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Brief Reports

Identifying Royal College-accredited simulation centre research priorities across Canada

Définir des priorités de recherche à l'échelle du Canada pour les programmes de simulation agréés par le Collège royal

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Abstract

To advance the field of health sciences simulation, research must be of high quality and would benefit from multi-institutional collaboration where centres can leverage and share expertise as well as work together to overcome limits to the generalizability of research findings from single-institution studies. A needs assessment in emergency medicine simulation has illustrated the importance of identifying research priorities in Canada. The main purpose of this study was to identify simulation research priority directions for Canadian simulation centres. The current survey study drew on 16 research priorities developed through a two-round internal Delphi study at McGill University that 15 of 17 simulation centre advisory board members participated in. The final 16 research priorities were then rated by a total of 18 of 24 simulation centre directors and/or delegates contacted from 15 of 19 Royal College of Physicians and Surgeons of Canada-accredited simulation centres in Canada. Results revealed nine common research priorities that reached 70% or higher agreement for all respondents. We anticipate that our findings can contribute to building a shared vision of priorities, community, and collaboration to enhance health care simulation research quality amongst Canadian simulation centres.

Résumé

Pour faire progresser le domaine de la simulation en sciences de la santé, il faut tendre vers une recherche de haute qualité, qui serait favorisée par une collaboration multi-institutionnelle permettant aux programmes de tirer parti de leur expertise, de la partager et de surmonter les limites de la généralisabilité des résultats de recherche provenant d'études menées dans un seul établissement. Une évaluation des besoins en matière de simulation en médecine d'urgence a illustré l'importance de définir des priorités de recherche à l'échelle du Canada. Le principal objectif de cette étude était de dresser les orientations prioritaires des programmes de simulation canadiens pour la recherche en simulation. Elle est basée sur 16 priorités de recherche dégagées d'une étude Delphi à deux tours réalisée à l'Université [masqué], à laquelle 15 des 17 membres du comité consultatif de son centre de simulation ont participé. Les 16 priorités de recherche finales ont ensuite été évaluées par 18 des 24 directeurs ou délégués de centres de simulation contactés, provenant de 15 des 19 programmes de simulation agréés par le Collège royal des médecins et chirurgiens du Canada. Les résultats font état de neuf priorités de recherche communes ayant obtenu un taux d'accord de 70 % ou plus parmi l'ensemble des répondants. Nous pensons que nos résultats peuvent contribuer à l'élaboration d'une vision commune des priorités parmi les programmes de simulation canadiens, à la création d'une communauté de pratique et à une collaboration pour améliorer la qualité de la recherche en simulation dans le domaine des soins de santé.

Introduction

Simulation plays a critical role in health professions education[1,2] and simulation research is growing.[3] Despite this growth, research objectives and quality is varied and collaborative research efforts in the field remain difficult.[3-6] Collaborative research supports leveraging expertise from professionals with different research and professional backgrounds. For example, not all simulation centres have access to people with Masters degrees or PhDs with simulation education research experience to help acquire research funding or support study design and analyses, though they may be interested and highly capable of playing an active or leadership role in research efforts nonetheless. Another reason collaborative research is important is because it helps researchers overcome the limitations of generalizability (i.e., transferability) that single-institutional studies face. In other words: just because a simulation approach, tool, or intervention worked in one simulation centre does not mean it will necessarily work in another.

With varying and often limited resources across simulation centres, collaborative multi-centre research requires communication and reflection about research priorities simulation centres wish to pursue. Recent articles have highlighted the importance of identifying research priorities in emergency medicine simulation in Canada.[7,8] Such studies have tended to use discussions and meetings to accomplish these aims.[7,9] During the pandemic, directors and simulation staff have been even busier than normal and in-person meetings have often not been possible. The main purpose of this study was to identify simulation research priority directions for Canadian simulation centres. Doing so stands to help Canadian simulation centres identify and prioritize strategic research focal points (and associated needs), contribute to building a shared vision of priorities, community, and collaboration amongst simulation centres, and ultimately support strengthening the visibility and maximizing the quality and impact of simulation centre research conducted in Canada. Our aim was not to be prescriptive, but rather to provide simulation centres across the country with an opportunity for reflection and consideration of a list of research priorities established through an internal Delphi at McGill University. This is the first study to explore simulation centres' research priorities to the authors' knowledge. We briefly describe the internal Delphi below before describing the national survey sent to all RC-accredited simulation centres in Canada; the latter being the focus of this brief report.

Method

We initially conducted an internal Delphi at McGill University in order to identify local research priorities to help support the mandate of a new Director of Simulation Research and the Multidisciplinary Research Committee they chaired as part of this new position. An initial set of 16 research priorities were developed by the Director of Research with feedback from the Director of the Steinberg Centre for Simulation and Interactive Learning in late 2020. Next, these 16 research priorities were rated by 15 of 17 (88% response rate) members of the Steinberg Centre for Simulation and Interactive Learning's Advisory Committee, including the Director of Research, Director of Education, and the Director of the Simulation Centre who are members of this committee. The Advisory Committee includes simulation education stakeholders from different health professions (e.g., medicine, nursing), health sciences education research and university leadership, and provides oversight of all simulation centre activities, including research, making them an informed, accessible group and a panel with clear inclusion criteria. [10] Members were asked to "*please indicate your level of agreement on how much of a priority the following directions are for advancing research at the SCSIL (Steinberg Centre for Simulation and Interactive Learning)"* on a likert scale from 1-5 where 1 was strongly disagree, 3 was somewhat agree, and 5 was strongly agree. A rating of 4 or 5 was counted as agreeing that a priority was important.

All 17 members of the Advisory Committee were invited to complete the first round of the Delphi in January 2021 and the second in February 2021. The same 15 members completed both rounds. Four additional priorities were suggested by advisory members (added in the second round) and four statements were dropped. The final 16 statements with 70% agreement or more were identified through this Delphi study and were used in the national survey that is the main focus of this brief report. While the level of consensus in published Delphi studies ranges from 51%-100%,[11] 70% was determined to be a helpful cut-off for the present study, based on other health sciences education studies,[12] and to allow for broader reflection of simulation research priorities.

In order to address our research objective, we elected to conduct a national survey rather than a national Delphi. We did this primarily due to considerations of potential

burnout, survey fatigue, and the significant challenges simulation centre directors and others were facing to adapt their simulation training to meet the needs and safety requirements of the pandemic. Moreover, we had already generated statements from our internal Delphi; a step some Delphi studies use as round 1 of consensus building.[10] Participants of the national survey were identified from a publicly available list of 19 Canadian simulation centres accredited by the Royal College of Physicians and Surgeons of Canada (RCPSC). Contact information of the simulation centre director and/or delegates (e.g., research directors) was identified from the RCPSC site, individual simulation websites, or the individuals we contacted from these sources. 24 sim centre personnel were contacted to participate. More than one person was contacted if more than one name (e.g., director, director of research) was identified. A total of 18 directors and/or delegates (/24; 75% response rate) from 15 (/19; 79% response rate) unique, RCPSC-accredited Canadian simulation centres completed the study. The directors who developed the original research priorities at McGill University and participated in the internal Delphi did not participate in the national survey.

Individuals were sent a recruitment email that included a letter of support from the RCPSC and informed consent to participate in the study that received McGill University IRB approval. After consenting, participants were asked to rate the 16 pre-identified research priorities (from the internal Delphi) using a 5-point Likert scale (where 1 = strongly disagree, 3 = somewhat agree, and 5 = strongly agree). Ratings of 4 or 5 were counted as agreeing with a priority. All 16 research priorities are included in Table 1. Participants also reported their gender, experience with simulation research, and were invited to add new priorities if relevant.

Table 1. Descriptive statistics of 16 research priorities (N = 15)

Research Priority	**% Agreement**		
	Raw %	**70-79%**	**80%+**
Supporting university/hospital faculty-led research	93	X	X
Supporting university-external research grants to conduct research at the simulation centre (e.g., CIHR, SSHRC)	87	X	X
Conducting research that can contribute to internal and local guidelines and decision-making.	87	X	X
Conducting research that examines transfer of skills acquisition to patient safety and clinical outcomes (outcome improvement based on application of skills to broader context)	80	X	X
Implementing and evaluating emerging simulation technology (AR/VR/AI/gaming/virtual worlds)	80	X	X
Actively involve health professional programs including, but not limited to medicine in simulation research.	80	X	X
Implementing and evaluating new competency assessments	80	X	X
Supporting university/hospital trainee-led research	73	X	-
Conducting research that can contribute to provincial guidelines and decision-making.	73	X	
Recruiting fellows with experience and/or potential to conduct para-autonomous/self-directed (supervised) research as part of their fellowship	67	-	-
Conducting research that examines transfer of skills acquisition in simulation to clinical environments (replication of skills)	67	-	-
Promoting (i.e., signal boosting) research done at the simulation centre to academic and health sciences stakeholders (e.g., university researchers, health sciences professionals, health sciences associations, including accreditation groups (e.g., Royal College of Physicians and Surgeons of Canada)	67	-	-
Showcasing research conduct at the simulation centre (e.g., via website)	67	-	-
Implementing and evaluating online technology and distance simulation learning (multimedia/videos/course management systems/chat rooms)	60	-	-
Pursuing and supporting research partnerships with industry partners	20	-	-
Promoting (i.e., signal-boosting) research done at the simulation centre to private stakeholders (e.g., med tech companies)	13	-	-

Results

Most respondents were males (*n* = 13; 72%). Seven respondents (39%) had previously conducted simulation research acting as a principal investigator and/or primary supervisor of supervisee-led simulation research as well as serving as a co-applicant/ co-investigator, collaborator, or on simulation research. In terms of frequency of involvement with medical simulation research, seven individuals reported regular involvement (one or more studies per year), six individuals reported somewhat regular involvement (one study every two to three years), and five individuals reported their involvement as a few occasions over the course of their career. All our respondents were affiliated with the Faculty of Medicine at their respective institutions. Amongst our 18 respondents, 13 individuals held positions as Director of the simulation centre, two individuals were Director of Research, and three individuals held delegate positions. 27% (4) of participating simulation centres were located in Western Canada and 73% (11) were located in Central Canada; 47% (7) of these were located in Ontario while 27% (4) were located in in Quebec.

Table 1 presents the % of agreement for all 16 research priorities. Agreement % was calculated by counting the number of respondents who assigned a research priority a rating of 4 or 5, summing this number (e.g., eight centres rated it 4, four centres rated it 5) and dividing it by the number of simulation centres (12/15 = 80%). We averaged the ratings of respondents for each criteria in the three cases we had two respondents per simulation centre to avoid any of these centres having an undue influence on agreement rates.

Among the 16 research priorities, nine out of 16 priorities were rated with 70% or higher agreement and seven out of 16 priorities were rated with 80% or higher agreement amongst respondents from 15 RCPSC-accredited simulation centres.

Discussion and conclusion

Sharing the nine research priorities identified in our national survey study can help Canadian simulation centres identify and prioritize strategic research directions, such as supporting university-external research grants to conduct research at the simulation centre and conducting research that can contribute to internal and local guidelines and decision-making. Common priorities can support large-scale collaboration between centres, helping researchers to overcome limitations with single-centre studies and increase the generalizability and impact of associated studies. Community can also be built around common priorities. Advantages of a community of simulation researchers (e.g., INSPIRE[13]) include sharing best (and ineffective) practices with priorities such as implementing and evaluating new competency assessments and different kinds of simulation technology.

While purposeful and convenience sampling from simulation centres accredited by the RCPSC ensured that we had relevant and well-defined criteria for our survey, the exclusion of non-RCPSC-accredited simulation centres limits this study from being a national survey of all Canadian simulation centres. Non-RCPSC-accredited simulation centres may have different research priorities and represent an important but distinct population from our sample of interest who tend, for example, to have educational responsibilities to their universities. Future research could seek to solicit research priority ratings from non-RCPSC accredited simulation centres as well as simulation trainees, though both populations were outside of the scope of this study. Strengths of this national survey study include its novelty, the high response rate, and the national survey being based on an internal Delphi, especially in the absence of prior literature to guide its development and a multi-stage Delphi not being feasible at the time this study was conducted.

The authors of this study found the results of the national survey helpful to benchmark against the priorities established in our internal Delphi, particularly, as the majority but not all of our priorities are shared by RCPSC-accredited simulation centres across the country. These identified common grounds represent fertile terrain to build collaborations across Canada on something we and our centre are currently exploring with other Canadian simulation centres in the hopes of both a successful research collaboration as well as to build experience and community conducting collaborative, multi-institutional research that addresses common research priorities.

Conflicts of Interest: The Royal College of Physicians and Surgeons of Canada provided a letter of support that was included in recruitment emails.

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