024).
2. National Department of Health. Strategic plan 2014/15 - 2018/19. Pretoria: NDoH, 2014.
3. Szabo CP, Ramlall S. Research competency and specialist registration: Quo vadis? S Afr Med J 2016;106(12):1183-1185. https://doi.org/10.7196/SAMJ.2016.v106.i12.11217
4. Biccard BM, Dyer RA, Swanevelder J, Coetzee JF, Shafer SL. Is the HPCSA requirement for a research dissertation for specialist registration the best option? S Afr J Anaesth Analg 2017;23(4):4-6.
5. Glasziou P, Altman DG, Bossuyt P, et al. Reducing waste from incomplete or unusable reports of biomedical research. Lancet 2014;383(9913):267-276. https://doi.org/10.1016/s0140-6736(13)62228-x
6. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap) – a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform 2009;42(2):377-381. https://doi.org/10.1016/j.jbi.2008.08.010
7. Eysenbach G. Improving the quality of Web surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). J Med Internet Res 2004;6(3):e34. https://doi.org/10.2196/jmir.6.3.e34
8. Sullivan GM, Artino AR, Jr. Analyzing and interpreting data from Likert-type scales. J Grad Med Educ 2013;5(4):541-542. https://doi.org/10.4300/jgme-5-4-18
9. Grossman E. How long does it take a registrar to complete the compulsory research project enabling specialist registration? S Afr Med J 2019;109(4):254-258. https://doi.org/0.7196/SAMJ.2019.v109i4.13377
10. Parry J, Coovadia A. A quantitative assessment of the time to complete the Master of Medicine research thesis in a cohort of paediatrics registrars at the University of the Witwatersrand, South Africa. S Afr Med J 2024;114(10):43-48. https://doi.org/10.7196/SAMJ.2024.v114i10.2237
11. Barnard M, Jackson BS. South African surgical trainees Master of Medicine dissertation survey. S Afr J Surg 2023;61(1):7-13.
12. Patel P, Naidoo P, Smith M, Loveland J, Govender T, Klopper J. South African surgical registrar perceptions of the research project component of training: Hope for the future? S Afr Med J 2016;106(2):169-171. https://doi.org/10.7196/SAMJ.2016.v106i2.10310
13. Stehlik P, Withers C, Bourke RC, et al. Mandatory research projects during medical specialist training in Australia and New Zealand: A survey of trainees' experiences and reports. Med J Aust 2025;222(5):231-239. https://doi.org/10.5694/mja2.52611

Received 31 October 2024; accepted 15 May 2025.