

## A call for more research in medical education

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Medical education research is “the critical, systematic, study of teaching and learning in medicine including scholarly analysis of the context, processes and outcomes of all phases of medical education.”<sup>1</sup> It has also been defined as “a careful or systematic study designed to answer the fundamental questions raised by medical educators in order to make educational decisions that can be based on rigorous research-based findings rather than personal experiences.”<sup>2</sup> As in any research, quantitative research in medical education too begins with identifying the research problem, doing a literature review, formulating the conceptual theoretical framework on which depends the choice of study design, identifying the study population and sampling procedure.<sup>2</sup> Ethical guidelines are to be followed throughout.<sup>2</sup> Data is collected, analyzed and interpreted before it is finally disseminated and used.<sup>2</sup> When qualitative methods are used in medical education research, however, many times data is collected and analyzed simultaneously (based on which subsequent plans are made), with data being collected till saturation is achieved and theory being generated inductively.<sup>2</sup>

Medical education research was born in the 1950s.<sup>3</sup> Since then, there have been many initiatives that have stimulated medical education research, one of which was the creation of the Best Evidence Medical Education (BEME) Collaboration with recommendations being made for good practice based on evidence.<sup>4</sup> BEME is in a way an extension of the Evidence Based Medicine initiative.<sup>4</sup> The first BEME guide was published in 1999 and recommended that teachers should make judgments about their teaching practice based on the Quality, Utility, Extent and Strength of evidence and a consideration of the Target (outcomes measured) and the Setting/context - the “QUESTS dimensions.”<sup>5</sup> From 1999 to today, 44 BEME guides have been published.<sup>5</sup> These BEME reviews guide readers about the best evidence that is available and how it can be used in practice.<sup>7,2</sup> The synthesis methodology used could be realist synthesis, theory led analysis and synthesis, statistical meta-analysis or meta-ethnography. There are three types BEME reviews. An effectiveness review analyzes studies dealing with how, for whom, under what circumstances and why educational interventions worked and would therefore have mixed or qualitative data (as opposed to quantitative data alone) from studies that determine whether the intervention worked or not. Such reviews would therefore contribute to practical or theoretical knowledge for improvement.<sup>5</sup> Before undertaking an effectiveness review, it may be necessary to undertake a definitional review to come to a consensus about the definition of a concept in health professional education or sometimes, a scoping review too might be required just to identify how much and what is written about a topic and where and why it is written.<sup>5</sup>

In general, medical education researchers focus on topics ranging from curriculum, teaching methods, assessment, evaluation, faculty development initiatives, the use of technology in training, etc.<sup>7</sup> Norman states that although initially the curriculum was a major topic of interest, soon assessment too became a popular topic.<sup>8</sup> Regehr, who studied the themes and trends in medical education research articles in four major medical education journals from 2000 to 2004 found four important themes: “applied curriculum and teaching issues, skills and attitudes relevant to the structure of the profession, student characteristics, and evaluation of individuals.”<sup>7,9</sup> Although he differentiated them into thematic and programmatic categories of research, he favors the latter. In thematic research, many researchers in the community work on the same topic whereas in programmatic lines of research, researchers in the community work together towards a single goal of building understanding of the phenomenon of interest by working collaboratively.<sup>9</sup> If we look at

more recent research, Rotgans who analyzed medical education research from 1988 to 2010 found that the most important themes related to assessment, clinical and communication skills, clinical clerkships and problem-based learning.<sup>10</sup> Collins identifies future opportunities for documenting the relationship between education of medical students/residents and patient outcomes and quality health care.<sup>11</sup> Examining outcomes of interventions introduced for achieving the competency requirements of the ACGME is another opportunity for conducting medical education research in the United States, as would be applicable to research pertaining to other countries' competency frameworks too.<sup>11</sup> According to Hamstra, topics that hold the most promise in the future would be studies on assessment and individual competence.<sup>12</sup> The emerging themes in medical education research involve "contextual issues, cognition and educational theory, assessment of individuals, teaching and learning, curriculum development and evaluation, leadership/career development, methodology and research principles."<sup>12,13</sup>

Majumder observes that medical education research in Asia has not substantially influenced educational policy and practice nor does it receive the attention it gets globally.<sup>14</sup> According to him, the barriers to medical education research in Asia are poor-socio-economic conditions (including lack of funds), cultural and religious conservatism, lack of relevance, incongruence between mission and vision, leadership crisis (with there being no institute to undertake medical education research), faculty development, information poverty and unforeseeable short-term research outcome.<sup>14</sup> Majumder suggests ways to improve medical education research in Asia like the provision of funding, better access to information, establishing centers for medical education research (with special medical education researchers and multi-professional research teams) and commitment of institutions and stakeholders.<sup>14</sup> Although there are challenges, they can be overcome.

In conclusion, we stress the importance of more researchers taking up medical education research. As Dauphinee and Wood-Dauphinee point out, conducting medical education research and committing to Best Evidence Medical Education is not a choice that some faculty only should end up making; it is something that all of us in the medical education community have to engage in because of our accountability to society and the responsibility to quality-improvement that we shoulder.<sup>15</sup> Let us physiologists use our interest in medical education to explore the opportunities available for medical education research, learn more about it, engage in more meaningful medical education research and contribute to generating evidence that could later guide educational decisions. This would benefit not just our students but patients too in the long run. We at the National Journal of Physiology, for our part, urge authors to conduct more medical education research and submit more such articles for publication. We look forward to our role in contributing to the creation of an evidence base that can be used to guide the educational decisions we make. Let us take this opportunity and benefit from it.

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