



## A survey of self-reported research knowledge in Guyanese, Rwandan, Zambian, and Ethiopian anesthesia residents

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### To the Editor,

Both the conduct and appraisal of research are important skills in medical practice. Formal research activity is mandated in medical training programs across institutions that are partnered with the Canadian Anesthesiologists' Society International Education Foundation (CASIEF) (e.g., Guyana, Zambia, Ethiopia, Rwanda) where residency is structured as a *Masters of Medicine (Anesthesia)* with a dissertation requirement. Medical capacity building must include early, active engagement of partner institutions and prioritization of their stated goals.<sup>1</sup> Supporting resident scholarly projects and developing research environments is within CASIEF's mandate to build medical capacity internationally. Therefore, we sought to inform our education project with local and context-specific knowledge relating to production and consumption of basic science and clinical

research. We conducted a survey to identify current local trends in research education and activity as well as perceived barriers to scholarly education and production.

Following Research Ethics Board review and approval (University of Ottawa #H01-18-01; 12 February 2018) we conducted a survey of medical residents using a structured, English-language, self-administered, electronic questionnaire (eAppendix, available as Electronic Supplementary Material). The design and conduct of the survey were informed by best-practice recommendations for surveying physicians<sup>2</sup> and content was informed by existing literature<sup>3,4</sup> and input from stakeholders.

The initial 32 items were developed by two of the authors (H.B. and D.M) and then reduced to 25 items by consensus among all investigators (survey available as electronic supplemental material). The questionnaire was pretested with five individuals within the target population in March 2018. The target population included anesthesia resident trainees in any CASIEF country (specifically Guyana, Zambia, Ethiopia, or Rwanda). Eligible participants were identified by local stakeholders producing a final sampling frame of 121 anesthesia residents.

The electronic survey was built using SurveyMonkey software (SurveyMonkey Corporation, San Mateo, CA, USA). Surveys were collected from 6 March 2018 to 2 November 2019. Data were exported to Microsoft Excel (Microsoft Corporation, Redmond, WA, USA). Demographic data and quantitative data were analyzed with counts and proportions. Likert scale data were summarized with median [interquartile range (IQR)] values. Qualitative data from free text questions underwent inductive thematic analysis.<sup>5</sup>

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**Table** Summary of qualitative responses about the research environment

	Themes	Missing entries*
Describe your research environment	Positive comments	5
	<ul style="list-style-type: none"> <li>- Department is attempting to become active in research</li> <li>- Publications have been on the rise</li> <li>- Encouraging and supportive department</li> <li>- More research ideas generated from journal club</li> <li>- Lots of interest in improving research activity</li> </ul> Negative comments <ul style="list-style-type: none"> <li>- Not many people conducting research</li> <li>- Expectations for resident research without supportive knowledge and experience in research</li> <li>- Lack of guidance</li> <li>- No time allocated to research activity</li> <li>- Challenging and stressful expectations to meet given clinical demands</li> <li>- Pressure to have a good project</li> <li>- No funding for research activity</li> </ul>	
How to improve your research environment?	<ul style="list-style-type: none"> <li>- More mentorship, to help with challenges met during research project development</li> <li>- More organized research activities like journal clubs, critical appraisal, and research days</li> <li>- More and regular research teaching including methodology and statistics, formal research curriculum</li> <li>- More access to literature and academic journals</li> <li>- More protected time to do research</li> <li>- More funding</li> <li>- More physical tools to support research activity: computers, internet, overhead projector, data software</li> </ul>	5

\* "Missing entries" refers to no answer given to a particular question

The survey was administered electronically to 121 international anesthesia trainees in April 2018 via their professional email account. We received 38 responses (response rate, 31%). Females represented 42% (16/38) of respondents; 82% (31/38) were between the ages of 20 and 40 yr. Fifty-eight percent (22/38) of respondents had prior formal education about research, 21 during medical school and 16 during residency (and 15 during both medical school and residency). Median [IQR] Likert scores (on a ten-point scale) of self-rated knowledge were 5 [4–7] for research ethics and software, 4 [3–5] for research methods, 4 [3–6] for critical appraisal, and 3 [2–4] for communicating research findings. Ninety-two percent (35/38) had a mandatory research project in residency, 55% (21/38) attended a regular journal club, 50% (19/38) regularly consumed research, but only 42% (16/38) had access to research subscriptions.

Respondents describing the research environment at their institution yielded not only themes of eagerness to improve research activity but also pressures to meet research expectations without resource and educational support (Table). The most commonly reported barriers to

conducting research were lack of time and a dedicated research rotation (21/38; 55% for each), followed by lack of access to software and technology (18/38; 47%), and lack of faculty support (17/38; 45%). Themes related to improving the local research environment were the need for more organized research education and mentorship as well as more resources to complete research projects (time, money, hardware/software).

Although most surveyed programs had some established research activity (e.g., journal club, regular research consumption, mandatory research project) and were dedicated to expanding trainee research activity, there is a need for support in developing foundational knowledge related to research consumption and production. The biggest gaps in knowledge and stated barriers included research methods and communication of research findings, suggesting the need for a focused research curriculum. The CASIEF mandate can be fulfilled through a dedicated research curriculum as well as supporting partner institutions to create regular research engagement through journal clubs.

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## References

1. Citrin D, Mehanni S, Acharya B, et al. Power, potential, and pitfalls in global health academic partnerships: review and reflections on an approach in Nepal. *Global Health Action* 2017; DOI: <https://doi.org/10.1080/16549716.2017.1367161>.
2. Burns KE, Duffett M, Kho ME, et al. A guide for the design and conduct of self-administered surveys of clinicians. *CMAJ* 2008, 179: 245-52.
3. Bhagavathula AS, Bandari DK, Tefera YG, Jamshed SQ, Elnour AA, Shehab A. The attitude of medical and pharmacy students towards research activities: a multicenter approach. *Pharmacy* 2017, DOI: <https://doi.org/10.3390/pharmacy5040055>.
4. Shaw M, Harris B, Bonner S. The research needs of an ICM trainee: the RAFT national survey results and initiatives to improve trainee research opportunities. *J Intensive Care Soc* 2017, 18: 98-105.
5. Luborsky MR. The identification and analysis of themes and patterns. In: Gubrium J, Sankar A (Eds). *Qualitative Methods in Aging Research*. Thousand Oaks, CA: SAGE Publications; 1994: 189-210.

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