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Abstracts

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“Speaking up” for patient safety in an emergency: the effect of cultural diversity

Submission ID

6

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INTRODUCTION

Communication problems can have a profound negative effect on crisis management. Effective communication during acute situations when different levels of authority exist within the team may be challenging. Authority gradients are most accentuated between attending physicians and residents and can pose a threat to patient safety.

The aim of the current study was therefore to examine the effect of national culture on speaking up and challenging authority behavior by comparing residents from Canada and Israel. These are two very different cultures where the communication dynamic tends to be much more reserved in North America vs direct and even aggressive in Israel. Our main objective was to examine the potential impact of factors that affect speaking up behavior in both cultures, which may help improve resident training and promote changes in organizational and professional culture to encourage “speaking up.”

METHODS

Anesthesia residents from both countries participated in a simulated crisis that presented them with situational opportunities to challenge a staff regarding clearly wrong clinical decisions in a life-threatening scenario. During the simulation, a routine induction turns into a ‘can’t intubate can’t ventilate’ scenario. During the scenario the learner has five distinct challenge opportunities to speak up and change the staff anesthesiologist’s management. The learner is expected to offer to change patient management. These are all well within the resident’s fundamental expected knowledge base, thereby ensuring the scenario does not test the resident’s knowledge but rather their communication skills and their ability to challenge wrong decisions by a superior.

Deliberate deception was used to preserve the “natural” hierarchy gradient. The primary outcome was the best-responses challenge attempt on the previously validated

modified Advocacy-Inquiry scale (mAIS) between groups. The secondary outcomes were: 1) the number of challenge attempts 2) Ottawa Global Rating Scale scores (GRS).

Scenarios were videotaped and scored on the mAIS by two independent raters.

RESULTS

Forty-four residents completed the study (22 in each group). For the primary outcome, the median [IQR range] for maximum mAIS was 3.0 [2.5–3.1 (0.0–5.5)] for the Israel group and 3.0 [3.0–4.0 (0.0–5.0)] for the Canada group (95% confidence interval, –0.76 to 0.31; $P = 0.34$). There was no statistically significant difference between the groups in the max mAIS, the cumulative number of challenges made nor the total GRS score.

DISCUSSION

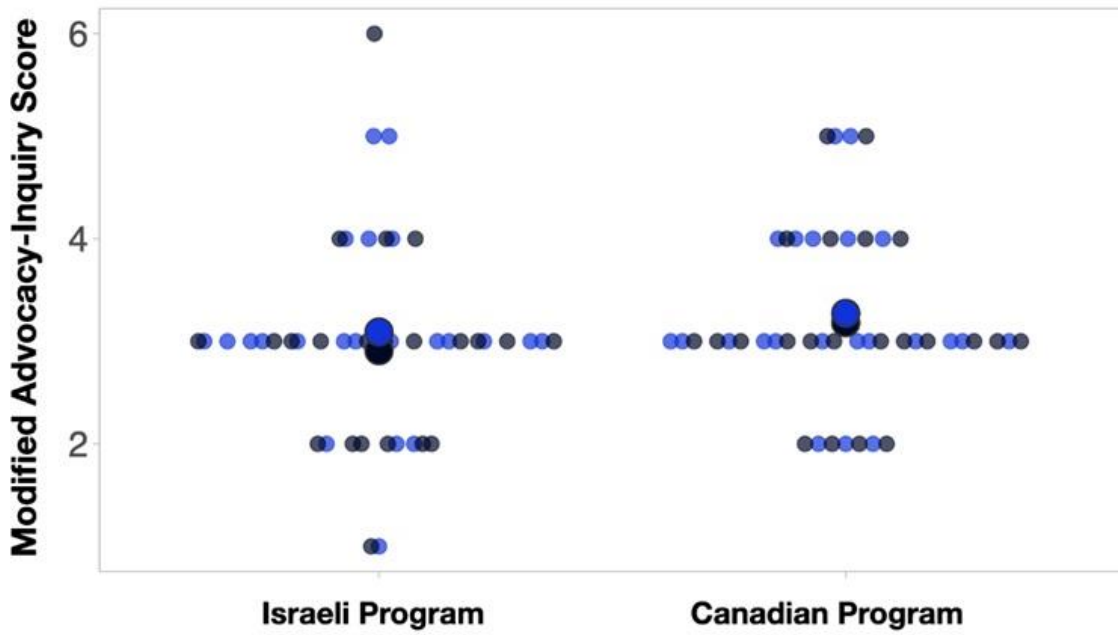
In the current study we did not find a difference between groups for the primary outcome measure of mAIS, or the secondary outcomes of the GRS score and number of challenge attempts. Our data does not support the hypothesis that the different cultural backgrounds of Israeli and Canadian anesthesiology residents affect speaking up in a crisis situation.

It may hint at the profound effect of the deeply engrained hierarchy in medicine and the need to address it professionally to foster a culture in which trainees feel safe to speak up for patient safety.

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Figure Best modified advocacy-inquiry score for all participants over the five different opportunities to challenge in the scenario for the two groups



The smaller dots represent individual data points, with light and darker dots representing the two raters. The larger circles represent the median scores as rated by the two raters (again in light and darker blue).

Developing a simulation-based anesthesia and crisis management education program for pediatric diagnostic imaging nurses assisting anesthesiologists

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95

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INTRODUCTION

The 2023 Guidelines to the Practice of Anesthesia¹ state that health care facilities ‘must ensure that ancillary personnel are available’ and that they ‘should have the competencies to meet the specific needs of subspecialty areas of anesthesia.’ It is therefore our responsibility as anesthesiologists to lead this multidisciplinary training. At our tertiary level pediatric facility, ancillary staff assisting anesthesia come from a wide range of services, including many remote from the operating room. Diagnostic imaging is one such department. The usual technique in this department uses titrated intravenous anesthesia while maintaining spontaneous ventilation and requires little airway manipulation. Nevertheless, the diagnostic imaging nursing team revealed they had developed significant anxiety assisting in alternative techniques including several fundamental areas relating to airway manipulation and perianesthesia crisis management.

METHODS

A needs assessment was conducted using a computerized survey of the diagnostic imaging nurses, which they all completed. This identified the specific areas of concern which included basic airway management, assistance of intubation and management of laryngospasm. It also addressed the preferred education delivery methods and potential impediments to attendance. One-hour sessions were planned, each with four or five participants, and were provided *in situ* to facilitate maximal attendance. A pilot session covering basic and advanced airway management using simulated obstruction and hypoventilation introduced simulation-based learning and provided a common basic skillset to the participants. A lesson plan, using Gagne’s events of instruction,² simulation activity running sheet and handout was then created for the session. Debriefing of the simulation component was conducted using the Promoting Excellence and Reflective Learning in Simulation (PEARLS) framework.³ The participants were asked to complete written evaluations immediately prior and after the session. This used Likert scales for

ease of response and free text comments to evaluate the session and inform further session development of the program. Paired pre- and postsession Likert scale data was evaluated for significance using *t* tests.

RESULTS

A total of 11 learners attended one-hour sessions, which took place *in situ* in the diagnostic imaging department after completion of patient care activities. Nine (81%) completed the pre- and postsession evaluations. Overall, there was an increase in the Likert scale rating for all the self-evaluated knowledge and skill domains. The mean difference in confidence in assisting intubation was 0.89 ($P = 0.026$) and for accessing anesthesia equipment and drugs this was 0.67 ($P = 0.025$). For confidence in recognizing features of a difficult airway the mean difference was 1.22 ($P = 0.00002$). Following the session, 100% of the learners completing evaluations agreed or strongly agreed that the learning environment was safe and positive, and that they were engaged and satisfied with the session. The written comments detailed desired topics for future sessions.

DISCUSSION

We have shown it is feasible to run *in situ* simulation sessions where learners were unanimously satisfied with the sessions and showed improved self-evaluated knowledge and skills. As hypothesized, running *in situ* sessions facilitated attendance but also revealed latent environmental risks that needed addressing, for example, the way the anesthesia carts are organized. The program also fosters multidisciplinary working and camaraderie amongst the staff involved. Further sessions are underway where we will also evaluate effectiveness with objective knowledge questionnaires in addition to self-evaluation of confidence. Furthermore, other nonoperating room ancillary teams have expressed interest in similar training.

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Effectiveness of extended reality-based simulation training in ultrasound-guided regional anesthesia: a systematic review

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102

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INTRODUCTION

Ultrasound-guided regional anesthesia (UGRA) has replaced landmark-based approaches to performing nerve blocks; however, UGRA is a complex skill requiring knowledge of sonoanatomy, dexterity, and safe needling techniques.¹ Simulation-based procedural training may be an ideal tool to supplement gaps in clinical exposure because it allows for deliberate psychomotor practice in a controlled environment while avoiding any patient risk. A recent systematic review found that simulation-based UGRA training is effective in improving knowledge, skills, and patient outcomes.² Nevertheless, multiple different modalities were used including gel phantoms, animal models, and cadavers; each presenting with unique advantages and disadvantages. Extended reality presents a novel modality for learning these skills, with the potential for improved accessibility, versatility, portability, and cost-effectiveness.³ We conducted a systematic review to evaluate the effectiveness of extended reality technology in UGRA training. This will inform and optimize future UGRA educational training programs and research endeavours.

METHODS

The systematic review was performed following A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR 2) and reported in adherence to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines.^{4,5} The protocol was prospectively registered. Studies identified in MEDLINE, EMBASE, Cochrane Library, and Scopus were included if they assessed extended reality in UGRA training, including alternate reality (AR), virtual reality (VR), and mixed reality (MR). AR overlays a digital interface on existing surroundings, VR presents a computer-rendered three-dimensional environment or model, and MR is a continuum between digital and physical elements. We included studies in both clinical and nonclinical settings evaluating all health care providers on four learning outcomes, according to a modified Kirkpatrick/Phillips model: Level 2, knowledge and skills;

Level 3, transfer of learnt behaviors; Level 4, patient outcomes; and, Level 5, cost-benefit. A literature search was conducted by an experienced librarian. The screening template was pilot-tested prior to extraction. After extracting all the articles, two authors independently screened all the titles and abstracts, completed a full-text review, and extracted relevant data. A third author resolved discrepancies during screening/review. Two authors also independently assessed each of the final studies for quality and risk of bias.

RESULTS

We screened 694 citations and 57 full texts and included six studies in our review. Three studies used immersive augmented reality (AR), one study used nonimmersive VR, and one study used immersive VR. One study showed that interactive virtual simulation improved knowledge acquisition (Kirkpatrick 2). All six studies had an outcome regarding skill acquisition (Kirkpatrick 2); four of these found that extended reality simulation can shorten procedure time, and improve certain aspects of UGRA performance (e.g., needle visibility), though two showed no significant differences in skill acquisition. Two studies examined behaviors (Kirkpatrick 3); one showed potentially improved ergonomics with a head-mounted display, however the other was terminated prematurely because of technical issues. None of the studies included outcomes related to Kirkpatrick level 4 or 5. Three of the studies had a significant risk of bias, because of poor randomization, group crossover, low recruitment, and confounding variables.

DISCUSSION

Extended reality training can improve knowledge, skills and behaviors associated with performing UGRA. AR displays improved ergonomics, and shortened procedure times; however, three studies used head-mounted US displays, not “true” AR. Immersive VR trainers provided comparable or improved knowledge and skill acquisition and trainee satisfaction; however, no completed studies directly compared VR with traditional simulation. Though extended reality training shows promise, there is currently little high-quality evidence in this rapidly expanding field. Consensus on definitions of “extended reality” should be reached, and further studies are necessary to evaluate the effectiveness of extended reality-based UGRA simulation.

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Global health education in Canadian anesthesia residency programs: a survey of opportunities and attitudes

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117

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INTRODUCTION

Understanding global health (GH) priorities is imperative to a physician's ability to address health disparities and provide equitable care for all populations. In the field of anesthesia, GH competencies are invaluable as 28% of the global disease burden comes from surgical conditions, and consequently, anesthesia and postoperative care.¹ The changing demographics of Canada, secondary to the influx of immigrant and refugee populations, has further necessitated the need for structured GH education during residency.² Currently, there is a paucity of literature on the extent of GH education in Canadian residency programs. The purpose of our survey was to: 1) assess the extent of GH opportunities in Canadian anesthesia residency programs, 2) assess the attitudes of anesthesia program directors (PDs) and residents toward GH training, and 3) identify barriers to participation in GH training within Canadian anesthesia residency programs.

METHODS

An online cross-sectional survey was conducted following the Phillips *et al.*³ design. The survey was reviewed by an expert panel and subsequently, a 16-question pilot survey was conducted. The pilot survey indicated a Cronbach's alpha reliability of 0.610. The deviation below the accepted minimum threshold of 0.7 was justified by the limited sample size of 13 participants. After the pilot survey, study data was collected via two distinct surveys sent to Canadian anesthesia (PDs) and residents. The surveys used a combination of open-ended, closed-ended, and 5-point Likert scale questions. The PD survey consisted of 32 questions and was distributed via email, between September to October 2023. The resident survey consisted of 25 questions and was distributed via the Canadian Anesthesiologists' Society mailing platform, between October to November 2023. Both groups were sent two reminder emails, each at two-week intervals. Survey response rate (RR) was calculated and adjusted using the American Association for Public Opinion Research response rate definitions.³ The nonresponse bias (NRB)

was calculated using the proxy nonrespondent model.³ Survey responses were analyzed using descriptive statistics analysis. Inferential statistics analysis (Fisher's exact test) was used to compare the responses of PDs and residents.

RESULTS

We received 76 completed surveys—65 from residents and 11 from PDs. Our overall RR was 12%, PD RR was 70%, and resident RR was 10%. The calculated NRB was found unlikely to have practical significance. The internal consistency, for all parts of the survey, was considered acceptable as measured by Cronbach's alpha (0.66 to 0.93). Eighty-two percent of PDs agreed that it is important for anesthesia residents to understand the global shortage in anesthesia and that Indigenous health-focused experiences should be strongly encouraged. Eleven percent of PDs identified their programs as having a GH curriculum or budget. Sixty-six percent of residents agreed that training in resource-constrained communities should be strongly encouraged. Eighty-one percent of residents were interested in GH initiatives and only 41% felt they could easily arrange such experiences. The only statistically significant difference between PDs' and residents' answers was perceptions of financial barriers to engaging in GH experiences ($P = 0.04$).

DISCUSSION

The survey revealed a consensus among anesthesia PDs and residents around the importance of GH, including Indigenous health, within anesthesia training. The statistically significant difference between PDs and residents regarding perceptions of financial barriers may stem from a lack of insight into residents' financial challenges and a lack of unawareness regarding available funding opportunities amongst residents. Residents' strong interest in GH and the identified lack of curriculum support the need to incorporate formal GH curriculum in residency. Limitations of this study include a low resident RR, which can be attributed to time constraints faced by residents and the survey's length.

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When the hero feels like a fraud: a survey of imposter syndrome among anesthesiologists

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39

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INTRODUCTION

Imposter syndrome (IS) is a concept that describes persistent internal feelings of intellectual fraudulence among high-achieving individuals, often despite objective evidence to the contrary.¹ Recently, IS has become a subject of growing interest within the medical profession, likely because of its potential impacts on physician burnout, reduced work performance, and compromised quality of health care for the public.^{2,3} Anesthesia is a unique specialty where the daily clinical environment can rapidly change from quiet and predictable routines to high-intensity life-threatening situations, and an anesthesiologist's ability to handle a crisis can be the difference between a patient's life or death. While there have been very few studies that focus specifically on IS within anesthesia, the risk of burnout is known to be high.⁴ This survey aims to explore the overall prevalence of IS among anesthesiologists within a single Canadian province and to compare that prevalence at different career stages.

METHODS

Following approval from the local research ethics board, a link to complete an anonymous survey was sent by email to the province's anesthesiologists at staff, fellow, and resident levels, as well as to third- and fourth-year medical students who were considering pursuing training in anesthesia. Medical students, residents, and fellows were contacted by administrative staff through university mailing lists. Staff anesthesiologists were contacted through the provincial anesthesiologists' society membership mailing list. Individual consent to participate was implied by the voluntary completion of the survey.

The survey included questions of demographic and professional background such as gender and years in clinical practice, and the Clance Imposter Phenomenon Scale (CIPS), a validated tool for assessing IS.⁵ The CIPS score (20–100) was calculated as instructed with higher scores indicating more frequent or intense imposter feelings. A CIPS score greater than

40 indicates at least moderate IS. Participants were also asked to self-evaluate the severity of their IS and consider its potential impacts on their career.

Data was analyzed using R (R Foundation for Statistical Computing, Vienna, Austria). Linear regression analysis was performed to assess associations of demographic or professional factors with severity of IS as quantified by the CIPS score.

RESULTS

At the time of submission, 125 responses were obtained, with 98 completed in full and included for analysis. Forty-four (45%) respondents were female; eight were medical students, nine residents, eight fellows, and 73 staff. The median [IQR] CIPS score was 59 [47–69]. Eighty-four (86%) participants had CIPS scores greater than 40, indicating at least moderate IS.

Linear regression analysis of preliminary data revealed no statistically significant association between increased CIPS score and age ($P = 0.82$), female gender ($P = 0.16$), current clinical role ($P = 0.78$) or years since graduating from medical school ($P = 0.16$).

Sixty-three (64%) respondents subjectively felt that they experienced IS, with 33 indicating that it affected them mildly, 26 moderately, and four severely. The most common reported professional impacts of IS were feeling inadequate about their patient care abilities (39/62, 63%), wondering if they were competent in their clinical role (36/62, 58%), and avoiding difficult or high-risk procedures (30/62, 48%).

DISCUSSION

Early responses suggest a high prevalence and severity of IS among anesthesiologists in our province. No significant associations were seen between CIPS scores and the demographic or professional factors evaluated, but data collection is ongoing. The high prevalence is consistent with other studies of IS among physicians, which may reflect the perfectionistic and high-expectation culture of medicine.^{2,3} Response bias is possible, with individuals who experience IS being more inclined to complete a voluntary survey.

Future research is planned in the form of semistructured interviews with willing participants to explore the professional impacts of IS in greater depth.

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