UOJM JMUO

May 2025
Volume 15.1

Advances in Medical Education

Les progrès de l'éducation médicale

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ISSN: 2292-650X

UOJM
UNIVERSITY OF OTTAWA JOURNAL OF MEDICINE

JMUO
JOURNAL MÉDICALE DE L'UNIVERSITÉ D'OTTAWA

VOLUME 15 ISSUE 1 MAY 2025

The student-run medical journal of the University of Ottawa

ABOUT US

UOJM is an international peer-reviewed journal led and published by the students of the Faculty of Medicine. We welcome submissions in a variety of areas in biomedical research and feature original research, review articles, news and commentaries, case reports and opinion pieces. Our articles are written in both English and French. We are the only bilingual medical journal in Canada run by students.

Le JMUO est un journal revu, édité et publié par les étudiants de la Faculté de médecine. Nous encourageons les soumissions d'une variété de différents domaines en recherche biomédicale et publions des articles de recherche originale, des articles de revue, des nouvelles et commentaires, des rapports de cas et des pièces d'opinion. Nos articles sont écrits en français et en anglais. Nous sommes la seule revue médicale bilingue au Canada dirigée par des étudiants.

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Articles published in the UOJM can be digitally archived and indexed at uO Research: http://www.ruor.uottawa.ca/en

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UOJM: PREFACE

The University of Ottawa Journal of Medicine (UOJM) is pleased to present its latest issue to our readership. Medicine and healthcare remain central concerns for the people of the Ottawa region and the Canadian population. During these times, there are many groups committed to advancing various areas of investigation, and we take pride in supporting and publishing their work.

From innovative therapeutic approaches to emerging trends in healthcare, research continues to serve as a catalyst for challenging existing practices and informing future improvements. The high quality of the articles in this issue reflects the dedication of our authors to expanding our knowledge on a wide range of medical and healthcare topics. This work also highlights the ongoing commitment and tireless efforts of our reviewers and editorial team in maintaining the highest standards of scholarship.

This edition brings together scientific progress, clinical insights, and expert perspectives that address some of the most pressing challenges and opportunities in modern medicine. Here is an overview of what you can expect in this current issue:

EXPLORING LEARNER PERCEPTIONS OF UNDERGRADUATE MEDICAL LEADERSHIP TRAINING AT THE UNIVERSITY OF OTTAWA
This study explores medical student perceptions of the leadership curriculum at the University of Ottawa, a key component of the CanMEDS framework. Findings highlight strong student confidence in core leadership skills, alongside a desire for more interactive, small-group learning. These insights aim to guide future enhancements to leadership education in undergraduate medical training.

THE IMPORTANCE OF SCHIZOPHRENIA RESEARCH AND PARTNERSHIP WITH PATIENTS: AN INTERVIEW WITH LUC VIGNEAULT
This interview features Mr. Luc Vigneault, a mental health advocate and educator who lives with schizophrenia. With decades of experience in peer support and public speaking, he works to challenge stigma and promote recovery. His ongoing contributions span community, academic, and institutional settings across Québec.

IDENTIFYING GAPS IN THE TEACHING OF MEDICAL LITERATURE CRITICAL APPRAISAL SKILLS: A NEEDS ASSESSMENT SURVEY OF MEDICAL STUDENTS
This article explores medical students' perspectives on learning critical appraisal skills, which are essential for evidence-based clinical practice. Findings reveal a gap between current teaching methods and students' learning preferences. The study highlights the need to align medical education with student-identified approaches to better support skill development.

OPEN-SOURCED EQUITY SURVEY TO ASSESS ORGANIZATIONAL DIVERSITY AND INCLUSION
This article presents an open-source equity and diversity survey developed by the ICU Bridge Program to assess volunteer demographics and guide inclusive recruitment. The survey is designed to be brief, bilingual, and easily integrated into organizational workflows. By sharing this tool, the authors aim to support other institutions in strengthening their equity assessment practices.

TRANSGENDER HEALTHCARE SAVES LIVES: IMPACTS OF ACCESS ON SUICIDALITY
This article discusses barriers to transgender care for youth, highlighting the impact on mental health and the need for equitable access. It offers strategies for healthcare providers and considerations for medical trainees to improve care for transgender patients.

NAILED WELLNESS: A PROPOSAL FOR TRAINING NAIL SALONS TO DETECT SIGNS OF ORGAN SYSTEM DYSFUNCTION ON THEIR CLIENT'S NAILS
This proposal suggests training nail salon staff to recognize signs in clients' nails, using informational materials similar to the skin cancer detection program in hair salons. The goal is to create an additional layer of disease screening, empowering non-healthcare workers to contribute to early detection and support clients' health through referrals to healthcare providers.

UOJM: PREFACE

OPTIMIZING CARDIAC MONITORING UTILIZATION IN THE EMERGENCY DEPARTMENT FOR PATIENTS AWAITING IN-HOSPITAL BEDS

This study examines cardiac monitoring for patients awaiting inpatient beds in the emergency department (ED) and identifies risk factors for serious adverse events (SAEs). The results suggest that patients without these risk factors could be safely removed from cardiac monitoring, indicating the need for further research to optimize monitor use in the ED.

MEDICINAL MELODIES: A SCOPING REVIEW OF MUSIC IN MEDICAL EDUCATION

This review explores integrating music into medical education to enhance empathy and interpersonal skills. Methods like active participation, reflective listening, and coursework have shown benefits in stress relief, teamwork, and communication. While challenges exist, such as excluding non-musicians, music's potential to improve patient care and interactions warrants further research to refine its integration into medical training.

SIGNING ON: A NEW CHAPTER IN MEDICAL EDUCATION FOR INCLUSIVE CARE: SCOPING REVIEW

This review explores integrating Deaf awareness and ASL training into medical education to improve care for patients. Nine studies showed that workshops increased Deaf awareness and improved medical students' attitudes. However, the limited research and small sample sizes suggest the need for more comprehensive, specialty-specific training.

RAYS OF CHANGE: COMMENTARY ON POTENTIAL INTERVENTIONS FOR SKIN CANCER PREVENTION IN ONTARIO MEDICAL EDUCATION

This commentary addresses the rising skin cancer rates in Ontario and the exclusion of Skin of Colour populations from sun-protection advocacy. It suggests installing sunscreen dispensers in medical schools to promote sun safety and awareness, with materials focused on SOC needs. Despite challenges like cost and resistance, involving healthcare professionals and students could lead to long-term improvements in sun-protective behaviors and public health outcomes.

On behalf of the entire team at the University of Ottawa Journal of Medicine, we thank you for contributing to student-led research at the University of Ottawa.

Yannick Galipeau and Jacob Wise
Co-Editors-in-Chief (2024-2025)

JMUO: PRÉFACE

Le Journal médical de l'Université d'Ottawa (JMUO) a le plaisir de présenter son édition la plus récente à nos lecteurs. La médecine et les soins de santé restent des préoccupations centrales pour la population de la région d'Ottawa et pour l'ensemble des Canadiens. De nombreux groupes se consacrent présentement à faire progresser divers champs de recherche, et nous sommes fiers de soutenir et de publier leurs travaux.

Des approches thérapeutiques innovantes aux tendances émergentes en matière de soins de santé, la recherche continue de servir de catalyseur pour remettre en question les pratiques établies et inspirer les améliorations futures. La grande qualité des articles de cette édition reflète l'engagement de nos auteurs à enrichir nos connaissances sur une vaste gamme de sujets médicaux et de santé. Ces travaux mettent également en lumière l'engagement constant et les efforts inlassables de nos réviseurs et de notre équipe éditoriale pour maintenir les plus hauts standards de rigueur scientifique.

Cette édition réunit progrès scientifiques, éclairages cliniques et points de vue d'experts qui abordent certains des défis et des opportunités les plus urgents de la médecine moderne. Voici un aperçu de ce que vous trouverez dans cette édition :

EXPLORATION DES PERCEPTIONS DES APPRENANTS SUR LA FORMATION EN LEADERSHIP MÉDICAL DE PREMIER CYCLE À L'UNIVERSITÉ D'OTTAWA

Cette étude examine les perceptions des étudiants en médecine concernant le curriculum de leadership à l'Université d'Ottawa, composante clé du référentiel CanMEDS. Les résultats révèlent une forte confiance des étudiants dans les compétences fondamentales en leadership, ainsi qu'un désir d'apprentissage plus interactif en petits groupes. Ces observations visent à orienter les améliorations futures de la formation en leadership dans le cadre de la formation médicale de premier cycle.

L'IMPORTANCE DE LA RECHERCHE SUR LA SCHIZOPHRÉNIE ET DU PARTENARIAT AVEC LES PATIENTS : ENTRETIEN AVEC LUC VIGNEAULT

Cet entretien présente M. Luc Vigneault, défenseur et formateur en santé mentale vivant avec la schizophrénie. Fort de décennies d'expérience en soutien par les pairs et en prise de parole en public, il œuvre à combattre la stigmatisation et à promouvoir le rétablissement. Ses contributions se déploient dans des contextes communautaires, académiques et institutionnels à travers le Québec.

IDENTIFIER LES LACUNES DANS L'ENSEIGNEMENT DES COMPÉTENCES D'ÉVALUATION CRITIQUE DE LA LITTÉRATURE MÉDICALE : ENQUÊTE D'ÉVALUATION DES BESOINS AUPRÈS DES ÉTUDIANTS EN MÉDECINE

Cet article explore le point de vue des étudiants en médecine sur l'apprentissage des compétences d'évaluation critique, essentielles à la pratique clinique fondée sur les preuves. Les résultats mettent en évidence un écart entre les méthodes d'enseignement actuelles et les préférences d'apprentissage des étudiants. L'étude souligne la nécessité d'harmoniser l'éducation médicale avec les approches identifiées par les apprenants pour mieux soutenir le développement de ces compétences.

ENQUÊTE OPEN SOURCE SUR L'ÉQUITÉ POUR ÉVALUER LA DIVERSITÉ ET L'INCLUSION ORGANISATIONNELLES

Cet article présente une enquête open source sur l'équité et la diversité, développée par le programme ICU Bridge, pour évaluer la démographie des bénévoles et guider un recrutement inclusif. L'outil, bilingue et concis, s'intègre facilement aux processus organisationnels. En partageant cet outil, les auteurs souhaitent aider d'autres institutions à renforcer leurs pratiques d'évaluation de l'équité.

LES SOINS DE SANTÉ POUR LES PERSONNES TRANSGENRES SAUVENT DES VIES : IMPACTS DE L'ACCÈS SUR LA SUICIDALITÉ

Cet article aborde les obstacles à l'accès aux soins pour les jeunes transgenres, souligne les répercussions sur la santé mentale et plaide pour un accès équitable. Il propose des stratégies pour les professionnels de santé et des pistes de réflexion pour les étudiants en médecine afin d'améliorer la prise en charge des patients transgenres.

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NAILED WELLNESS : PROPOSITION DE FORMATION DES SALONS DE MANUCURE POUR DÉTECTER LES SIGNES DE DYSFONCTIONNEMENT DES SYSTÈMES ORGANIQUES SUR LES ONGLES DE LEURS CLIENTS

Cette proposition suggère de former le personnel des salons de manucure à reconnaître les signaux portés par les ongles, en s'inspirant des programmes de dépistage du cancer de la peau dans les salons de coiffure. L'objectif est d'ajouter une couche de dépistage, permettant à des non-professionnels de santé de contribuer à la détection précoce et d'orienter les clients vers des prestataires de soins.

OPTIMISATION DE L'UTILISATION DE LA SURVEILLANCE CARDIAQUE AU SERVICE DES URGENCES POUR LES PATIENTS EN ATTENTE D'UN LIT D'HÔPITAL

Cette étude évalue l'utilisation de la surveillance cardiaque pour les patients en salle d'urgence en attente d'un lit d'hôpital et identifie les facteurs de risque d'événements indésirables graves. Les résultats suggèrent que les patients sans ces facteurs pourraient être retirés en toute sécurité de la surveillance, soulignant le besoin de recherches supplémentaires pour optimiser l'usage des moniteurs en urgences.

MÉLODIES MÉDICINALES : REVUE EXPLORATOIRE DE L'INTÉGRATION DE LA MUSIQUE DANS L'ÉDUCATION MÉDICALE

Cette revue examine l'intégration de la musique dans la formation médicale pour renforcer l'empathie et les compétences interpersonnelles. Des méthodes comme la participation active, l'écoute réflexive et les travaux dirigés ont montré des bienfaits pour la gestion du stress, le travail d'équipe et la communication. Malgré des défis tels que l'exclusion des non-musiciens, le potentiel de la musique pour améliorer les soins et les interactions avec les patients justifie de nouvelles recherches pour affiner son intégration.

SINGING ON : UN NOUVEAU CHAPITRE DANS L'ÉDUCATION MÉDICALE POUR DES SOINS INCLUSIFS : REVUE EXPLORATOIRE

Cette revue explore l'intégration de la sensibilisation à la surdité et de la formation à la langue des signes américaine (ASL) dans l'éducation médicale pour améliorer les soins aux patients sourds. Neuf études montrent que des ateliers augmentent la sensibilisation à la surdité et améliorent les attitudes des étudiants en médecine. Toutefois, le faible nombre de recherches et la petite taille des échantillons soulignent le besoin de formations plus complètes et spécifiques aux différentes spécialités.

RAYONS DE CHANGEMENT : COMMENTAIRE SUR LES INTERVENTIONS POTENTIELLES POUR LA PRÉVENTION DU CANCER DE LA PEAU DANS L'ÉDUCATION MÉDICALE EN ONTARIO

Ce commentaire traite de l'augmentation des taux de cancer de la peau en Ontario et de l'exclusion des populations à la peau foncée des campagnes de prévention solaire. Il propose l'installation de distributeurs de crème solaire dans les facultés de médecine pour promouvoir la sécurité solaire, avec des supports adaptés aux besoins des Peaux de Couleur (PdC). Malgré des obstacles tels que le coût et la résistance au changement, l'implication des professionnels et des étudiants pourrait favoriser des comportements durables de protection solaire et améliorer la santé publique à long terme.

Au nom de toute l'équipe du Journal médical de l'Université d'Ottawa, nous vous remercions de contribuer à la recherche dirigée par les étudiants à l'Université d'Ottawa.

Yannick Galipeau et Jacob Wise
Co rédacteurs en chef (2024–2025)

Exploring Learner Perceptions of Undergraduate Medical Leadership Training at the University of Ottawa

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Date Submitted: January 8, 2023
Date Accepted: September 22, 2023
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.6588

ABSTRACT

Objectives: "Leader" represents one of the key professional competencies outlined in the CanMEDS roles. Currently, the University of Ottawa undergraduate medical education leadership curriculum is being revised to improve the student experience and quality of learning. Here, we gather medical students' attitudes on the curriculum, including mandatory lecture content, electives, and extra-curricular opportunities to inform future changes.

Methods: An optional, anonymous, internet-based, 27-item online survey was administered to students from the 2021 to 2024 Doctor of Medicine graduating cohorts. This survey explored four major themes: 1) self-identified leadership competencies, 2) leadership training satisfaction and 3) opportunities to enhance leadership curriculum.

Results: Of 640 eligible students, 67 individuals (10 % response rate) participated in this survey. Overall, the majority of participants agreed or strongly agreed that as a result of their pre-clerkship leadership education, they were confident in their "communication skills" (n= 51, 77%), "capacity to influence others" (n= 43, 64%), "manage conflict" (n= 45, 68%), "provide" (n= 45, 68%) and "utilize feedback" (n= 56, 84%), and "recognize their strengths" (n= 55, 82%) and "areas of growth" (n= 50, 75%). Regarding areas of improvement, respondents supported the incorporation of leadership workshops, simulated learning, and the conversion of large didactic lectures to small group discussions to enhance the current curriculum. Conversely, students did not support the use of online resources. Major themes identified from qualitative feedback included more experiential learning via small group discussions, workshops and opportunities to practice learned leadership skills.

Conclusion: The data collected in this study suggests that the current curriculum provides meaningful education, but there is room for further optimization. Specifically, shifting toward small-group learning might be preferred over the current curriculum. This feedback will guide decisions to optimize the leadership curriculum learning experience.

RÉSUMÉ

Objectifs : Le terme « leader » représente l'une des compétences professionnelles clés décrites dans les rôles CanMEDS. Actuellement, le programme de leadership de l'enseignement médical de premier cycle de l'Université d'Ottawa est en cours de révision afin d'améliorer l'expérience des étudiants et la qualité de l'apprentissage. Ici, nous recueillons les attitudes des étudiants en médecine sur le programme, y compris le contenu des cours magistraux obligatoires, les cours facultatifs et les opportunités extrascolaires afin d'éclairer les changements futurs.

Méthodes : Un sondage en ligne facultatif, anonyme, comprenant 27 questions, a été administré aux étudiants des cohortes de doctorat en médecine diplômant entre 2021 et 2024. Ce sondage a exploré quatre thèmes principaux : 1) les compétences en leadership auto-identifiées, 2) la satisfaction de la formation en leadership et 3) les opportunités pour améliorer le curriculum de leadership.

Résultats : Sur 640 étudiants éligibles, 67 individus (taux de réponse de 10 %) ont participé à ce sondage. Dans l'ensemble, la majorité des participants étaient d'accord ou tout à fait d'accord pour dire qu'à la suite de leur formation en leadership préexternat, ils avaient confiance en leurs « compétences en communication » (n= 51, 77%), leur « capacité à influencer les autres » (n= 43, 64%), à « gérer les conflits » (n= 45, 68%), à « fournir » (n= 45, 68%) et à « utiliser la rétroaction » (n= 56, 84%), et à « reconnaître leurs forces » (n= 55, 82%) et leurs « domaines de croissance » (n= 50, 75%). Concernant les domaines d'amélioration, les répondants ont soutenu l'incorporation d'ateliers sur le leadership, l'apprentissage par simulation et la conversion de grandes conférences didactiques en discussions en petits groupes afin d'améliorer le programme actuel. En revanche, les étudiants ne sont pas favorables à l'utilisation de ressources en ligne. Les themes majeurs identifiés à partir des commentaires qualitatifs incluaient davantage d'apprentissage expérientiel par le biais de discussions en petits groupes, d'ateliers et d'opportunités de mettre en pratique les compétences de leadership acquises.

Conclusion : Les données recueillies dans le cadre de cette étude suggèrent que le programme d'études actuel fournit un enseignement significatif, mais qu'il est possible de l'optimiser davantage. En particulier, le passage à l'apprentissage en petits groupes pourrait être préféré au programme actuel. Ce retour d'information guidera les décisions visant à optimiser l'expérience d'apprentissage du programme d'études en leadership.

INTRODUCTION

"Leader" represents one of the key professional competencies outlined by the CanMEDS roles to function as an effective physician. The CanMEDS represents a framework that describes the required competencies of Canadian physicians to effectively meet healthcare needs and encompasses seven domains: Leader, Communicator, Collaborator, Health Advocate, Scholar, Professional and Medical Expert.[1] Specifically, poor communication skills, leadership and professionalism are associated with patient dissatisfaction, poor patient outcomes and medico-legal claims.[2] While leadership training is quite prevalent among residency programs and practicing physicians, it is rarely integrated into undergraduate curricula. Within the formal or informal curriculum, many medical schools use large-group didactic sessions and have struggled to establish optimized content delivery formats despite evidence suggesting favourable learning outcomes with small-group teaching, project-based and longitudinal programming.[3,4] Fortunately, at the University of Ottawa, students engage in four large group leadership teaching sessions during their pre-clerkship training. Moreover, students are required to complete two multisource feedback exercises whereby feedback is solicited from 8-10 independent evaluators regarding the students' CanMEDS competencies. In addition, for interested students, there is an option of pursuing a non-mandatory leadership elective. Unfortunately, there is no unified definition of leadership and studies of leadership training programs have struggled to demonstrate tangible quantitative measures of behaviour change.[5] Therefore, student feedback represents a critical surrogate of program effectiveness, reception, and change.[5–8] Specifically, student feedback on teaching is consistent and promotes meaningful educational changes that improve learner satisfaction and knowledge acquisition.[9] Moreover, this form of feedback has been shown to be helpful in guiding program and teaching optimization.[10,11] Consequently, we solicited student feedback to gather medical students' attitudes on the leadership training, including mandatory lecture content, elective, and extra-curricular opportunities. This information was collected with aspirations to evaluate satisfaction with the University of Ottawa's leadership training and help guide changes to optimize the leadership curriculum.

METHODS

Data Collection: an anonymous, internet-based, 27-item online survey study administered to all students from 2021 to 2024 Doctor of Medicine graduating years. This was advertised via social media (Facebook and Instagram) and class-wide emails, which were approved by and disseminated from the local institution's medical student association and leadership curriculum program director. All questions were either single-item or multiple-item responses followed by an open text for student comments and feedback. The survey was designed to take approximately 15-20 minutes to complete. This survey explored three major themes: 1) self-identified leadership competencies, 2) leadership training satisfaction, and 3) opportunities to enhance leadership curriculum. The descriptive statistics for each of the major themes are reported below. This project was reviewed by the University of Ottawa Research Ethics Board and met the criteria of TCPS2 - Article 2.5.

RESULTS

Between May 2022 and September 2022, 67 students completed the survey. Of the respondents, 55 were pre-clerkship students, and the remaining 12 were clerkship students. The survey had a response rate of 10%, with a total of 640 students eligible to participate in the study.

Self-Reported Leadership Competencies

Student respondents were asked to report using a five-point Likert scale whether the current leadership training had positively influenced their knowledge and competencies in key learning domains (Figure 1). Overall, the vast majority of student respondents agreed that the curriculum was beneficial to the learning. Specifically, after completing the leadership training at their current training level, 56 (84%) respondents agreed or strongly agreed that they were more confident in their ability to "utilize feedback," 55 (82%) were more comfortable with their ability to "recognize her strengths," and 50 (75%) were better able to "identify areas of growth" (Figure 1). While still representing the majority, fewer students agreed or strongly agreed that they were better prepared to "manage conflict" (n= 46, 68%), "influence others" (n= 40, 60%) or "provide feedback" towards others (n= 40, 60%) (Figure 1).

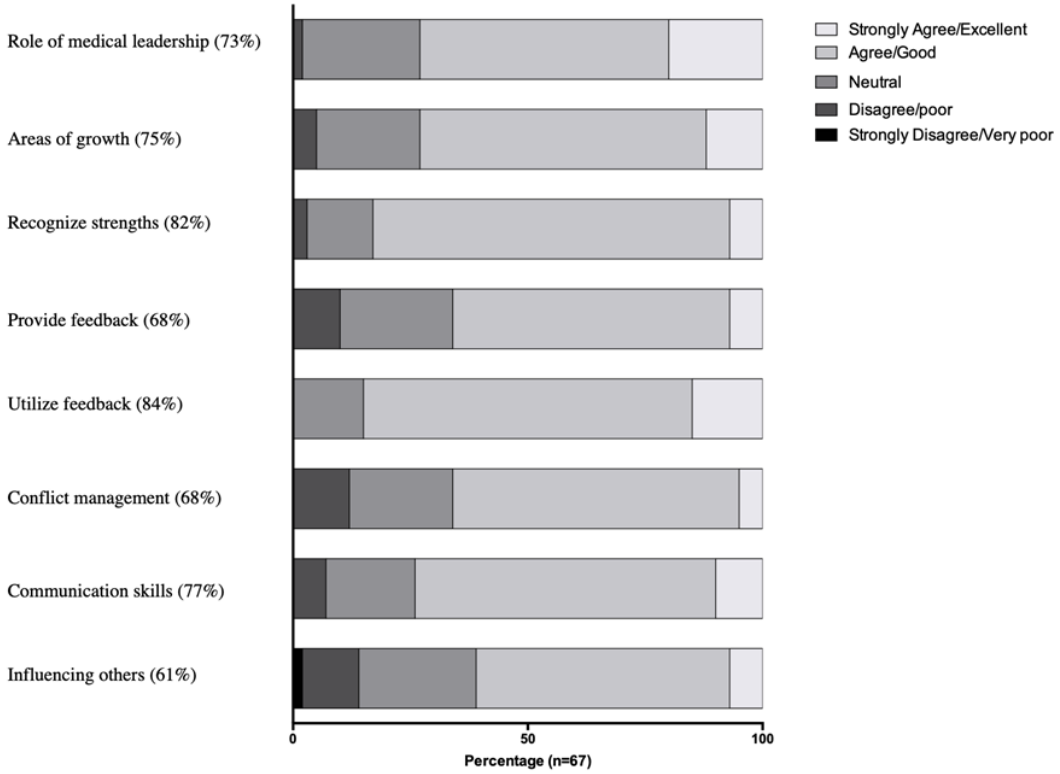

Figure 1: Self-reported confidence in skills taught as part of the Leadership Objectives. Percentages represent the summation of Agree and Strongly agree statements, n=67.

Leadership Training Satisfaction

Student respondents reported dissatisfaction with the overall experience relating to their leadership curriculum and opportunities for mentorship training. While 45 (67%) respondents were satisfied with the opportunities for leadership experiences within the curriculum, only 26 (39%) respondents believed that the overall leadership training was good or excellent. Most respondents rated the pre-clerkship leadership lectures as neutral (n= 27, 40%), poor (n= 17, 25%) or very poor (n= 1, 2%). Additionally, the majority of respondents did not believe the pre-clerkship leadership lectures had prepared them in anticipation of their clerkship learning experiences (n= 48, 72%) (Figure 2A).

As part of the leadership curriculum, students complete a multisource feedback exercise (MSF) at the end of their first and third years of training. Students are asked to solicit feedback from at least 8 colleagues, mentors, and preceptors in order to determine their aptitude regarding the CanMEDS domains (Leader, Communicator, Collaborator, Health Advocate, Scholar, Professional and Medical Expert) using a nominal marking scheme. This exercise, which is meant to allow students to garner feedback, develop further self-awareness, and encourage growth, was not reported upon positively in this survey. Only 25 (37%) respondents reported that the value of the MSF exercise was good or excellent. Similarly, only 21 (31%) respondents "learned something about themselves" from from completing this exercise and even fewer made "major changes as a direct result of the feedback" they received from the MSF (n= 15, 22%) (Figure 2B).

Opportunities to Enhance Leadership Training

When asked to propose additional content or topics they would like to see in future renditions of the curriculum, 47 (70%) respondents indicated no additional content was required. While participants were generally satisfied with the content, only 4 (6%) respondents indicated that no changes are required to the current curriculum with regard to content delivery and format. Specifically, participants were given an opportunity to select several proposed curriculum enhancements that they believed would enhance the learning experience, as shown in Figure 3. The majority of suggested changes selected by participants included more small group discussions (n= 36, 54%), the utilization of standardized simulation scenarios (n= 37, 55%), the provision of leadership workshops (n= 35, 52%) and the creation of a leadership elective (n= 35, 52%) (Figure 3).

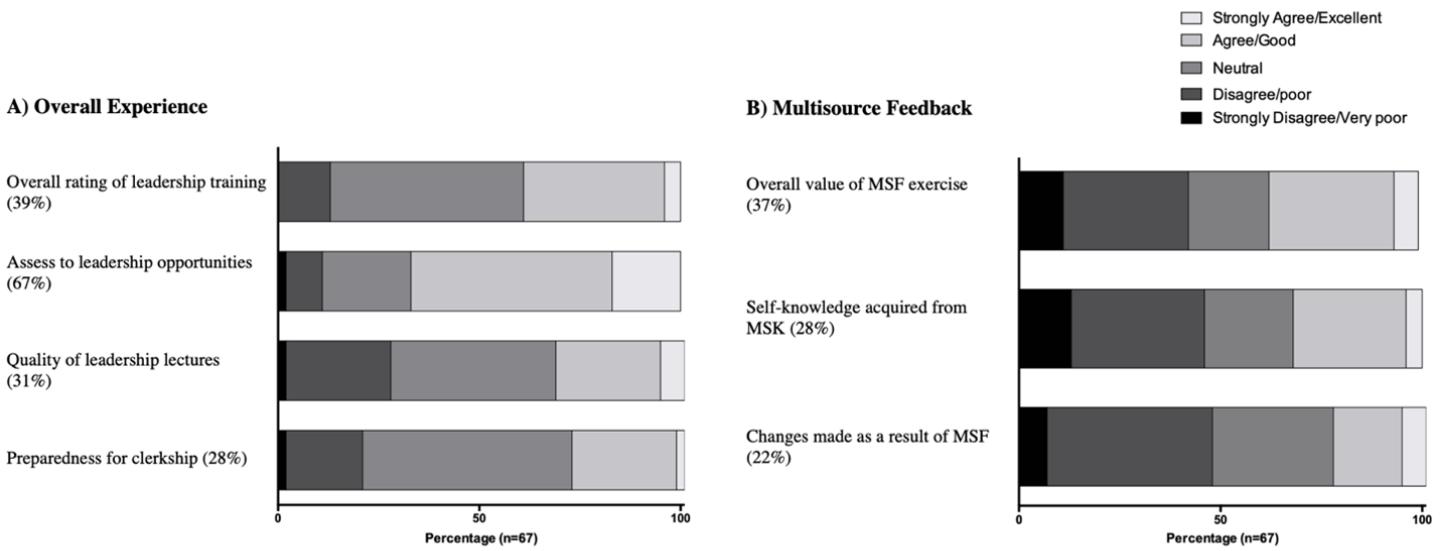

Figure 2: Leadership Training Satisfaction. Participant reported satisfaction with the overall leadership curriculum (2A) and specifically the Multisource Feedback Exercise (2B). Percentages represent the summation of Agree and Strongly agree statements, n=67.

Regarding additional leadership training and opportunities, 27 (40%) respondents would like "additional training," and 34 (50%) were unsure or indifferent towards "additional hours being devoted to leadership training." Regarding avenues of additional leadership training delivery, "self-learning modules" were an unpopular learning modality (n= 50, 74%). However, 54 (80%) respondents agreed to incorporate "standardized patient scenarios" and supported the emphasis on "small group discussions over large group lectures." Finally, 35 (52%) participants were interested in the option to participate in a leadership elective for supplemental learning (Figure 3).

DISCUSSION

Here, we have solicited anonymous feedback from current medical students at University of Ottawa regarding leadership training and recommendations for program enhancement with the goals of incorporating this feedback to inform curriculum changes. The respondents reported increased competencies and confidence in multiple curriculum objectives, such as receiving and giving feedback as well as developing a better understanding of leadership and medicine. However, only 39% of student respondents reported a good or excellent leadership training experience, which indicates there is further room for curriculum improvement and reform. When asked if additional content was warranted, student participants generally agreed that the curriculum content was satisfactory, with most respondents responding that no additional content was required (70%). However, most suggestions for improvement are related to content delivery. Preferred methods of content delivery include small group discussions, workshops, and simulated learning. Many students (52%) also indicated interest in additional leadership opportunities in the form of an elective. Although there is already a leadership elective offered, it is currently limited to 20 students annually through a lottery process. The feedback garnered from this study will provide meaningful insight for curriculum changes and learning optimization for future cohorts at the University of Ottawa. This initiative can be used as a template to influence other curriculum renewal. Notably, student feedback is known to promote positive curriculum changes. Moreover, 'Empowerment Evaluation,' which entails incorporating feedback from all stakeholders, including students, faculty, and administrators, in an egalitarian process of review, was described by the Stanford University School of Medicine and has been found to be an effective method of transforming the medical curriculum.[12]

Here, most respondents supported leadership training; however, findings suggested that the curriculum could be further optimized. Most students (70%) did not believe curriculum content changes were necessary, but most responded positively to alternative modes of content delivery

such as standardized patient learning scenarios (54%), leadership workshops (52%) and small group sessions (52%). These findings are consistent with previous literature supporting these preferred methods of delivery of leadership curricula in medical school.[13–15] Bharwani et al. acquired student feedback from attendees registered at the University of British Columbia, University of Alberta and University of Calgary and found that the capacity for creating a compelling vision, communication skills and conflict resolution are notable skills identified to be missing in medical school leadership programs.[14] Varkey et al. discerned that 85% of medical student respondents identified leadership, conflict management, communication and teamwork as necessary skills that should be taught, yet are underrepresented in medical school training.[16] Similarly, a systematic review of 111 studies found that key features of a successful medical training curriculum include experiential learning, small group sessions, regular opportunities for feedback and reflection and longitudinal programing.[15]

The MSF exercise is a well-established tool used in undergraduate and post-graduate medical education.[17] Unfortunately, among our respondents, students indicated that the MSF was not a positive learning experience. Few student respondents reported gleaning more insight into their own competencies (31%), and even fewer indicated that they had made a change as a direct result of the feedback provided (22%) by the MSF. It is possible the format of delivery was inappropriate or insufficient to incite meaningful feedback and or change. At the University of Ottawa, the MSF exercise is conducted electronically using an anonymous form that provides nominal scores for performance in the CanMEDS competencies. An issue with technology-mediated methods of feedback includes the one-way transmission of information whereby respondents can get fixated on grade scoring.[18] Additionally, learners report dissatisfaction with feedback when there is inadequate guidance or documentation to support improvement; this is often seen in quantitative evaluations.[19] A systematic review of MSF in medical education noted that the influence and use of MSF results varied heavily on the format of feedback, specifically results varied depending on if it had been facilitated or included descriptive narrative comments.[17] To further enhance the MSF exercise, the curriculum should consider the incorporation of qualitative feedback.

However, short narrative comments may lose their evaluative power when there is no dialogical context, where there is no room for clarification or further explanation.[20] Dawson et al. describe meaningful feedback as 'usable, detailed, considerate of affect and personalised to the student's own work.[21] Consequently, educating evaluators on strategies and techniques to optimize feedback is warranted to maximize the quality of the feedback and impact of the simulation exercises.

The data collected from the surveys suggest that the majority of respondents would support incorporating simulation-based exercises and emphasizing small group discussions over large didactic lectures. This is supported by the literature in medical leadership education. Despite the fact that medical students favour simulation and facilitated small group discussions over didactic lectures, less than 30% of medical leadership programs employed mixed approaches to teach and apply leadership skills, with most curricula failing to demonstrate changes in student behaviour.[5] Generally, leadership programs do not give students an opportunity to practice and apply leadership skills as they are predominantly didactic and encompass short-term course-based programming, often consisting of one or two sessions of condensed seminars. Simulation provides the opportunity for students to practice their acquired knowledge of leadership skills and apply them in high-fidelity scenarios, providing an opportunity for enhanced leadership training amongst undergraduate medical trainees.[22] The use of simulation-based learning has been shown beneficial in long-term skill development and retention. For example, Hunziker et al. found that a brief 10-minute lecture followed by a simulated learning scenario significantly increased patient-centered outcomes immediately and four months after the program was administered.[23] We do recognize that while extremely beneficial, simulation-based learning can be extremely resource intensive, and financially limiting.[24]

The study has a few limitations that must be addressed. Firstly, the generalizability of this survey to the general medical class is limited by the poor response rate. Nevertheless, our response rate (n= 67/640, 10%) was comparable to that of online quality improvement surveys for physicians without monetary incentives, which were 8-15%.[25,26] In future surveys, we could increase participant response rate through repetitive advertising, in-person questionnaires and monetary incentives.

Likewise, it is possible our sample represents a biased cohort given that it contains predominantly pre-clerkship students. Furthermore, there may be a selection bias as it may have catered to individuals who were more dissatisfied with the current curriculum or individuals passionate regarding leadership training or curriculum changes. To account for potential biases, future surveys could collect additional demographic information such as age, gender, and previous education to evaluate demographic differences in program satisfaction, leadership interests and program feedback. While we attempted to collect qualitative feedback via written text responses, too few respondents provided comments (n= 11, 16%) in order to enable meaningful qualitative analysis of the feedback received. Future surveys should incorporate qualitative analysis, such as semi-structured interviews, to garner more robust data and recommendations for program enhancement. These methods encourage the divulsion of personalized feedback and facilitate reflection. Consequently, anonymous surveys may not be as strong of a tool for qualitative comments and suggestions.[27] Instead of self-reported subjective metrics of knowledge acquisition, more objective measures of knowledge retention, such as quizzes or skill assessments, would have permitted a more accurate representation of learning from the current leadership curriculum.

Effective leadership training in medical education is necessary to ensure that future physicians have the knowledge and skills needed to navigate the healthcare system, collaborate, and deliver excellent patient care. Well-designed leadership training can improve physician team effectiveness, reduce medical errors, improve overall healthcare expenditure and improve patient satisfaction.[7,28,29] Consequently, the survey data was utilized to promote systemic and institutional change using an empowerment evaluation approach.[12] In response to the survey data, the University of Ottawa leadership working group committee was formed and comprised of medical faculty and students to guide leadership curriculum reform. A modified, longitudinal leadership curriculum was proposed for the graduating class of 2026 with considerations from the survey data. The future undergraduate medical leadership curriculum will focus on core competencies in identifying and resolving conflict, reflecting on feedback, and setting goals to achieve personal growth, providing effective feedback to patient's peers and colleagues, effectively collaborating and communicating with others and demonstrating the concepts of effective leadership.

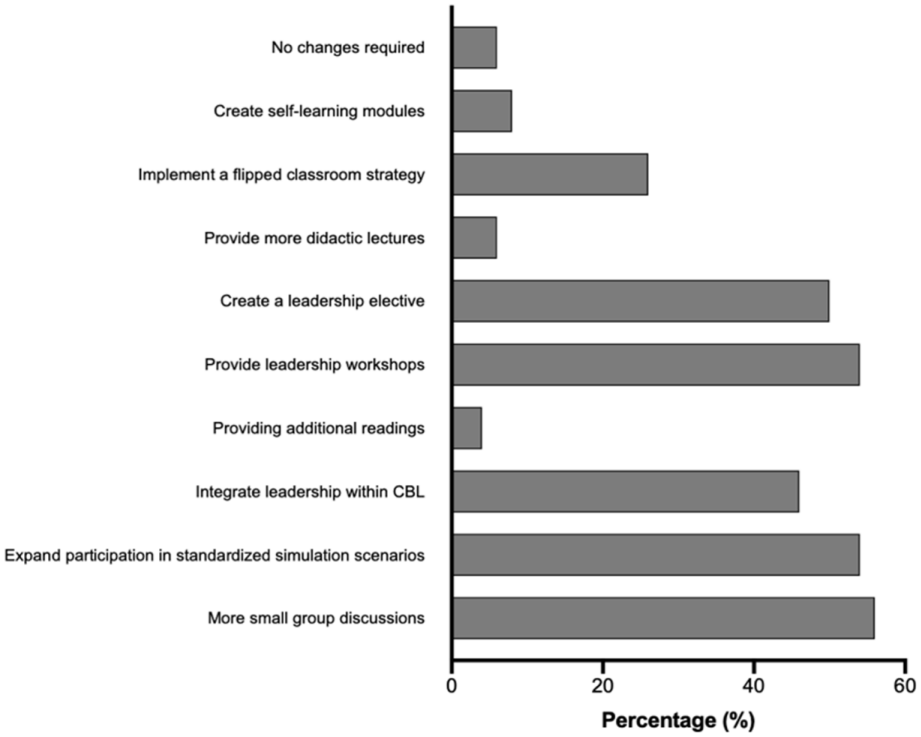

Figure 3: Recommendations for Leadership Curriculum Enhancement. Responses to predetermined suggestions for curriculum improvements, n=67. Percentages represent proportions of selected suggestions by respondents. Respondents were permitted to pick multiple suggestions.

An emphasis will be placed on flipped classroom discussions, small group breakout discussions and workshops. Additionally, further leadership training opportunities, with additional resources, will be devoted to the extracurricular first-year leadership elective to increase potential student enrolment.

CONCLUSION

The feedback solicited from medical trainees suggests that current leadership training is not effective nor optimally administered. Leadership represents a critical physician skill that is associated with professional competency, quality of patient care and satisfaction. Respondents support alternative learning strategies such as experiential and small group learning. This feedback has been used to conduct decisions to optimize the leadership curriculum learning experience with current education reforms. Further qualitative surveys and knowledge assessments will be required to examine student reception to new curriculum changes.

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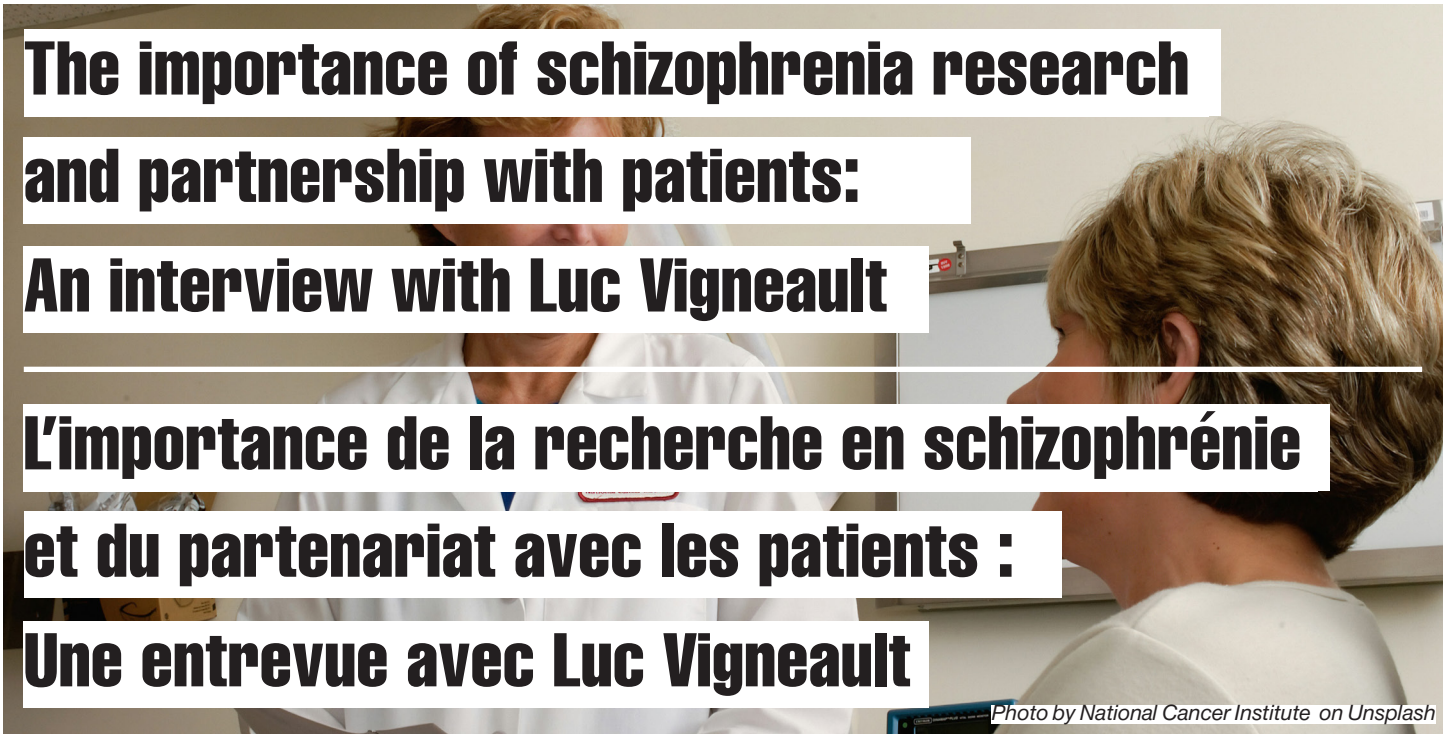
Conflicts of Interest Disclosure

There are no conflicts of interest to declare.

The importance of schizophrenia research and partnership with patients: An interview with Luc Vigneault

L'importance de la recherche en schizophrénie et du partenariat avec les patients : Une entrevue avec Luc Vigneault



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Date Submitted: February 2, 2023
Date Accepted: December 11, 2023
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.6626

Keywords: *Schizophrenia, Patient-Partner, Research, Recovery*

SETTING

Last May, **"Blinded for Review"** and **"Blinded for Review"** had the privilege of virtually interviewing Mr. Luc Vigneault, an author, speaker, and instructor of 62 years who lives with a diagnosis of schizophrenia. Mr. Vigneault is also a patient partner member of the Canadian Network for Research in Schizophrenia and Psychoses. Since 1994, he has been speaking on themes of recovery, challenging stigma, and the demystification of mental health in community, university, institutional, and private settings. In addition to all he has done, Mr. Vigneault has accumulated several years of experience as a peer support for people living with mental health difficulties. He is currently working on different projects at different universities in Québec.

MISE EN CONTEXTE

En mai dernier, « **Caché pour révision** » et « **Caché pour révision** » ont eu le privilège d'interviewer virtuellement M. Luc Vigneault, un auteur, conférencier et formateur âgé de 62 ans vivants avec un diagnostic de schizophrénie, qui est aussi membre du Réseau canadien de recherche sur la schizophrénie et les psychoses en tant que patient partenaire. Depuis 1994, il donne entre autres des conférences sur les thèmes du rétablissement, de la lutte à la stigmatisation ainsi que sur la démystification des troubles mentaux et ce, dans des milieux communautaires, universitaires, institutionnels et privés. Monsieur Vigneault cumule aussi plusieurs années en tant que pair-aidant auprès de personnes vivant avec des problèmes de santé mentale. Il travaille présentement sur différents projets dans des universités à travers le Québec.

Would you be able to tell us about some of the different projects you are currently involved in as a patient partner?

I worked with Nicolas Franck, a psychiatrist in Europe. His work is dedicated to helping people with cognitive disorders; he is an expert over there. In my opinion, this research subject is extremely important. I work with Nicolas at the peer support level; he is a founder of a peer support school in Europe. He invited me to give lectures and present at conferences on my journey, my recovery, and my cognitive impairments. I have made it my personal mission. For a long time, I believed that I wasn't intelligent until I learned that the issues were caused by a cognitive disorder and that it can be treated.

I also work with Caroline Collard, who is a professor and researcher at Université Laval. She leads a research project on cognitive disorders among students who have mental health challenges. She is in the process of developing concrete tools to help support young people. In this project, I am a part of the consultation team and I share my expertise as a person with lived experience. The tools should be available by fall. They will be accessible to both students and the people who work with them.

I am also a member of the research teams CAP-rétablissement and VITAM at Université Laval as well as the Canadian Network for Research in Schizophrenia and Psychoses with Tania Lecomte. Occasionally, we will meet and ask ourselves: "Who among us should be the person commenting on this issue?" Sometimes it is the patients who are in the best position to talk to managers, sometimes it is the psychiatrists, and other times, the psychologists. The strength is truly in the teamwork. It is important to acknowledge who is in the best position to discuss different topics. For example, for the book on stigmatization that I co-wrote with Tania Lecomte, she was better suited to speak about teaching. If I had spoken about it, it would not have had the same impact.

I do a lot of work on the importance of working with families in research. There are studies on this subject. I am working on a research project on confidentiality with families with Marie-Hélène Morin, who is at the Université du Québec - Rimouski. It isn't that mental health service users do not want to talk to their families, but rather the service providers. We have to change this.

What makes research so important to you?

When I was at the hospital, there were workshops on substance abuse, workshops on hygiene, etc. Nobody went to them. I organized a workshop called "How to get out of the Hospital and never come back". None of the rooms had patients anymore because they were all at my workshop. We offered the same activities as the other workshops, but we gave them meaning. We gave hope. We asked them about their needs and their passions. I asked them: "Getting out of the hospital is a great life project, do you want to try it?" Life projects can be short-term and that's enough to get them going. Once they are out, the goal is to never return and for that, obviously, we need to discuss substance use.

They would occasionally call me from the hospital and say, "Mr. Tremblay doesn't want to get out of bed today." I answered, "What does he have to do today?" They answered, "Nothing." "Then why would he get up today then? If we motivate him, give him a project, he will want to get up." For me, there are 4 fundamental pillars of recovery: hope, reclaiming the practice of taking action, work, and family. Work regulates life, it provides structure and a reason to get up in the morning, to get dressed, etc. Research is my personal life project. I am currently working on a project with the Université de Montréal on medical assistance in dying, and we are seeing that outside of patients with terminal cancer, we do not offer all the care that exists to these people, up until they ask for medical assistance in dying. I, myself, have also lived through this situation, and that is why research is important to me. Research allows us to say, "You see, what I experienced, there are millions of others who also experienced it."

Luc Vigneault

Source: Université Laval, https://www.ulaval.ca/en/about-us/awards-and-distinctions/doctorats-honoris-causa/luc-vigneault

Tell us what research represents to you.

Research is a credible, solid tool that details needs. When I talk to managers and caregivers, sometimes, when I tell them what I am going through, it seems that it goes completely over their heads. When research confirms what we say, we are taken more seriously.

We often hear the phrase: "To feel fulfilled you have to accept the illness." I was talking to my colleagues, and we do not know anybody for whom everything changed the day they accepted their illness. I am 62 years old, and I still do not accept that I have an illness, I will never accept it. However, I recognize that I have difficulties and that I am not like other people. Research has shown that I was right: you don't have to accept your illness in order to recover from it. We can recover as a result of pressure from others or external factors, we see that in addiction. For example, in addiction, putting someone in treatment against their will has an impact. It is not always desirable, but it does have an impact.

Research has also shown that a therapeutic relationship is fundamental. Whether you are a physician, psychologist, or social worker, without a respectful therapeutic relationship you are going nowhere. A person's profession is not of the utmost importance... It is the therapeutic relationship that matters, listening, giving a warm welcome, and feeling appreciated, heard, and considered. Alas, the current system does not encourage this.

According to you, what is the most important component of research?

I believe that the patient must be a key stakeholder in the research team. In the research teams with which I work, I am even involved in grant applications. We have submitted applications to the FRQ and the IRSC, and patient partners are co-recipients of the grants alongside the PhD researchers. So, from the beginning, I am a co-recipient of the grant. We are all members of the same team, and we all have knowledge. Integrating experiential knowledge with scientific knowledge is what makes research strong; all perspectives are present.

The researchers I know who have worked with patient partners in the past no longer want to work without them. Recently, I worked with the Université de Bordeaux on a project that was also a doctoral thesis.

So, I was working on it for 4 years. I then became the first patient partner in history to be a member of the defence committee of a doctoral thesis, the defendant was a psychologist named Kevin-Marc Valéry. Kevin found it inconceivable that I would not be on the defence committee after 4 years of working together. Tania Lecomte was the president of the committee and together, we broke the glass ceiling by having a patient approving the title of 'doctor' to a student. It was the first time in the world, and we hope that it becomes the norm—that we integrate patient partners into all the steps of research. The message that this sends to patients is, "We have heard you. Not only have we heard you, but we are applying what you have told us. You are our equals."

I attribute a lot of importance to the role of the family in recovery and research. Research has also demonstrated that the presence of families is fundamental. The family perspective enriches research and improves the research question and analysis to better respond to patient needs. Research informs education; Education informs the clinician; the clinician then cares for the patient. It is an ongoing cycle. In my opinion, making changes happens through research, and it is important to include families in all of these spheres.

If you had to make a recommendation to researchers who are seeking to do research with patient partners, what would it be?

First, all universities should have training courses for patient partners and researchers. In these courses, patients and researchers learn to interact and collaborate. Then, one can go find experienced patient partners, like myself, to guide new patient partners in research. What's important is not to require them to be included in all aspects of research, but to give them the opportunity to be included. Occasionally, researchers will tell me, "We are entering a phase of research that is difficult, if you do not want to be included, that is okay, but if you do, you can be, but it is as you wish." The financial aspect interests me less, but it is my decision not to participate, not them telling me not to.

Accounting for patient partner salaries in research is also needed when submitting grant applications. Funders are familiar with this, and the door is already open, which is fantastic. Speak to your colleagues who are already doing research with patient partners, and they can help you. What is important is to clearly set the standards.

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At Université Laval, in our training for patient partners, we explain the process of research questions. We also explain the role and expectations of patient partners. There are some patients who are advocates, but there is no place in research for that. In research, one must take a step back from their illness. Everyone agrees that the system needs reform, you do not need to assert your arguments at the table, as everybody agrees with that. When someone invites you to take a seat at the table, it is because the door is open, and you do not have to break into open doors.

Finding a patient partner who has lived experience of the subject at hand is ideal. For example, if you are studying homelessness, it requires a patient who has known homelessness. In some universities, there are patient partner offices where researchers can find a list of patient partners with their specialties. There is a lot of research and training that already exists on the subject. Inform yourselves, ask around, and you will find what you need.

Pourriez-vous nous parler un peu de différents projets de recherche dans lesquels vous êtes actuellement impliqué en tant que patient partenaire?

J'ai travaillé avec Nicolas Franck, qui est médecin psychiatre en Europe. Il se consacre aux gens ayant des troubles cognitifs, il est une sommité là-bas. À mon avis, ce sujet de recherche est très important. J'ai travaillé avec Nicolas au niveau de la pair-aidance. Il a fondé une école de pairs-aidant en Europe. Il m'a invité à y donner des cours et des conférences sur mon parcours, mon rétablissement et, entre autres, sur mes problèmes cognitifs. J'en fais mon cheval de bataille. J'ai longtemps pensé que je n'étais pas intelligent, jusqu'à ce que j'apprenne que ce soient des troubles cognitifs et que cela se soigne.

Je travaille actuellement avec Caroline Collard , qui est professeure et chercheuse à l'Université Laval. Elle a un projet sur les troubles cognitifs chez les étudiants qui ont des troubles mentaux. Elle est en train de créer des outils concrets pour accompagner ces jeunes. Je fais partie des gens qui offrent des conseils pour le projet et je partage mon expertise en tant que personne n'atteinte. Les outils devraient être disponibles cet automne. Ces outils vont être accessibles à la fois aux étudiants et aux intervenants qui vont les accompagner.

Je fais partie de l'équipe de recherche *CAP-rétablissement* et le Centre de recherche VITAM en santé durable à l'Université Laval. Je fais aussi partie du Réseau canadien de recherche sur la schizophrénie et les psychoses avec Tania Lecomte. Parfois on se réunit et on se demande « Qui parmi nous est le mieux placé pour dire certaines choses ? ». Parfois ce sont les patients qui sont mieux placés pour parler aux gestionnaires, parfois c'est le psychiatre, parfois c'est le psychologue. C'est l'équipe qui fait la force. Il faut être capable de dire qui est le mieux placé. Par exemple, pour le livre que j'ai coécrit avec Tania sur la stigmatisation, c'était elle la mieux placer pour parler de l'enseignement. Si c'est moi qui en avais parlé, ça n'aurait pas eu le même impact.

Je travaille beaucoup sur le fait qu'il faut travailler avec la famille en recherche. Il y a des recherches au sujet. Je travaille sur une recherche sur la confidentialité avec la famille avec Marie-Hélène Morin, qui est à l'Université du Québec à Rimouski. Ce n'est pas vrai que les usagers ne veulent pas parler à leur famille, ce sont les intervenants qui ne veulent pas. Il faut changer ça.

Qu'est-ce qui rend la recherche si importante pour vous ?

Quand j'étais à l'hôpital, il y avait des ateliers pour la toxicomanie, des ateliers sur l'hygiène, etc. Personne n'y assistait. J'ai organisé un atelier qui s'appelait Comment sortir de l'hôpital et ne jamais revenir. Il n'y avait pas de patient dans les chambres, tout le monde était à mon atelier. Nous donnions les mêmes activités que les ateliers sur la toxicomanie et les autres, mais on leur donnait un sens. On donnait l'espoir. On leur demandait leur besoin, leur passion. Je leur demandais « Sortir de l'hôpital c'est un beau projet de vie, est-ce que ça vous tente ? ». Les projets de vie peuvent être courts termes, c'est assez pour les mettre en action. Une fois qu'ils sont sortis, le but c'est de ne pas revenir et pour ça évidemment qu'on va devoir parler de la consommation de drogue.

On m'appelait parfois de l'hôpital et on me disait « Monsieur Tremblay il ne veut pas se lever aujourd'hui ». Je leur demandais « Qu'est-ce qu'il a à faire monsieur Tremblay aujourd'hui? » Il me disait « Rien ». « Pourquoi

est-ce qu'il se lèverait aujourd'hui alors? Si on lui donne une belle motivation, un projet, il va vouloir se lever. » Pour moi, il y a quatre piliers fondamentaux dans le rétablissement : l'espoir, la réappropriation d'agir, le travail et la famille. Le travail, ça vient régulariser la vie, ça donne une raison de se lever le matin, de se laver, etc. La recherche c'est mon projet de vie. Je travaille présentement sur une recherche avec l'Université de Montréal sur l'aide médicale à mourir et on remarque qu'en dehors des gens qui sont en phase terminale de cancer, l'on n'a pas offert tous les soins qui existaient à ces personnes, jusqu'à ce qu'il demande l'aide médicale à mourir. J'ai moi-même vécu cette situation et c'est pour ça que la recherche est aussi importante pour moi. La recherche permet de dire : « Vous voyez, ce que j'ai vécu, il y en a des milliers d'autres qui l'ont vécu. »

Parlez-nous de ce que la recherche représente pour vous.

La recherche c'est un outil crédible, solide, qui vient détailler les besoins. Quand je parle aux gestionnaires et aux soignants, parfois lorsque je leur dis ce que je vis, on sent que ça leur passe 10 pieds par-dessus la tête. Lorsqu'une recherche vient confirmer ce qu'on dit, on nous prend plus sérieusement.

On entend souvent « pour s'épanouir, il faut accepter la maladie ». Je parlais à mes collègues et on ne connaît personne qui ont accepté la maladie au jour que tout a changé pour eux. J'ai 62 ans et je n'accepte toujours pas ma maladie, je ne l'accepterai jamais. Par contre, je reconnais que j'ai des difficultés, que je ne suis pas comme les autres, je reconnais ça. La recherche a démontré que j'avais raison, c'est faux qu'il faut accepter sa maladie pour se rétablir. On peut se rétablir par des pressions ou facteurs externes, on le voit en toxicomanie. En toxicomanie mettre quelqu'un en cure contre son gré, cela un impact. Ce n'est pas toujours souhaitable, mais cela un impact.

La recherche a aussi démontré que ce qui est fondamental est le lien de confiance. Peu importe que tu sois médecin, psychologue, travailleuse sociale, sans un lien de confiance, tu ne vas nulle part. La profession de la personne ne vient pas au premier rang de ce qui est important... c'est le lien de confiance, l'écoute, l'accueil chaleureux, se sentir apprécié et écouté, être considéré. Hélas! le système actuel ne favorise pas ça.

Qu'est-ce qui est la chose la plus importante en recherche, selon vous?

Pour moi, il faut que le patient fasse partie prenante de l'équipe de recherche. Dans les équipes de recherche où je travaille, je fais même partie des demandes de subventions. Nous avons fait des demandes à FRQ et IRSC et ce qu'on dit c'est que les patients partenaires sont codétenteurs de l'octroi, comme les chercheurs avec un PhD. Donc, dès le départ, je suis codétenteur de l'octroi. Nous sommes tous membres de l'équipe, nous avons tous un savoir. Intégrer le savoir expérientiel avec le savoir scientifique, c'est ce qui fait la force de la recherche, tous les points de vue sont là.

Les chercheurs que je connais, qui ont travaillé avec de patients partenaires, ne veulent plus travailler sans eux. Récemment, j'ai travaillé avec l'Université de Bordeaux sur une recherche qui était également une thèse doctorale. Donc, j'y étais pendant quatre ans. Je suis aussi devenu le premier patient partenaire de l'histoire à être membre du jury d'une thèse doctorale, d'un psychologue qui s'appelle Kevin-Marc Valéry. Pour Kevin-Marc, c'était inconcevable que je ne fasse pas partie du jury après avoir travaillé quatre ans ensemble. Tania Lecomte était présidente du comité de jury et avec moi en tant que membre, nous avons brisé un plafond de verre, où un patient approuvait le titre de docteur d'un étudiant. C'était une première mondiale – en espérant que ça devienne la norme un jour – qu'on intègre les patients partenaires dans toutes les étapes de la recherche. Le message que cela envoie aux patients c'est le suivant : « On vous a entendus. Non seulement on vous a entendus, mais on met en application ce que vous nous avez dit. Vous êtes nos égaux. »

J'accorde beaucoup d'importance au rôle de la famille dans le rétablissement et la recherche. La recherche a aussi démontré que la présence des familles sont fondamentales. Le point de vue des familles viennent enrichir la recherche, vient bonifier la question de recherche et l'analyse pour répondre le mieux possible aux besoins des patients. La recherche, c'est ce qui va nourrir l'enseignement; l'enseignement c'est ce qui nourrit le clinicien; et le clinicien soigne le patient. C'est une roue qui tourne. Selon moi, pour changer les choses, c'est par la recherche que ça passe et c'est important d'y inclure la famille de l'ensemble de ces sphères.

Si vous aviez une recommandation à faire aux chercheurs qui veulent s'ouvrir à la recherche avec de patients partenaires, quelle serait-elle?

D'abord, toutes les universités ont des formations pour les patients partenaires, elles ont aussi des formations pour les chercheurs. Dans ces formations, les patients et les chercheurs apprennent à se côtoyer et à travailler ensemble. Ensuite, on peut aller chercher de patients partenaires d'expérience, comme moi, pour guider de nouveaux patients partenaires de recherche. L'important ce n'est pas obligatoirement de les inclure dans l'ensemble des parties de la recherche, mais de leur offrir l'opportunité de l'être. Parfois les chercheurs me disent : « On rentre dans un bout de la recherche le plus ardu, si tu ne veux pas être là c'est correct, si tu veux être là, tu seras là, mais sinon c'est comme tu veux ». L'aspect financier, ça m'intéresse moins, mais c'est moi qui décide de ne pas y aller, pas eux qui me le disent.

Il faut aussi prévoir un salaire pour les patients partenaires de recherche dans les demandes de subventions. Les donneurs de fonds y sont habitués, la porte est déjà ouverte, c'est ça qui est fantastique. Parler à vos collègues qui font déjà des recherches avec de patients partenaires, ils vont vous aider. Ce qui est bien important c'est d'indiquer clairement les règles.

À l'Université Laval, dans nos formations de patients partenaires de recherche, on explique le processus de question de recherche. On explique aussi le profil et les attentes envers les patients partenaires de recherche. Il y a certains patients qui sont des militants, mais ce n'est pas la place en recherche pour ça. En recherche, il faut avoir du recul sur sa maladie, un peu comme moi. Tout le monde est d'accord que le système a besoin d'une réforme, tu n'as pas besoin de mettre ton point sur la table, tout le monde est d'accord avec ça. Quand quelqu'un t'invite à t'asseoir à une table, c'est parce que la porte est ouverte, tu n'as pas besoin de défoncer les portes ouvertes.

Aller chercher un patient partenaire qui a du vécu à ce sujet est l'idéal. Par exemple, si tu fais une recherche sur l'itinérance, il faudrait un patient qui a connu l'itinérance. Dans certaines universités, il y a des bureaux de patients partenaires, où les chercheurs peuvent y trouver une liste de patients partenaires avec leurs spécialités. Il existe déjà plein de recherches et de formations à ce sujet. Informez-vous et vous allez trouver.

Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Identifying Gaps in the Teaching of Medical Literature Critical Appraisal Skills: A Needs Assessment Survey of Medical Students

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Date Submitted: April 6, 2023
Date Accepted: January 18, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.6727

ABSTRACT

Objective: Acquisition of critical appraisal skills during medical training is essential for providing high-quality evidence-based patient care. To ensure the effective and durable acquisition and application of these skills, within an overcrowded undergraduate curriculum, the learning needs of medical students must be better understood. The objective of this survey was to explore medical students' medical literature critical appraisal skills and determine their educational needs.

Methods: A web-based survey was administered to University of Ottawa medical students over a 2-month period. The survey captured demographic information, educational experiences, the perceived value of critical appraisal skills, and learning preferences for the development of these skills. Proportions were reported for both categorical and ordinal variables.

Results: Fifty-nine students completed the survey. The majority of respondents reported that they were lacking both competence (57%) and confidence (75%) in critical appraisal. The most common content delivery methods for teaching critical appraisal skills were lectures and seminars. However, journal club, case-based learning, and journal articles were perceived by respondents as being more effective content delivery methods.

Conclusion: Most students recognize the clinical practice value of critical appraisal but report lacking competence and/or confidence for successfully employing these skills for patient care. Interestingly, students' preferred content delivery methods differed from those most commonly utilized in our undergraduate medical curricula, highlighting a shortcoming in the teaching of evidence-based medicine.

RÉSUMÉ

Objectif : L'acquisition de compétences d'évaluation critique au cours de la formation médicale est essentielle pour fournir aux patients des soins de qualité fondés sur des données probantes. Pour garantir une acquisition et une application efficace et durable de ces compétences, dans le cadre d'un programme d'études de premier cycle surchargé, les besoins d'apprentissage des étudiants en médecine doivent être mieux compris. L'objectif de ce sondage était d'explorer les compétences des étudiants en médecine en matière d'évaluation critique de la littérature médicale et de déterminer leurs besoins en matière d'éducation.

Méthodes : Un sondage en ligne a été administré aux étudiants en médecine de l'Université d'Ottawa sur une période de deux mois. L'enquête a recueilli des informations démographiques, des expériences éducatives, la valeur perçue des compétences d'évaluation critique et les préférences d'apprentissage pour le développement de ces compétences. Les proportions ont été rapportées pour les variables catégorielles et ordinales.

Résultats : Cinquante-neuf étudiants ont répondu à l'enquête. La majorité des répondants ont indiqué qu'ils manquaient à la fois de compétences (57%) et de confiance (75%) en matière d'évaluation critique. Les méthodes les plus courantes pour enseigner les compétences en matière d'évaluation critique sont les cours magistraux et les séminaires. Cependant, les clubs de lecture, l'apprentissage basé sur des cas et les articles de journaux ont été perçus par les répondants comme étant des méthodes de transmission de contenu plus efficaces.

Conclusion : La plupart des étudiants reconnaissent la valeur de l'évaluation critique dans la pratique clinique, mais déclarent manquer de compétences et/ou de confiance pour utiliser avec succès ces compétences dans les soins aux patients. Il est intéressant de noter que les méthodes d'enseignement préférées des étudiants diffèrent de celles qui sont le plus souvent utilisées dans nos programmes d'études médicales de premier cycle, ce qui met en évidence une lacune dans l'enseignement de la médecine fondée sur des données probantes.

INTRODUCTION

The plethora of published medical literature, coupled with rapidly evolving clinical knowledge and practice, demands that physicians are competent in critically appraising medical literature to ensure the delivery of safe, timely, and cost-effective care, in accordance with their patients' preferences.[1-6] For instance, a scoping review of 636 articles found that implementation of evidence-based practices resulted in widespread improvement in patient outcomes (including but not limited to infection, length of stay, and mortality) as well as healthcare savings.[7] Despite long-standing advocacy for teaching evidence-based medicine (EBM) principles within undergraduate medical curricula, Canadian medical schools struggle to provide their students with the training necessary to critically appraise medical literature with competence and confidence.[8] A survey of physicians in Ontario, Canada showed that nearly half of respondents had less than satisfactory knowledge of basic EBM principles; a finding that was attributed to the inadequacy of their training.[8] Interestingly, younger physicians (who were more likely to have received formal training in critical appraisal) had better knowledge of EBM principles, suggesting that these skills can be successfully acquired and maintained when they are incorporated in undergraduate medical curricula.[9]

Research determining the educational needs of medical students' for acquiring critical appraisal skills is lacking. Previous studies attempted to identify challenges in the implementation of EBM curricula by surveying faculty members and healthcare providers.[8,10-13] While these studies identified potential challenges (such as inadequate resources, students' perceptions, time constraints), it is unclear whether the concerns perceived by administrators, faculty members, and practicing physicians are representative of those experienced by medical students.[8,10-14] Optimizing the teaching of critical appraisal skills in undergraduate medical curricula requires a better understanding of students' learning preferences. The objective of this survey was to 1) explore medical students' current medical literature critical appraisal skills and 2) determine their educational needs to help establish a durable foundation for the acquisition of these skills. We hypothesized that most medical students would report that they lacked competence and confidence in their critical appraisal skills.

METHODS

Survey design

We conducted a survey-based study of medical students at the University of Ottawa. We used a cross-sectional design with a convenience sampling technique. The survey (available in English and French) consisted of 12 questions that collected information on demographics, previous educational experiences, learning preferences, self-perceived competence, and confidence in critical appraisal skills.

Definitions

In our study, we refer to different components of the undergraduate medical curriculum at the University of Ottawa. Society, Individual, and Medicine (SIM) addresses population & public health, vulnerable populations, health services, and research methods through a series of lectures, panel discussions and small group workshops.[15] Case-based learning (CBL) and Team-based learning (TBL) involve the application of theoretical knowledge to clinical scenarios in small group settings. Physician Skills Development (PSD) aims to prepare students for clinical practice through lectures, simulations, and workshops.

Participants

All medical students enrolled at University of Ottawa were eligible to participate in the study. All respondents had to provide electronic consent to participate. There were no exclusion criteria.

Data collection and analysis

Invitations to participate were sent by e-mail to all eligible participants and further advertised through social media accounts restricted to medical students at the University of Ottawa. Data was collected using Google Forms for a 2-month period from February 2020 to April 2020. Proportions were reported for both categorical and ordinal variables.

Ethics

Ethics exception was provided by the Ottawa Health Science Network Research Ethics Board. The survey was registered with The Ottawa Hospital's quality improvement projects initiative. No personal identifying information was collected.

RESULTS

Fifty-nine students completed the survey; the majority (78.0%) were in second or third years of medical school. An overwhelming majority of respondents appreciated that critical appraisal skills would benefit their practice as residents (93.2%) and as independent practitioners (93.2%). However, more than half reported that they lacked competence (57.6%) and confidence (74.6%) in their critical appraisal skills. The majority (55.9%) reported that their education and training experiences for conducting a critical appraisal of the medical literature were insufficient.

Regarding the various content delivery methods in the undergraduate medical curriculum, respondents reported that lectures/seminars (67.8%), self-learning modules (SLMs) (40.7%), and SIM (35.6%) were used to teach critical appraisal. Only a minority reported that they were taught critical appraisal through CBL (20.3%), TBL (5.1%), and PSD (3.4%) (Figure 1).

Students reported that the following content delivery methods would be more effective at helping them develop competence and confidence in medical literature critical appraisal: 1) group journal club sessions (57.6%), 2) CBL (54.2%), 3) journal articles review (37.3%), 4) lectures/seminars (32.2%), 5) informal discussions with mentors (30.5%). With the exception of lectures/seminars (Figure 2), their preferred content delivery methods are underrepresented in the undergraduate medical curriculum. Fewer than 25% reported that podcasts, textbooks, videos, web-based modules, or websites would be effective tools to help them acquire critical appraisal skills. Furthermore, the majority reported that SLMs, TBL, PSD, and SIM would not be effective methods for teaching these skills.

DISCUSSION

In this survey, we explored University of Ottawa medical students' perception of medical literature critical appraisal skills and determined their educational preferences for acquiring these lifelong learning skills. The results indicate that medical students recognize the importance of critical appraisal skills but lack the proficiency required to apply these skills clinically.

Less than half of the respondents had independently sought additional learning experiences (e.g. journal clubs, journal articles, videos) to develop their critical appraisal skills. While we did not ask respondents to provide their reason(s) for not seeking additional learning experiences, our hypothesis is that this finding is likely due to severe time constraints in medical school. Canadian medical students can work up to 70 to 85 hours per week,[16] which leaves little time for extra-curricular activities including professional skills development. However, interventions as short as 2 hours in duration have demonstrated that they improve medical students' attitudes, knowledge, and skills pertaining to EBM.[17,18] Furthermore, studies have generally shown that the teaching of critical appraisal skills results in larger gains in knowledge when provided to medical students rather than residents.[19] These data support the importance of incorporating EBM teaching in undergraduate medical curricula, such that medical graduates can continue to build on these foundational skills during residency, and ultimately implement evidence-based practices which have been shown to improve patient outcomes.[7]

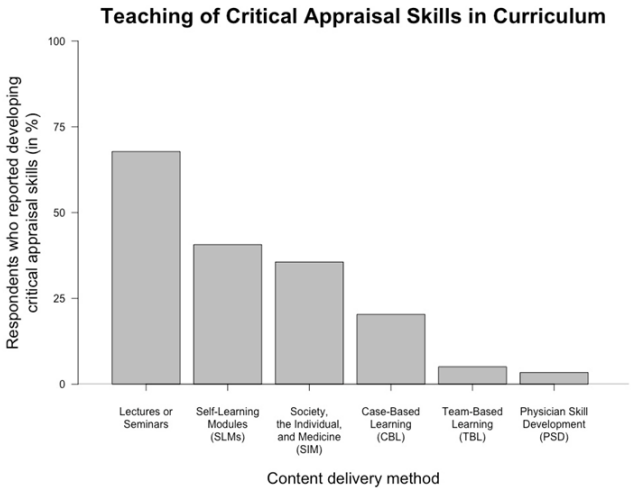

Figure 1. Essential components of undergraduate medical curriculum.

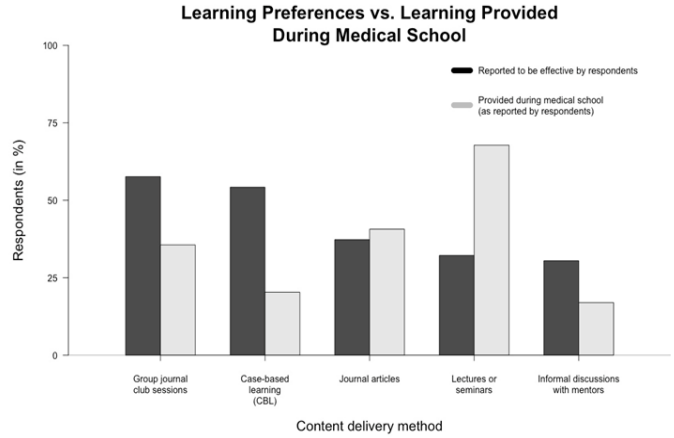

Figure 2. Content delivery methods deemed to be effective compared those used during medical school.

Our study identified an important discordance between medical students' preferred methods of developing critical appraisal skills and those methods commonly used. Respondents rated group journal club sessions, CBL, and journal articles as more effective content delivery methods for their development of these skills. However, only a minority of respondents reported that they had been provided one of these preferred methods to learn critical appraisal as part of their medical education to date. Two systematic reviews evaluating the effectiveness of EBM teaching have shown that the students' preferred methods generally help medical students improve their critical appraisal skills. Content delivery methods which were evaluated in these systematic reviews included lectures (both in-person and online), seminars, and small group workshops (including problem-based and team-based learning). However, there was insufficient evidence in either systematic review to make conclusions about the superiority of any single teaching method.[17,18] Curiously, studies have provided conflicting evidence for the effectiveness of problem-based and team-based learning, when compared to traditional didactic teaching.[20-22] The studies included in these systematic reviews generally compared two different content delivery methods and found that students who received formal EBM teaching, regardless of the content delivery method, had greater competency and/or skills in EBM, thereby making it difficult to identify significant differences across teaching methods. This finding may be explained, at least in part, by bias inherent to before-after studies, such as the Hawthorne effect or repeat testing bias.[23] Furthermore, the effectiveness of these non-traditional teaching methods likely depends on prior knowledge of foundational concepts, which is required for application of critical appraisal to real-world patient problems. Thus, we suggest that undergraduate medical curricula should offer both traditional teaching methods, which assume no prior knowledge of EBM, alongside integrated problem-based and team-based learning, which are generally preferred by students. In practice, this could be accomplished via group journal club sessions, with articles selected to complement the clinical or medical content being taught in didactic teaching sessions. Alternatively, existing case-based learning modules could be updated to include additional sections on critical appraisal skills.

This study has several limitations. First, our survey was limited to medical students at the University of Ottawa. Thus, our findings may not be completely generalizable to other students or schools. However, most Canadian medical schools have similar undergraduate curricula, which generally consists of 1 or 2 years of foundational learning (offered through a combination of group learning, independent learning, and lectures/seminars combined with intermittent clinical exposure) followed by 18 to 24 months of clinical rotations. As such, we suggest that our survey's results will help inform medical educators who face a similar challenge of successfully incorporating the teaching of EBM in an efficient, effective, and durable manner. Second, our survey was made available to all medical students at the University of Ottawa and only 59 out of 656 enrolled students responded (9.0%). Thus, our study likely suffered from selection bias, whereby students who participated in our study may have had a greater interest in EBM than those who did not. As a result, we may have over-estimated the tendency of students to seek opportunities to develop or further refine their critical appraisal skills and/or their willingness to engage in problem-based or team-based learning of these skills. Finally, data collection took place prior to and during the start of the COVID-19 pandemic, which may have affected both response rate as well as students' perception of the undergraduate medical curriculum (which was temporarily suspended as of March 15, 2020). However, of the 59 respondents, only 10 (16.9%) completed the survey after March 15, 2020; therefore, we feel it is unlikely that the conclusions of our study were significantly impacted by the effects of the COVID-19 pandemic.

CONCLUSION

In conclusion, our survey reveals that University of Ottawa medical students recognize the importance of critical appraisal skills but struggle to practice them with competence and confidence. Our findings highlight an important discordance between the content delivery methods currently used to teach these skills in our undergraduate medical curricula and students' learning preferences. This gap may contribute to the difficulties encountered by medical students in the acquisition and application of their critical appraisal skills. Given the clinical practice importance of critical appraisal skills, medical educators must incorporate the learning of these skills in an efficient, effective, and durable manner in spite of an overcrowded undergraduate medical curriculum and the time constraints on medical students.

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Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Open-sourced equity survey to assess organizational diversity and inclusion

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Date Submitted: October 29, 2023
Date Accepted: June 6, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.6977

Keywords: *Survey, equity, diversity, automation*

ABSTRACT

The Intensive Care Unit (ICU) Bridge Program (ICUBP) has developed a 12-minute, bilingual, and optionally anonymous equity and diversity survey to assess volunteer demographics and evaluate the organization's equitable practices. The outcomes of the survey are the basis for recruitment initiatives by the ICUBP executive team. The purpose of this paper is to make the survey and how it's integrated into the program's daily workflow open-source, to allow other institutions to easily incorporate this into their existing infrastructure of equity assessment tools.

DÉCLARATION D'IMPLICATION

Le Programme de Liaison de l'Unité de Soins Intensif (PLUSI) vient de développer un 12 minutes, bilingue, et facultativement anonyme sondage d'équité et de la diversité pour évaluer les facteurs démographiques parmi ses bénévoles et pour surveiller les pratiques équitables au sein de l'organisation. Les résultats du sondage sont la base d'initiatives de recrutement par leur équipe exécutive. Nous voulons partager le sondage et comment c'est intégré dans le flux de travail quotidien du programme pour qu'il soit de source ouverte pour permettre les autres institutions à l'incorporer facilement dans leur propre infrastructure d'outils de surveillance d'équité.

INTRODUCTION

Diversity in the healthcare field is imperative to furthering medical advancement and favourable patient outcomes. Racial and cultural concordance, where there exists a shared identity between a patient and their healthcare provider, has shown to have visibly positive effects on patient care, highlighting the importance of diversity in medicine.[1,2] To increase diversity, it is important to provide further opportunity, such as volunteering and shadowing, to underrepresented individuals and make these accessible at an earlier level of education.[2] Furthermore, in the same vein, it's important for institutions to frequently assess their stakeholders and determine the effectiveness of their diversity efforts. However, many organizations either don't do this in a continuous way that is part of their natural workflow, or don't have any method of assessing at all. The University of Ottawa puts much emphasis on equity, diversity and inclusion, and in addition to other institutions across Canada, such as the University of British Columbia, and McGill University, who have implemented equity surveys in the past.[3-6] However, these surveys are based on Statistics Canada census standards and are written to serve entire university student populations. Our objective is to provide an example of an accessibly equity survey that is part of the daily logistics of a healthcare-based student initiative that assesses its volunteer diversity. Our proposed equity survey is unique in that it is specific to our organization's volunteer group, a student group affiliated with McGill University, through an open-access format that provides a template to our short and bilingual survey that is easily integrated into other student group operations and workflows and can be tailored to a wide range of groups.

DESCRIPTION OF THE INNOVATION

The Intensive Care Unit (ICU) Bridge Program (ICUBP) is a non-profit organization that offers university-level students volunteering and shadowing opportunities in ICU facilities across 4 hospitals in Montréal: 1 pediatric and 3 adult sites.[7] The role of volunteering and shadowing allows for students to gain a first-hand and realistic day-to-day perspective of healthcare, ultimately allowing students to foster and develop an interest and a potential career in the medical field.[7]

The ICUBP's Continuing Education, Equity, Diversity and Inclusion (CONT[ED]I)) coordinator has developed a bilingual survey to assess the demographics (age, race, gender, economic status, disability, etc.) among volunteers and to evaluate equitable practice within the organization.[7] The development of this survey was inspired by McGill University Faculty of Medicine and Health Sciences' Social Accountability and Community Engagement Office (SACE) and the Government of Canada's definitions for disability and visible minorities.[8,9] The survey ensured inclusivity of traditionally underrepresented populations to avoid their exclusion and lack of measurement, and to provide precise and appropriate definitions.

This survey has been integrated as a natural part of the ICUBP volunteer application whereby volunteers can optionally complete a 12-minute equity and diversity survey, which allows for continuous gathering of equity data (Figure 1).[10] The survey has anywhere from 25-34 questions, dependent on a respondents' answers to the conditional logic questions that tailor the survey according to the volunteers themselves. Volunteers have the option to remain anonymous, allowing the ICUBP to potentially interview and/or develop focus groups from volunteers to gather further insights.

OUTCOMES

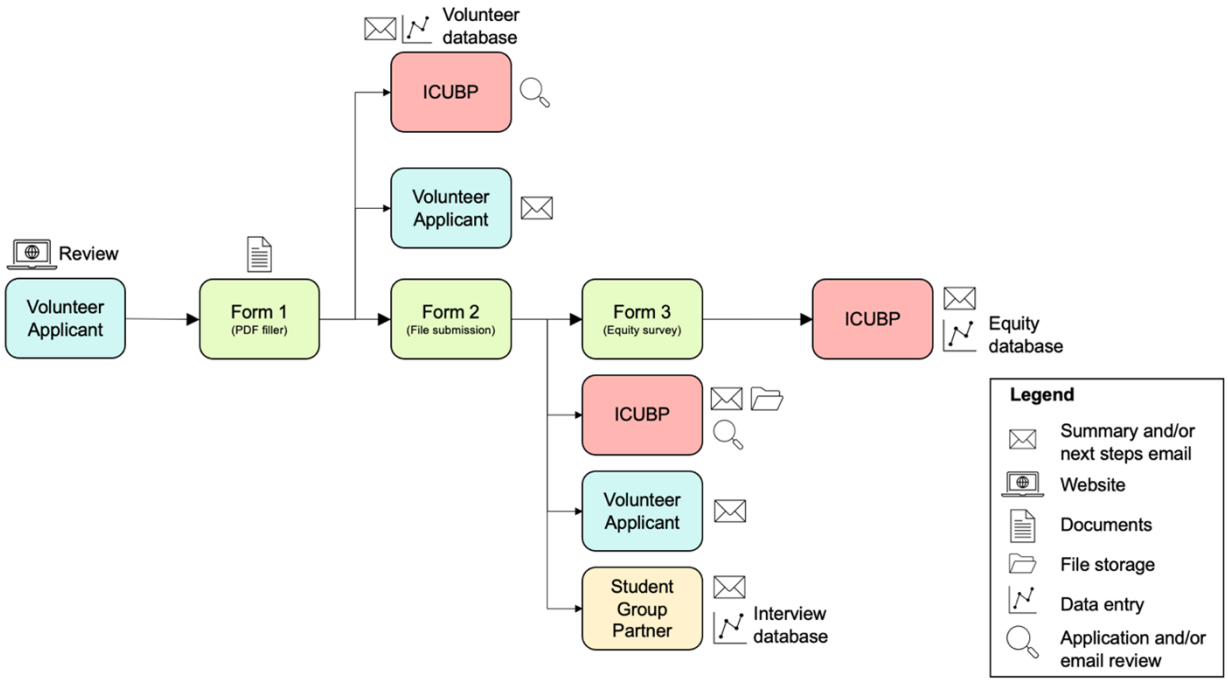
The program took approximately 2 years from initial consultation with SACE in February 2019 to retrospectively surveying volunteers in March 2021. From March 2021 to January 2023, the program received 60 anonymous responses from a potential pool of 1057 volunteers that go as far back as the program's initial group of volunteers in March 2016 (5.7% response rate). In February 2023, the survey was updated to give respondents the option to give their name and contact information. From January to December 2023, the program received 28 responses from 98 applicants (28.6% response rate) with 8 of those 28 choosing to identify themselves (28.6%). In March 2024, the program added a consent to publish the anonymized information on the program's website to allow anyone to track the program's progress and efforts over time and keep the organization accountable to its goals. This timeline (Figure 2) should be accelerated for other institutions since the template is freely available, easily copied, and requires only minor modifications to adapt to their specific situations and processes. This collected data is currently being used by the ICUBP as the basis for recruitment initiatives by the executive team.[7] The survey is outlined in English (Table 1), French (Table 2), and can be quickly copied via an

online form template on JotForm: https://www.jotform.com/form-templates/ur/intensive-care-unit-bridge-programs-open-sourced-equity-survey-to-assess-organizational-diversity-and-inclusion.

LIMITATIONS AND FUTURE DIRECTIONS

The limitations of this survey are:

1. It is unknown whether the survey respondents are representative of the ICUBP's volunteer population as certain groups may be more or less likely to complete the survey while applying to the program.
2. Though the survey is anonymous, it may be possible to match the equity survey responses (date and time the survey was completed, status in Canada, age, gender, education, any identifying comments made, etc) to a volunteer's application file (date and time the application was completed, government/student identifications, birthdays, etc.) and thus, de-identify individuals. However, this would require an ICUBP executive to intentionally compare two separate databases and would be a breach of multiple signed confidentiality agreements.



The Volunteer Applicant reviews the ICUBP website and completes Form 1, which:

1. Auto-completes the required program and hospital documentation (PDF filler) and attaches this to a summary and next steps email sent to the Volunteer Applicant.
2. Sends the ICUBP a summary email, which should be reviewed, and inputs the applicant's information into the ICUBP volunteer database.

The Volunteer Applicant attaches the PDF filler along with other files in Form 2, which:

1. Sends a summary email and the files to the ICUBP, which should be reviewed.
2. Sends a summary email and next steps to the Volunteer Applicant.
3. Sends a summary email and next steps for the interview process to the ICUBP's Student Group Partners, who are responsible for interviewing the ICUBP applicants.

The Volunteer Applicant's contact information is sent to an interview database which is shared by the ICUBP and Student Group Partner to track the status and progress of interviews

- This interview is conducted either by the ICUBP executive team or a 3rd party student group. For the latter, it is difficult to assess whether the potential inteviewers are representative due to the small sample size of this 3rd party's executive team. Ultimately, all interview notes are reviewed by the ICUBP's Volunteer and Hospital Management (VHM) executive team who give the final decision. The VHM team are recruited internally and require experience as an ICU volunteer prior to applying to the executive team. As such, as the ICUBP becomes more representative, so will the ICUBP's executive team. Assessing the executive teams of the ICUBP and 3rd party student groups will be difficult as their small size makes being representative year over year difficult, and it would be easy to de-identify this anonymous and private information.

The Volunteer Applicant has the option of completing the 12-minute optionally anonymous and bilingual equity survey (Form 3). If Form 3 is complete, a summary email is sent to the ICUBP and information into the ICUBP equity database.

Figure 1. Equity, diversity, and inclusion survey workflow within the Intensive Care Unit (ICU) Bridge Program (ICUBP)

3. Though having the equity survey be part of the application process is a strength, our response rate may be even higher than its current rate of 29%, because individuals may be less willing to fill out an additional form that is optional post-application. However, the application process encourages applicants to gather the appropriate documentation prior to beginning the survey and once all this is gathered, the process of filling out the forms itself has been streamlined as they are not required to answer the same question across several hospital forms due to the program's PDF filler (Figure 1). As such, it takes an estimated 20 minutes to fill out Forms 1 and 2 and apply to 4 different hospitals once all is gathered. However, adding an additional 12 minutes for an equity survey, which may be time-consuming for some, might be excessive.

The ICUBP CONT[ED]I coordinator is facilitating outreach to diverse student groups across Montréal's English and French universities to increase awareness of the program and further diversify the volunteer group. In the past, the ICUBP has held a workshop on "Indigenous Perspectives and Experiences in Healthcare" in collaboration with Université de Montréal's Indigenous interest group to not only recruit students from a variety of backgrounds, but also inform current volunteers and the public regarding disparities in healthcare and vulnerable populations. The ICUBP plans on developing such collaborations with other groups that consist of visible and non-visible minorities (black, LGBTQ+, etc), to inform those populations of the ICUBP's opportunities, while continually assessing and progressing to the goal of achieving a volunteer group that is representative of the general Montréal population. The program is also considering getting formal ethics approval to share future results in a research journal.

Figure 2. Equity survey implementation timeline

Table 1. Equity, Diversity, and Inclusion (EDI) Survey Template.

The survey begins with an introduction of the organization and its purpose, as well as the inspiration and purpose behind the survey.

Section	Question
1-Disclosure of Anonymity	**1. For this survey, I wish to…** a) remain anonymous; do not share my name and email with the ICUBP executive team b) be non-anonymous; share my name and email with the ICUBP executive team i. 1.1 Name ii. 1.2 Email **For purposes of reaching out post-survey for follow-up questions (all responses regardless of anonymity remain confidential.)*
2-Background	2. Do you give consent for the publication of your anonymized data from this survey on the ICUBP's website? *The purpose of publishing this data on the website is to demonstrate the progress and steps the ICUBP has made and are taking to ensure equity, diversity, and inclusion within our volunteer group. Regardless of whether you wish to remain anonymous or non-anonymous, your data will be anonymized when published on the website if you give consent.* a. Yes, I give consent. b. No, I do not give consent. 3. What type of volunteer are you? a) Applicant **Hidden question that was originally necessary to survey previous, applying, and current volunteers in 2021. Now that the survey is part of the application process, this option is automatically selected for the respondent* 4. What is your country of birth? *[All countries listed as options in a dropdown menu].* **5. What is your status in Canada?** *Please find below the specification for each status as per the Government of Canada Immigration and Citizenship Glossary (*https://www.canada.ca/en/services/immigration-citizenship/helpcentre/glossary.html*).* • Citizen: Canadian by birth (either born in Canada or born outside Canada to a Canadian citizen who was themselves either born in Canada or granted citizenship) or has applied for a grant of citizenship and has received Canadian citizenship (naturalization). • Landed Immigrant/Permanent Resident: A person who has legally immigrated to Canada but is not yet a Canadian Citizen. • Refugee: A person who is outside of their home country or country where they normally live and fears returning to that country because of a well-founded fear of persecution for reasons of race, religion, nationality, membership in a particular social group or political opinion. • Asylum Seeker: Protection that is offered to persons with a well-founded fear of persecution based on race, religion, nationality, political opinion or membership in a particular social group, as well as those at risk of torture or cruel and unusual treatment or punishment. • Foreign Student/International Student: A temporary resident who is legally authorized to study in Canada on a temporary basis. a) Citizen b) Landed Immigrant/Permanent Resident c) Refugee d) Asylum Seeker e) Foreign Student/International Student f) Waiting for Status 5.1 Please specify current status, and if applicable, which status you are waiting/have applied for: g) I prefer not to answer 6. Age a) 0-17 b) 18-24 c) 25-34 d) 35-44

e) 45-54
f) 55-64
g) 65+
h) I prefer not to answer

7. Education: What degree are you currently pursuing?
   a) Bachelor's Degree
   b) Master's Degree
   c) Doctoral Degree
   d) MDCM
   e) I have graduated from university
   f) Other
   g) I prefer not to answer

8. What is your current gender identity?
   a) Female
   b) Male
   c) Two-spirit or another Indigenous identity
   d) Transgender
   e) Non-binary/genderqueer/gender non-conforming
   f) Intersex
   g) I prefer not to answer
   h) Not listed, please specify:

9. Do you self-identify as Black (e.g. Black African, Black Caribbean, Black North American, etc.)?
   a) Yes
   b) No
   c) I prefer not to answer

10. Do you consider yourself to be a member of the First Nations, Métis or Inuit?
   a) Yes
   b) No
   c) I prefer not to answer
      10.1 Please select the nation(s) with which you identify.
         I) Inuit
         II) Métis
         III) First Nations non-status ("non-status Indian")
         IV) First Nations status ("status Indian")
         V) I prefer not to answer
         VI) Preferred response not listed, please specify:

11. With which of the following groups do you most strongly identify? Please select all that apply.
   a) Arab
   b) Black (e.g. Black African, Black Caribbean, Black North American, etc.)
   c) Chinese
   d) Filipino
   e) Indigenous (e.g. First Nations, Métis, Inuit)
   f) Japanese
   g) Korean
   h) Latin American
   i) South Asian (e.g. East Indian, Pakistani, Sri Lankan, etc.)
   j) Southeast Asian (e.g. Vietnamese, Cambodian, Malaysian, Laotian, etc.)
   k) West Asian (e.g. Iranian, Afghan, etc.)
   l) White/Caucasian
   m) I prefer not to answer
   n) Preferred response not listed, please specify:

12. Do you consider yourself to be a member of a visible minority?

"Members of visible minorities means persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour." Canadian Employment Act S.C. 1995, c. 44 (https://laws-lois.justice.gc.ca/eng/acts/e-5.401/)

a) Yes
b) No
c) I prefer not to answer

13. Do you have any disabilities?
According to the Accessible Canada Act (S.C. 2019, c. 10), disability means any impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment — or a functional limitation — whether permanent, temporary or episodic in nature, or evident or not, that, in interaction with a barrier, hinders a person's full and equal participation in society.
    a) Yes
    b) No
    c) Prefer not to answer

14. Do you self-identify as an individual with a familial income (combined income of parents or guardians and siblings within a household) that is $80,000 or less?
    a) Yes
    b) No
    c) I prefer not to answer

15. Do you self-identify as having spent the majority of your childhood (0-18 years old) in a small population center (population = 0-29,000)?
    a) Yes
    b) No
    c) I prefer not to answer

3-Healthcare Interest

16. Are you interested in a career in healthcare?
    a) Yes
    b) No
    c) I prefer not to answer
    16.1 [Optional] Explain your interest in pursuing a career in healthcare.
    16.2 What healthcare professions are you interested in? Please select all that apply.
        a) Dentistry
        b) Dental hygiene
        c) Medicine
        d) Nursing
        e) Nutrition and dietetics
        f) Ophthalmology
        g) Physical therapy
        h) Social work
        i) Occupational therapy
        j) Pharmacy
        k) Respiratory therapy
        l) Speech language pathology
        m) I prefer not to answer
        n) Other, please specify:

17. What difficulties related to the application process, if any, are you facing in seeking your dream career? Please select all that apply.
    a) Academic excellence
    b) Work experience
    c) Volunteering experience
    d) Interview skills
    e) No difficulties
    f) Other
    g) I prefer not to answer
    17.1 In your opinion, these difficulties are due to which of the following? Please select all that apply?
        I) Financial burdens
        II) Busy schedule

	III) Lack of work/volunteering opportunities IV) Cultural differences V) Familial changes VI) Other VII) I prefer not to answer 17.2 [Optional] Explain how your cultural or financial background impact your journey to achieve your dream career.
	18. On a scale of 1-10, how would you rate the performance of Canadian schools to ensure the diversity of their students? 1 = not satisfactory / 10 = very satisfactory / 0 = prefer not to answer
	19. [Optional] If you could, what aspects would you like to change in the admission process to foster more diversity?
4-ICUBP-specific questions *[insert ANY organization-specifics]*	20. Do you think that the ICUBP helps you better prepare for your dream career? a) Yes b) No c) I prefer not to say
	21. [Optional] What are the most helpful opportunities that the ICUBP provides or could provide but does not currently?
	22. Did you face any difficulties while applying to the ICUBP volunteering & shadowing program? a) Yes b) No c) I prefer not to say 22.1 [Optional] What difficulties have you faced while applying to the ICUBP?
	23. [Optional] What are your goals, what do you expect to achieve as a volunteer, and what can the ICUBP do to best support you going forward?
	24. [Optional] Do you have any recommendations to improve the ICUBP enrollment process to include a more diverse population?
	25. [Optional] Do you have any comments or feedback on your experiences with this survey? Please use this space for additional comments for the ICUBP team.
The survey ends with a thank you page confirming their submission has been received and thanking the volunteer for their time.	

Bolded questions in the table above indicate a question that applies conditional logic and based on the responses to such questions, follow-up questions may or may not appear accordingly.

Table 2. Modèle pour le sondage d'équité, la diversité et l'inclusion

Le sondage commence avec une introduction de l'organisation et sa raison et ses buts. De plus, il se présente avec l'inspiration et la raison pour le sondage enfin.	
Section	Question
1- Divulgation d'Anonymat	**1. Pour ce sondage, je souhaite...** a) restez anonyme; ne partager pas mon nom ni mon courriel avec l'équipe exécutif PLUSI. b) restez non-anonyme; partager mon nom et mon courriel avec l'équipe exécutif PLUSI. 1.1 Nom 1.2 Courriel **Pour raison de contacter ces gens après qu'ils complètent le sondage pour poster des questions de suite. (tous réponses resterons confidentiel n'importe le cas, même s'ils souhaitent de rester anonyme).*
2-Arrière-plan	2. Donnez-vous votre consentement pour la publication de mes résultats anonymes de ce sondage sur le site web du PLUSI? *L'objectif de la publication de ces résultats sur le site web est de démontrer les progrès et les mesures que PLUSI a réalisés et entreprend pour assurer l'équité, la diversité et l'inclusion au sein de notre groupe de bénévoles. Que vous souhaitiez rester anonyme ou non anonyme, vos résultats seront anonymisées lors de leur publication sur le site web si vous donnez votre consentement.* a) Oui, je donne mon consentement. b) Non, je ne donne pas mon consentement. 3. Quel type de bénévole êtes-vous? a) Postulant(e) **Cette question était nécessaire pour mener une enquête auprès des volontaires du passé, les postulant(e)s, et les volontaires au courant en 2021. Parce que le sondage est intégré dans l'application, cette question est maintenant cachée et la seule option est présélectionnée automatiquement pour le postulant(e).* 4. Quel est votre pays de naissance? *[Tous pays sont présents sur la liste déroulante].* **5. Quel est votre statut au Canada?** *S'il vous plait, veuillez noters les spécifications de chaque statut selon le glossaire de l'immigration et de la citoyenneté du gouvernement du Canada (https://www.canada.ca/fr/services/immigration-citoyennete/centre-aide/glossaire.html).* • Citoyen(ne): un citoyen est une personne qui est canadienne de naissance (née au Canada ou née à l'extérieur du Canada d'un parent citoyen canadien qui est lui-même né au Canada ou qui a obtenu la citoyenneté) ou a demandé et obtenu la citoyenneté canadienne (naturalisation). • Immigrant(e) ayant obtenu le droit d'établissement/Résident permanent: Une personne ayant légalement immigré au Canada, mais qui n'est pas encore citoyen canadien.. • Réfugié(e): Personne qui se trouve hors de son pays d'origine ou de résidence habituelle et qui ne peut y retourner, parce qu'elle craint avec raison d'être persécutée pour des motifs liés à sa race, sa religion, sa nationalité, son appartenance à un groupe social particulier ou ses opinions politiques. • Asile: Protection accordée à la personne qui craint avec raison d'être persécutée du fait de sa race, sa religion, sa nationalité, ses opinions politiques ou son appartenance à un groupe social particulier, ainsi qu'à celle qui risque la torture ou des traitements ou peines cruels et inusités. • Étudiant(e) étranger(ère)/Étudiant(e) international(e): Résident temporaire autorisé légalement à étudier au Canada de façon temporaire. La plupart des étudiants étrangers doivent obtenir un permis d'études si leur formation dure plus de six mois. a) Citoyen(ne) b) Immigrant(e) ayant obtenu le droit d'établissement/Résident(e) permanent(e) c) Réfugié(e) d) Asile e) Étudiant(e) étranger(ère)/Étudiant(e) international(e) f) Attend pour le status

5.1. S'il vous plait, specifier votre status actuel, et si applicable, quel status attendez-vous et/ou pour quelle status avez-vous soumis une demande:

g) Je préfère de ne pas répondre

6. Âge
   a) 0-17
   b) 18-24
   c) 25-34
   d) 35-44
   e) 45-54
   f) 55-64
   g) 65 et plus âgé(e)
   h) Je préfère de ne pas répondre

7. Éducation: Quel degré est-ce que vous suivez présentement?
   a) Baccalauréat
   b) Maîtrise
   c) Doctorat
   d) MDCM
   e) J'ai fini l'université et vient d'obtenir un degré/certificat
   f) Autre
   g) Je préfère de ne pas répondre

8. Comment identifiez-vous présentement en tant que genre?
   [Sélectionnez tout ce qui s'y rapporte]
   a) Femme
   b) Homme
   c) Bi-spirituel ou autre identité autochtone
   d) Transgenres
   e) Non-binaire / genderqueer / non conforme au genre
   f) Intersexe
   g) Je préfère de ne pas répondre
   h) Non inscrit, s'il vous plaît préciser:

9. Vous identifiez-vous comme noir (par exemple, noir africain, noir des Caraïbes, noir nord-américain, etc.)?
   a) Oui
   b) Non
   c) Je préfère de ne pas répondre

10. Considérez-vous comme membre des Premières Nations, des Métis ou des Inuits?
   a) Oui
   b) Non
   d) Je préfère de ne pas répondre
      10.1 Veuillez sélectionner la ou les nations avec lesquelles vous vous identifiez
         I) Inuit
         II) Métis
         III) Premières Nations non inscrites (« Indien non inscrit »)
         IV) Statut des Premières Nations (« Indien inscrit »)
         V) Je préfère de ne pas répondre
         VI) Réponse préférée non répertoriée (veuillez préciser):

11. Avec lequel des groupes suivants vous identifiez-vous le plus fortement? Veuillez sélectionner tous ceux qui s'appliquent.
   a) Arabe
   b) Noir (par exemple, noir africain, noir des Caraïbes, noir nord-américain, etc.)
   c) Chinois
   d) Philippin(e)
   e) Autochtones (p. Ex. Premières Nations, Métis, Inuits)
   f) Japonais
   g) Coréen
   h) Latino-américain

	i) Asie du Sud (par exemple, Inde orientale, pakistanaise, sri-lankaise, etc.) j) Asie du Sud-Est (par exemple, vietnamien, cambodgien, malais, laotien, etc.) k) Asie occidentale (par exemple iranien, afghan, etc.) l) Blanc/caucasien m) Je préfère de ne pas répondre n) Réponse préférée qui n'est pas lister (veuillez préciser): 12. Considérez-vous comme membre d'une minorité visible? *"Minorités visibles: Font partie des minorités visibles les personnes, autres que les autochtones, qui ne sont pas de race blanche ou qui n'ont pas la peau blanche." Loi sur l'équité en matière d'emploi L.C. 1995, ch. 44 (https://laws-lois.justice.gc.ca/fra/lois/e-5.401/page-1.html)* a) Oui b) Non c) Je préfère de ne pas répondre 13. Avez-vous des difficultés ou incapacités qui vous rend en situation d'handicap? *En accordance avec la Loi canadienne sur l'accessibilité, l'handicap veut dire une déficience notamment physique, intellectuelle, cognitive, mentale ou sensorielle, trouble d'apprentissage ou de la communication ou limitation fonctionnelle, de nature permanente, temporaire ou épisodique, manifeste ou non et dont l'interaction avec un obstacle nuit à la participation pleine et égale d'une personne dans la société.* a) Oui b) Non c) Je préfère de ne pas répondre 14. Identifiez-vous comme une personne dont le revenu familial (revenu combiné des parents ou tuteurs et frères et sœurs au sein d'un ménage) est de 80 000 $ ou moins? a) Oui b) Non c) Je préfère de ne pas répondre 15. Identifiez-vous comme un individu qui vient de passer la majorité de son enfance (0 à 18 ans) dans un centre de population petite (population de 0 à 29,000 gens)? a) Oui b) Non c) Je préfère de ne pas répondre
3- Intérêt du domaine de la santé	**16. Êtes-vous intéressé par une carrière dans le domaine de la santé?** a) Oui b) Non c) Je préfère de ne pas répondre 16.1 [Facultatif] Expliquez votre intérêt dans la poursuite pour une carrière dans le domaine de la santé. 16.2 Quelles professions de la santé vous intéressent? *[Sélectionnez tout ce qui s'appliquent]* a) Dentisterie b) Hygiène dentaire c) Médicine d) Soins infirmiers e) Nutrition et diététique f) Ophtalmologie g) Thérapie physique h) Travail social i) Ergothérapie j) Pharmacie k) Thérapie respiratoire l) Orthophonie m) Je préfère de ne pas répondre n) Autre, veuillez préciser: **17. Quelles difficultés liées au processus de candidature, le cas échéant, rencontrez-vous dans la recherche de la carrière de vos rêves?**

	[Sélectionnez tout ce qui s'appliquent] a) Excellence académique b) Expérience de travail c) Expérience de bénévolat d) Compétences en entretien e) Aucune difficulté f) Autre g) Je préfère de ne pas répondre 17.1 À votre avis, ces difficultés sont dues à laquelle des situations suivantes? *[Sélectionnez tout ce qui s'appliquent]* I) Fardeaux financiers II) Horaire chargé III) Manque de possibilités de travail ou de bénévolat IV) Les différences culturelles V) Défis familiaux VI) Autre VII) Je préfère de ne pas répondre 17.2 [Facultatif] Expliquez comment vos antécédents culturels ou financiers influencent votre parcours pour réaliser la carrière de vos rêves?
	18. Sur une échelle de 1 à 10, comment évalueriez-vous le rendement des écoles canadiennes pour assurer la diversité de leurs élèves? 1 = pas satisfaisant / 10 = très satisfaisant / 0 = préfère ne pas répondre
	19. [Facultatif] Si vous le pouviez, quels aspects aimeriez-vous changer dans le processus d'admission pour favoriser plus de diversité?
4-Questions spécifiques au PLUSI *[insérer les précis de N'IMPORTE DE QUELLE organisation]*	20. Pensez-vous que le PLUSI vous aide à mieux vous préparer pour la carrière de vos rêves? a) Oui b) Non c) Je préfère de ne pas répondre
	21. [Facultatif] Quelles sont les opportunités les plus utiles que le PLUSI fournit ou pourrait fournir mais ne le fait pas actuellement?
	22. Avez-vous rencontré des difficultés lors de votre candidature du bénévolat et d'observation du PLUSI? a) Oui b) Non c) Je préfère de ne pas répondre 22.1 [Facultatif] Quelles difficultés avez-vous rencontrées en postulant au PLUSI?
	23. [Facultatif] Que sont-vos buts, qu'est-ce que vous croyez à atteindre comme bénévole, et que peut faire le PLUSI pour vous soutenir au mieux à l'avenir ?
	24. [Facultatif] Avez-vous des recommandations pour améliorer la procédure d'inscription au PLUSI en tant de promouvoir plus de diversité?
	25. [Facultatif] Avez-vous des commentaires ou des réactions sur votre expérience avec ce sondage? Veuillez utiliser cet espace pour des commentaires supplémentaires destinés à l'équipe PLUSI.
Le sondage se termine avec un page de remerciement qui confirme une soumission qui vient d'être reçu et pour remercier le volontaire pour leur temps.	

Les questions en caractère **gras** dans la table en indique une question qui applique la logique conditionnelle, et alors basé sur les réponses à ces questions, des questions de suite seront posées en accordance.

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Conflicts of Interest Disclosure

There are no conflicts of interest to declare.

Transgender Healthcare Saves Lives: Impacts of Access on Suicidality

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Date Submitted: January 20, 2024
Date Accepted: May 27, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.7067

Keywords: *transgender youth, gender-affirming care, mental health disparities, suicidality prevention, barriers to healthcare access, medical education reform, 2SLGBTQ+ health, health equity, pediatrics*

ABSTRACT

Transgender care amongst youth has received media and political attention in recent years, with broad impacts on transgender patients, especially in the field of pediatrics. Barriers to care contribute to poor outcomes, including increased suicidality, highlighting the need for equitable access to transgender healthcare. This article discusses strategies for healthcare providers to address these barriers and outlines important considerations for medical trainees and early-career physicians.

RÉSUMÉ

Les soins transgenres chez les jeunes ont retenu l'attention des médias et des politiques ces dernières années, ce qui a eu des vastes répercussions sur les patients transgenres, en particulier dans le domaine de la pédiatrie. Les obstacles au soins contribuent à de mauvais résultats, y compris l'augmentation de la suicidalité, soulignant la nécessité d'un accès équitable aux soins de santé pour les personnes transgenres. Cet article présente des stratégies permettant aux prestataires de soins de santé de surmonter ces obstacles et souligne les points importants à prendre en compte par les stagaires en médecine et les médecins en début de carrière.

Transgender youth face significant health disparities, particularly concerning mental health. I have met countless transgender youth hospitalized after suicide attempts, recalling their chosen names, injuries, and the systemic challenges they endure. These experiences highlight the critical need to address the disparities in transgender healthcare. For example, transgender individuals have higher rates of suicidality, depression, and anxiety

compared to cisgender peers (1). Notably, providing gender-affirming care is associated with a 60% lower risk of moderate or severe depression and 73% lower risk of suicidality compared to baseline, when measured by validated depression and anxiety scales (the Patient Health Questionnaire 9 (PHQ-9) and Generalized Anxiety Disorder 7-item (GAD-7)) at 3, 6, and 12 months of follow-up in an urban multi-disciplinary clinic (2).

Transgender youth face significant barriers to care with limited accessible providers, uncoordinated care, and gatekeeping and delayed access (3). Thus, transgender youth tend to avoid seeking healthcare because of fear of being challenged about their identity and 40-50% have unmet health needs, as evidenced by a cross-sectional study using nation-wide survey data of 2000+ youth across Canada in 2019 (4,5). This can be particularly distressing, when delayed treatment can lead to irreversible pubertal changes (6). Consequently, up to a quarter of patients obtain hormones from unregulated sources or attempt surgical procedures on themselves (7).

Within Canada, wait times range from 4-12 months (4) to diagnose gender dysphoria and discuss treatment options ranging from reversible (puberty blockers), partially reversible (cross-gender hormones), and irreversible (gender-affirming surgeries) options (6). Although medical therapy is not benign (altered bone density and vitamin D levels), this can provide time for identity exploration (8).

Despite life-saving implications, there is significant hesitancy to provide transgender care. Anecdotally, many cite concerns of patients regretting their decisions, which is not supported by the literature, with low rates of re-transitioning (<10% in North America) (9) and a majority of trans-identifying individuals reporting no decisional regrets (10). Other provider-specific barriers include stigma, knowledge gaps, and lack of exposure (11), which may stem from within medical education.

Unfortunately, medical students often lack exposure to 2SLGBTQ+ healthcare (12), despite trainees having some of the existing skills to participate in certain aspects of care. I would argue conversations about gender dysphoria are comparable to adolescent psychosocial history screening tools (HEADSS) (13), which ask about sexual practices, sexuality, and gender/sexual identity as part of a routine screening tool for all adolescents (14). Likewise, counselling on gender-affirming surgeries parallels consent for other irreversible surgeries (e.g., hysterectomy). Similarly, navigating mature minors and family/home conflicts are not unique to transgender youth. Although these examples highlight that medical students have some foundational skills required to engage in transgender healthcare, I believe that educational reform is required to increase comfort in applying existing skills to this patient population. Additional barriers to competence included limited curricular time, lack of topic-specific competency among faculty, and underwhelming institutional support (12). This is particularly important as transgender care has medicolegal implications under human rights legislations in Canada that recognizes gender identity as a prohibited ground of discrimination and encourages physicians to refer to specialists when care is outside their comfort or expertise (15).

Therefore, I encourage my colleagues to engage in the reform of medical education to address curriculum gaps to increase competence in providing transgender healthcare, which has lifesaving implications. There is evidence that simple interventions such as a 1 hour patient panel followed by a 1 hour small-group session with case studies dedicated to LGBTQ+ health topics in undergraduate medical education lead to an increased willingness to treat patients with gender identity issues and enhanced awareness that sexual identity and practices are clinically relevant (16). Specific to transgender healthcare, incorporating gender identity, treatment regiments, and monitoring requirements for medical management for transgender patients into the endocrinology unit of a second-year pathophysiology course was shown to significantly increase student willingness to care for transgender patients (17). Although these interventions have notable impacts, I argue that competence, which is fundamentally different than familiarity or willingness to provide care, requires more than a one-time session. In support of this notion, a recent scoping review identified 131 papers related to medical education and transgender health and found that transgender medical education is largely composed of “one-time attitude and awareness-based interventions” that do not provide competence to trainees (12). As such, further research and work is required to understand how to increase the competence of trainees in providing transgender healthcare.

In the meantime, something as simple as using chosen names can have tremendous effects, and lowers rates of depression, suicidal ideation and behavior (18). Likewise,

when transgender youth were asked what they want doctors to know, they wanted to feel as if "you are on [their] team", for special care during genital exams, to remember "names, pronouns, and gender markers are important" and that therapy "can save [their] life" (19). Trainees should also familiarize themselves and refer parents/youth to available resources that address such topics (20,21).

Ultimately, a lack of suitable care to transgender youth is harmful and we should facilitate these difficult conversations alongside patients, families, and caregivers through comprehensive assessments and shared decision making, with special consideration for family/caregiver dynamics, barriers to access, psychiatric comorbidities, and suicidality. Although it is a difficult process, transgender care can save lives, and should remain a priority.

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Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Nailed Wellness: A Proposal for Training Nail Salons to Detect Signs of Organ System Dysfunction on their Client's Nails

Photo by Giorgio Trovato on Unsplash

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Date Submitted: March 1, 2024
Date Accepted: July 31, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.7099

Keywords: *Screening, Nails, Systemic Disease, Salon, Public Health*

ABSTRACT

The physical characteristics of one's fingernails can indicate a large variety of diseases. Nail salon staff can be trained to recognize red flags on a client's nails with an emphasis on safely screening clients and referring them to the appropriate healthcare providers when necessary. This proposal is based on the Save Your Skin Foundation's successful skin cancer detection framework used in hair salons across Canada. Training consists of informational posters and short videos. This system would empower workers outside of the healthcare sector to advocate for the health of their clients while creating another tier of disease screening.

RÉSUMÉ

Les caractéristiques physiques des ongles peuvent être un signe d'une grande variété de maladies. Le personnel des salons de manucure peut être enseigné à reconnaître les signes inquiétants sur les ongles d'un client et les orienter vers une équipe de soins de santé appropriée si nécessaire. Cette proposition est basée sur le cadre de détection du cancer de la peau de la « Save Your Skin Foundation », utilisé avec succès dans les salons de coiffure à travers le Canada. L'enseignement consiste en des affiches d'information et de courtes vidéos. Ce système permettrait aux travailleurs n'appartenant pas au secteur de la santé de défendre la santé de leurs clients tout en créant un autre niveau de contrôle des maladies.

INTRODUCTION

The substantial costs of healthcare have immense political and social implications in the Canadian context, emphasizing the urgent need for cost-effective care. The present proposal describes an early screening system for systemic and specific organ conditions that present on the nails, utilizing pre-existing resources in nail salons to improve health outcomes for Canadians without placing a severe burden on the healthcare system. Often regarded as windows to systemic diseases, even subtle abnormalities in patients' nails may indicate serious ailments.[1] As such, the examination of nails may enable improved diagnosis and management of such conditions.[2] For example, abnormalities in nail morphology, such as koilonychia, clubbing, and pincer nails, may suggest the presence of thyroid disorders, infective endocarditis, and renal disease, respectively.[1] Drs. Grover and Bansal note that a nail-based screening program could prove effective, as prevention is preferable to treatments when there is acceptable specificity, sensitivity, and low cost with minimal discomfort for patients and examiners.[3] As such, the present proposal suggests the implementation of an early screening system wherein nail salon artists are primed to detect nail abnormalities suggestive of systemic conditions. This would rely on brief informational posters and videos. Correspondingly, inconspicuous or previously unnoticed systemic diseases may be detected early and swiftly treated.

HOW ARE NAILS WINDOWS FOR SYSTEMIC DISEASE?

The physical characteristics of one's nails (e.g., shape, colour, surface) can indicate a large variety of diseases. Examples of characteristics include:

1. Koilonychia is characterized by a reverse nail curvature most visible in the fingernails (Figure 1A).[1,4] This is attributable to multiple conditions, including chronic iron deficiency anemia, occupational factors, hemochromatosis, coronary disease, and thyroid disorders.[1,4]
2. Nail clubbing presents with an increase in the curvature of the longitudinal and transverse axes of the nails, commonly accompanied by tissue swelling around the fingertips (Figure 1B).[5,6] It may be indicative of various conditions, particularly infective endocarditis, inflammatory bowel disease, lung malignancies, or cystic fibrosis.[1]
3. Dolichonychia occurs when the nails are substantially longer than they are wide (Figure 1C).[1,7] This nail presentation has been associated with hypopituitarism and Marfan's syndrome.[1,7]
4. Brachyonychia is characterized by nails that are narrower relative to their length (Figure 1D).[1,8] This may be linked to hyperparathyroidism and psoriatic arthropathy.[1]

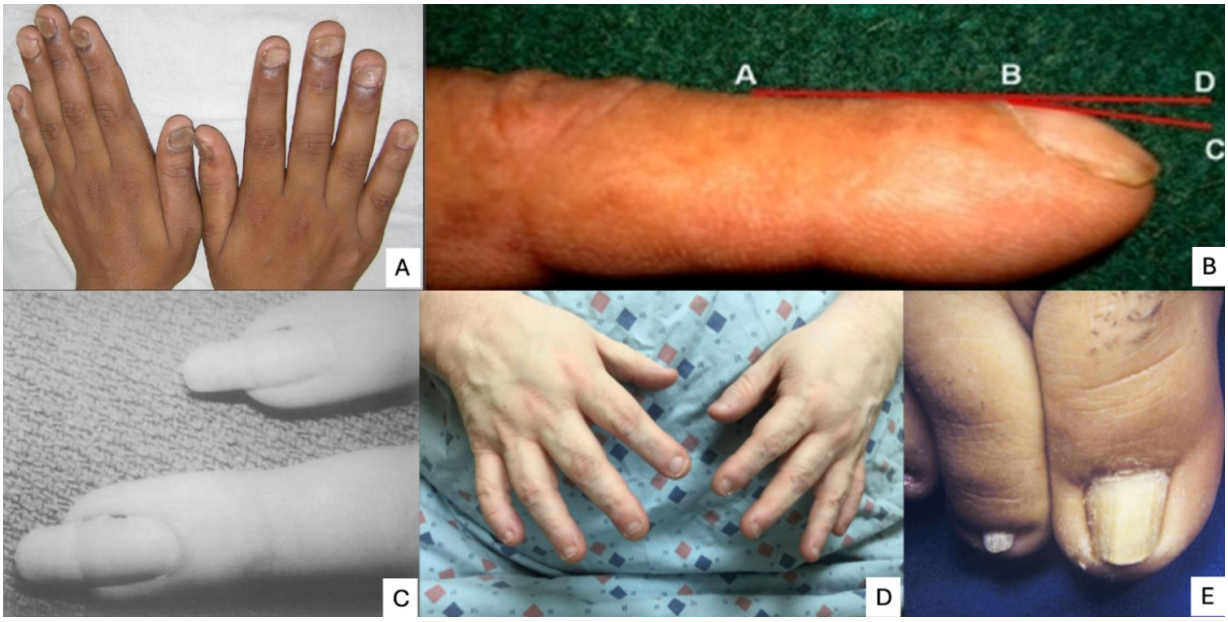

Figure 1. Visual depictions of nail abnormalities associated with organ dysfunction. (A) Koilonychia features nails with a concave outer surface.[1] (B) Clubbed nails have an atypical downward angle.[6] (C) Dolichonychia is exhibited by nails that are abnormally long and slender.[7] (D) Brachyonychia is represented by nails that are wide and flat.[8] (E) Pincer nails are distally curved inward.[9]

5. Pincer nails exhibit increased transverse curvature along the nail's length and are particularly pronounced towards the tip (Figure 1E).[1,9] These may be indicative of end-stage renal disease secondary to diabetes mellitus, gastrointestinal malignancies, Kawasaki disease, renal failure, amyotrophic lateral sclerosis, or systemic lupus erythematosus.[1,9]

The aforementioned systemic diseases associated with nail abnormalities can have devastating effects on patient well-being, warranting early detection and corresponding treatment.

PROPOSAL: HOW CAN CANADA BETTER SCREEN FOR THESE DISEASES?

To create an avenue for early screening of such conditions, we propose an initiative titled "Nailed Wellness." This project aims to educate and empower nail salon artists to recognize red flags in a client's nails and confidently speak up to refer them to a physician. This program would involve a short bilingual instructional video and provide salons with posters highlighting the main red flags to which attention should be paid. Notably, this program would rely on pictures of patients with light and dark skin tones, ensuring that no case is missed.

More specifically, the poster and video would highlight the 5-step nail examination technique described by dermatologist Mark Holzberg. The specific steps are to examine the colour and shape of the 1) nail folds, 2) lunula, 3) nail bed, 4) hyponychium, and 5) nail plate.[10] An acronym, such as "Filing Leaves Beautiful Hands Perfectly," would be used on the poster to ease understanding and aid recall. Next to each step, there would be pictures of red flag findings on multiple different skin colours. If the nail salon technician notices any of the abnormalities listed on the poster, they will be instructed to give their client a card with follow-up steps. This card would explain that the technician found a nail abnormality during the appointment and instruct the client to see a doctor for further assessment. This card would have fill-in-the-blanks in which the technician can fill out the date of the abnormality identification, its location, and any descriptive information.

A screening project such as this ultimately benefits the healthcare system, which includes larger stakeholders such as the Ministry of Health, provincial/territorial associations, and local health authorities. Educational institutions that specialize in the industry being targeted (i.e., nail technician training institutions) would be the major stakeholder targets for such a program. The project on which this proposal is based was able to successfully connect with these stakeholders and disseminate important screening information to trainees. Providing an estimate of cost is difficult at this stage of planning, but similar existing projects started with a budget of ten thousand dollars.[11,12]

HAS THIS BEEN DONE BEFORE?

Our proposal is modelled after the Save Your Skin Foundation (SYSF) Styling Hair & Saving Lives (Sty-Lives) initiative.[11] This program aimed to educate hairstylists and barbers to detect suspicious skin lesions on their clients' skin, acting as an early screening system for skin cancers.[11] In doing this, the SYSF hoped to obtain earlier detection of skin cancers and facilitate client-healthcare provider communication.[11] To better inform the Nailed Wellness initiative, our team conferred with Jasmine MacGowan, a managing director at the SYSF. MacGowan noted that the primary component provided to the salons was an instructional 4-and-a-half-minute video, with supporting resources being a poster (Figure 2) and a brochure.[12] By 2023, the initiative had recruited over 300 hairstylists and formed some notable collaborations with the Ontario Medical Students Association and educational institutions (e.g., St. Lawrence College, Coast Mountain College, Algonquin College, and Versailles Academy), integrating the content into the schools' curricula.[12,13] Sty-lives was also presented to a women's support group for new immigrants aspiring to become hairstylists in Canada.[12]

A cross-sectional study by Gibbs et al. surveyed 229 hairdressers and found that 73% of them believed they should be trained in skin cancer detection.[14] Additionally, 47.2% of the sample wanted to learn about skin cancer detection through the use of a video.[14] Another study by Bailey et al. surveyed 203 hair professionals and found that 49% were "very" or "extremely" interested in skin cancer education programs.[15] Overall, hairdressers are willing and eager to conduct screenings. Hopefully, nail salon technicians have a similar outlook.

WHAT COULD LIMIT THIS PROPOSAL?

The salon staff not being medically trained/certified is one of the greatest strengths and novelties of this proposal, in addition to being a limitation. Ultimately, a false positive may cause unneeded stress for customers and the medical system. Customers would have to commit time to follow up with a healthcare professional in addition to the worry of being flagged, while the healthcare system may need to entertain more worried patients. MacGowan noted that there was initial pushback due to a misconception that they wanted hairstylists to become experts in skin cancers.[12] As such, they adjusted their language to "emphasize providing tools for hairstylists to confidently address concerns rather than expecting expertise."[12] Fortunately, this proposal operates in a world where the SYSF has trailblazed the path toward a successful project and has encountered these errors. Thus, the language in advertising and training will clearly explain the role of salon staff and not conflate them with healthcare workers. Notably, the Sty-lives initiative began with a ten thousand dollar budget for content design and print, administrative fees, and video production.[12] Since then, a yearly budget has been maintained for the continuation of this project.[12] These costs are ultimately inherent to a project such as this, but working on an established framework means that costs should not be as high as the Sty-lives project. Finally, it would be difficult to convince salons to participate if there was a high barrier to entry (e.g., cost or accessibility). Thus, the Sty-lives project centers around providing free content and videos, even offering private training sessions at no cost.[11,12] MacGowan believes this is the key to effective recruitment of participants.[11,12] While this can also be time-consuming and costly, it would be the goal for Nailed Wellness.

WHAT ARE THE NEXT STEPS?

The success of Nailed Wellness depends on the salon workers' ability to recognize nail abnormalities suggestive of system disease. As such, standardized and easily digestible training materials depicting common nail abnormalities on a diverse array of patients must be created and disseminated across Canada. Moreover, nail technician schools may incorporate training programs into their curriculum, enabling salon workers' ability to recognize and report nail abnormalities indicative of broader health concerns. If this initiative proves beneficial in the Canadian context, it may have immense potential for international application to improve patient health and reduce healthcare costs.

Figure 2. Sty-Lives Poster (in English and French) and follow-up card.[11]

CONCLUSION

Utilizing lessons learned from the Sty-lives initiative can allow for the implementation of a screening system in nail salons. This intervention would take advantage of the fact that the physical characteristics of one's fingernails can indicate a large variety of systemic diseases. Nail salon staff can be trained to recognize red flags on client nails through the use of informational posters and videos and referring them to the appropriate healthcare providers when necessary. This is an early, simple, and high-yield intervention that reaches outside of the healthcare system to save time, money, and lives. This system would empower workers outside of the healthcare sector to advocate for the health of their clients.

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Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Optimizing Cardiac Monitoring Utilization in the Emergency Department for Patients Awaiting In-Hospital Beds

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Date Submitted: August 23, 2023
Date Accepted: October 14, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.6930

ABSTRACT

Purpose: Emergency department (ED) crowding is a growing crisis and beds with cardiac monitors are a very limited resource. This study aims to assess the use of cardiac monitoring among patients waiting in the ED for an inpatient bed, interventions due to monitoring, and identify risk factors for serious adverse events (SAE) to optimize the use of monitors.

Methods: We performed a 2-week health records review of hospitalized/boarded patients in the ED on cardiac monitors. We collected baseline characteristics and outcomes including serious adverse events (SAE; e.g., arrhythmia, hypotension) during the ED stay. We used descriptive statistics and a logistic regression analysis of six pre-determined variables to identify risk factors for SAE requiring intervention: age, past medical illness [chronic: hypertension, diabetes, cancer, chronic obstructive pulmonary disease, heart failure; or severe: pacemaker, previous Intensive Care Unit (ICU) stay, previous cardiac arrest, coronary artery disease, arrhythmia], abnormal vital signs (HR <50 or >105bpm, RR <8 or >25, SpO_2 <90% or supplemental O_2, mean arterial pressure <60 or >160mmHg, T<35 or >38°C), admission diagnosis, admission destination (monitored or unmonitored location), and Canadian Triage and Acuity Scale (CTAS) score.

Results: 305 patients (mean age 63.7 years; 52.5% male and 47.5% female) of whom 56 (18.4%, 9 with arrhythmia) suffered SAE. Patients admitted under Internal Medicine and Cardiology utilized the most hours on cardiac monitors (1,716.0 and 917.6 hours, respectively) and had the highest numbers of patients with SAE requiring intervention (33 patients total). Patients under Neurology and Medical Oncology had the highest SAE rate (38.5% and 35.7%, respectively). Variables associated with SAE requiring intervention were chronic (OR 4.89, p=0.04) or severe (OR 4.04, p=0.04) illness, abnormal vital signs (OR 3.55, p=0.002) and monitored destination (OR 2.32, p=0.03). These risk factors were associated with SAE during ED stay with 100% (93.2-100%) sensitivity and 4.7% (2.5-8.1%) specificity.

Conclusion: Our study revealed risk factors for identification of a SAE requiring intervention among hospitalized patients who undergo cardiac monitoring during their ED stay. Patients with no chronic or severe illness, normal vital signs and destined to an unmonitored inpatient location can potentially be removed from cardiac monitoring in the ED. Prospective studies are needed to develop a safe clinical decision tool for identification of hospitalized patients requiring ED cardiac monitoring while awaiting inpatient bed.

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RÉSUMÉ

Objectif : La surcharge des services d'urgence constitue une crise croissante et les lits équipés de moniteurs cardiaques sont une ressource très limitée. Cette étude vise à évaluer l'utilisation de la surveillance cardiaque chez les patients en attente d'un lit d'hospitalisation aux urgences, à décrire les interventions induites par cette surveillance et à identifier les facteurs de risque d'événements indésirables graves afin d'optimiser l'emploi des moniteurs.

Méthodes : Nous avons réalisé sur une période de deux semaines une revue des dossiers médicaux des patients hospitalisés ou en observation dans le service des urgences sous surveillance cardiaque. Nous avons recueilli les caractéristiques de base et les résultats, y compris les événements indésirables graves (p. ex., arythmie, hypotension) durant le séjour aux urgences. Nous avons appliqué des statistiques descriptives et une analyse de régression logistique portant sur six variables prédéterminées pour identifier les facteurs de risque d'événement indésirable grave nécessitant une intervention : l'âge, les antécédents médicaux [chroniques : hypertension, diabète, cancer, maladie pulmonaire obstructive chronique, insuffisance cardiaque ; ou sévères : stimulateur cardiaque, séjour antérieur en unité de soins intensifs (ICU), antécédent d'arrêt cardiaque, coronaropathie, arythmie], les signes vitaux anormaux (FC < 50 ou > 105 bpm, FR < 8 ou > 25, SpO_2 < 90 % ou recours à l'oxygène, pression artérielle moyenne < 60 ou > 160 mmHg, T < 35 ou > 38 °C), le diagnostic à l'admission, le lieu d'hospitalisation (secteur avec ou sans surveillance) et le score CTAS (échelle canadienne de triage et d'acuité).

Résultats : 305 patients (âge moyen 63,7 ans ; 52,5 % d'hommes et 47,5 % de femmes), dont 56 (18,4 %, dont 9 avec arythmie) ont présenté un événement indésirable grave. Les patients admis en médecine interne et en cardiologie ont cumulé le plus d'heures de surveillance cardiaque (1 716,0 et 917,6 heures, respectivement) et comptaient le plus grand nombre de patients ayant eu un événement indésirable grave nécessitant une intervention (33 patients au total). Les patients en neurologie et en oncologie médicale affichaient les taux d'événements indésirables graves les plus élevés (38,5 % et 35,7 %, respectivement). Les variables associées à un événement indésirable grave nécessitant une intervention étaient : maladie chronique (rapport de cotes 4,89, p = 0,04) ou grave (rapport de cotes 4,04, p = 0,04), signes vitaux anormaux (rapport de cotes 3,55, p = 0,002) et lieu d'hospitalisation surveillé (rapport de cotes 2,32, p = 0,03). Ces facteurs de risque étaient associés aux événements indésirables graves durant le séjour aux urgences avec une sensibilité de 100 % (93,2–100 %) et une spécificité de 4,7 % (2,5–8,1 %).

Conclusion : Notre étude a mis en évidence les facteurs de risque permettant d'identifier un événement indésirable grave nécessitant une intervention chez des patients hospitalisés bénéficiant d'une surveillance cardiaque pendant leur séjour au service des urgences. Les patients sans maladie chronique ni pathologie grave, présentant des signes vitaux normaux et dirigés vers un service d'hospitalisation sans surveillance continue pourraient potentiellement être retirés de la surveillance cardiaque aux urgences. Des études prospectives sont nécessaires pour développer un outil décisionnel clinique sûr destiné à identifier les patients hospitalisés qui nécessitent une surveillance cardiaque aux urgences en attendant l'attribution d'un lit.

INTRODUCTION

Emergency department (ED) beds with continuous cardiac monitoring are costly and a limited resource. Ideally, these beds should be reserved for critically ill patients who are at high risk for cardiac dysrhythmias and hemodynamic instability. Previous literature examining patients admitted to hospital has demonstrated that routine telemetry offers very little cardiac arrest survival benefit in most cases[1]. Unnecessary prolonged monitoring may even lead to undesired consequences. For example, routine continuous electrocardiographic monitoring in the ED for patients with low-risk chest pain have been shown to result in a high rate of alarms (4.7 alarms per monitored hour) with only a small minority (0.2%) of them triggering a change in management[2]. Even though patients with elevated troponins without ST-elevation myocardial infarction had fairly high rates of detected arrhythmias (26%), changes in management were uncommon (6.3%)[3].

ED crowding remains a growing problem universally. In addition to patients being assessed by emergency physicians, there are significant numbers of admitted patients remaining in ED beds, also known as boarded patients, due to inpatient bed overcapacity. As regional referral centers, many tertiary and quaternary care centers physically intake outside referrals though the ED to be seen by a specialty service, adding to the demands of cardiac monitoring space in the ED.

Practice standards for the use of cardiac monitoring in the hospital setting were first published in 1991 by the American College of Cardiology[4]. These were later revised in 2005 by the American Heart Association and again most recently updated in 2017 and 2021[5,6]. These guidelines, however, are not geared towards ED patients. There are no studies to date that examined the issue of ED cardiac monitoring of hospitalized patients. Wide variations in ED cardiac monitoring exist, resulting in long ED wait times, ambulance offload delays, and delay in acute care of high-risk patients waiting for a bed with cardiac monitoring.

By examining current practices amongst the different admitting services and analyzing clinical outcomes related to admitted patients on continuous cardiac monitoring in the ED, we can reduce unnecessary utilization of monitored beds in the ED and shift those resources more appropriately to critically ill patients.

The primary objectives of this study were to assess the proportion of patients who received clinical interventions in response to close cardiac monitoring and the length of time spent on monitors by boarded patients in the ED. The secondary objectives were to assess the proportion of patients with events that did not lead to changes in patient management and to identify factors associated with safe discontinuation of cardiac monitoring to optimize ED use of cardiac monitors for boarded patients.

METHODS

Study Design and Setting

This study was a health records review conducted over a 2-week period (December 1st to 14th, 2015) at the two academic tertiary care EDs of The Ottawa Hospital. This regional trauma center is also the referral destination for many subspecialties such as cardiac, vascular, and neurosurgical emergencies. This 1,163-bed facility annually handles over 160,000 emergency visits, nearly 1 million ambulatory care visits, and roughly 70,000 surgical cases[7]. The ED is staffed by 95 staff physicians, approximately 250 registered nurses, and around 60 emergency medicine residents. Data collection was performed by a member of our research team, where each chart was reviewed manually. Patients' medical record numbers were linked to unique study identification number which were kept on a hospital secure server. Research ethics board approval was received to conduct this study (OHSN REB protocol # - 20160543-01H).

Population

The patient population included all who were admitted to hospital from the ED and spent any amount of time in a monitored bed while boarded in the ED. Patients that did not spend any time in a cardiac monitored bed during their ED stay were not eligible. Patients were excluded if they had return of spontaneous circulation (ROSC) after a cardiac arrest, a diagnosis of ST-elevation myocardial infarction (STEMI), significant trauma that resulted in a code trauma called upon arrival to the ED, presented with symptoms consistent with a stroke leading to a code stroke activated upon their arrival, or if they were intubated prior to admission. These patients were excluded as it was felt that did not present a clinical dilemma regarding appropriate use of cardiac monitoring.

Data Collection

We collected patient demographics, baseline characteristics and clinical data obtained during the ED visit. We collected past medical history including dysrhythmia as part of baseline characteristics. Dysrhythmias were defined as any abnormal variation from normal sinus rhythm, such as irregularities and disturbances to rate and/or conduction. ED clinical data included the patients' presenting complaint, admission diagnosis, admission destination, admission vitals and time metrics (length of stay on monitor and in the in the ED) and the Canadian Triage and Acuity Scale (CTAS) score. The CTAS is a tool used in EDs to prioritize patient care by triaging patients according to acuity based on their presenting signs and symptoms. The CTAS has five levels: level 1- resuscitation (i.e., cardiac arrest), level 2 – emergent (i.e., chest pain with cardiac features), level 3 – urgent (i.e., vomiting and/or nausea with mild dehydration), level 4 – less urgent (i.e,, chronic confusion), level 5 – non-urgent (i.e., medication request).

Outcome Measures

The study outcome measures were arrhythmias detected on monitor, interventions performed due to cardiac monitoring and mortality during the ED and hospital stay.

Statistical Analysis

We used descriptive statistics and reported mean with standard deviation for continuous variables, and frequencies with percentages for categorical variables. We used multivariable logistic regression to identify variables associated with intervention in response to events identified through ED cardiac monitoring. Based on clinical sensibility and input from emergency medicine researchers and quality improvement experts, we chose six variables a priori for model development. The variables included age, past medical history, vital signs, admission diagnosis, admission destination and CTAS score. With the intent of identifying those at risk for arrhythmias we classified past medical history into either chronic or severe illness. Chronic illnesses included hypertension, diabetes mellitus, cancer, and chronic obstructive pulmonary disease. Illnesses considered severe involved a history of pacemaker insertion, Intensive Care Unit (ICU) stay, cardiac arrest, coronary artery disease, arrhythmias, or heart failure. Based on consensus and previous publications, we classified the vital signs as abnormal if the temperature was <35 or >38°C, heart rate was <50 or >105bpm, respiratory rate was <8 or >25 respirations per minute, oxygen saturations were <90% or if the patient required supplemental oxygen due to hypoxia, or if the mean arterial pressure (MAP) was <60 or >160mmHg[8]. This MAP range was determined based on the known range for maintenance of cerebral autoregulation.

Our preliminary analysis after review of 94 patients showed that 19% of patients received an intervention for abnormalities identified during ED cardiac monitoring. To perform a multivariable logistic regression analysis with six variables, we would require at least 60 patients with events identified on cardiac monitor, considering 10 events per variable as recommended for prediction tool development[9]. Hence, we estimated that a sample size of approximately 300 patients will be needed for this study. We used Statistical Analysis System (SAS) (version 9.4) for data analysis and defined $p<0.05$ as statistically significant.

RESULTS

Participants

A total of 400 charts of patients who had spent any time in an area of the ED with available cardiac monitors were reviewed to assess for eligibility (Figure 1). Overall, 52 patients were found to be ineligible as they did not meet the study inclusion criteria: 50 of these patients had not spent any time on a cardiac monitor and 2 patients were never admitted. The remaining 348 patients were assessed for any exclusion criteria. Of these, 43 were excluded because of a stroke or trauma code being called upon their arrival to the ED, presenting to the ED in cardiac arrest, or being intubated prior to their admission. Finally, 305 patients were included in the study.

Patient Characteristics

Baseline characteristics are detailed in Table 1. The mean age was 63.7 years old with males representing 52.5% (160 patients) and females representing 47.5% (145) of the patient population. In terms of past medical history, 40.0% of patients had at least one condition considered to be a severe illness, most commonly coronary artery disease (23.0%) and dysrhythmia (21.3%). 112 (36.7%) patients had a history of a chronic illness, most commonly hypertension (43.9%) and cancer (27.5%). 71 patients (23.3%) did not have a history of a severe or chronic illness. The majority of patients (66.9%) were triaged as CTAS 2 upon arrival to the ED. 160 (52.5%) patients were admitted to a

non-monitored area (inpatient ward) and 145 (47.5%) patients were admitted to a monitored area.

Cardiovascular emergencies such as acute coronary syndrome (69 patients, 22.6%), and sepsis/infections (52 patients, 17.0%) were the most common reasons for hospitalization. A small number of patients were diagnosed with an intra-abdominal emergency (15 patients, 4.9%) or a metabolic emergency, such as diabetic ketoacidosis, (16 patients, 5.2%).

More than half of patients were admitted either under Internal Medicine (104 patients, 34.1%) or Cardiology (62 patients, 20.3%) (Table 1). The mean duration per patient on cardiac monitor was highest for patients admitted under the following services: Radiation Oncology (mean 20.8 hours, 6 patients), Neurosurgery (mean 17.5 hours, 8 patients), Neurology (mean 16.9 hours, 13 patients), Internal Medicine (mean 16.5 hours, 104 patients) and Cardiology (mean 14.8 hours, 62 patients).

The total amount of cardiac monitoring hours utilized grouped by admitted service (Figure 2) reveals patients admitted under Internal Medicine utilized the most hours on a monitor, totaling to 1716.0 hours over the 2-week period. Patients admitted under Cardiology utilized the second most total hours on a monitor, with 917.6 hours. The remaining admitting services utilized markedly less monitored hours in total ranging from 219.7 hours by Neurology and 9.3 hours by Otolaryngology.

Interventions and Arrhythmias

In total, there were 64 events (21.0%) detected from close patient monitoring. Arrhythmias were detected in 17 (5.6%) patients (Table 2), and an additional 47 (15.4%) patients underwent an intervention not related to an arrhythmia but resulting from close cardiac monitoring. The types of dysrhythmias detected are detailed in Table 2. Not all detected arrhythmias led to an intervention. Of the 17 detected arrhythmias, 9 required interventions: administering an anti-arrhythmic (5 patients, 1.6%), magnesium sulfate (1 patient, 0.3%), intravenous fluids (1 patient, 0.3%) or transfer to the resuscitation bay (2 patients, 0.7%). Ultimately, 8 of the 17 patients did not receive any intervention in response to their detected arrhythmia.

Some interventions were not due to a cardiac arrhythmia (Table 2). The interventions performed for the 47 patients

Table 1. Patient Characteristics

Characteristics – n (%)	N=305
Age in Years, Mean (Standard Deviation)	63.7 (18.9)
Range	17 – 96
Sex	
Male	160 (52.5)
Female	145 (47.5)
Past Medical History	
Severe Illness	122 (40.0)
Coronary Artery Disease	70 (23.0)
Dysrhythmia	65 (21.3)
Heart Failure	44 (14.4)
Pacemaker	10 (3.3)
Previous Intensive Care Unit Stay	10 (3.3)
Previous Cardiac Arrest	1 (0.3)
Chronic Illness	112 (36.7)
Hypertension	134 (43.9)
Cancer	84 (27.5)
Diabetes	77 (25.2)
Chronic Obstructive Pulmonary Disease	54 (17.7)
None	71 (23.3)
Canadian Triage and Acuity Scale Score	
1	10 (3.3)
2	204 (66.9)
3	88 (28.9)
4	3 (1.0)
5	0 (0.0)
Admission Destination	
Ward	160 (52.5)
Ward with Telemetry	42 (13.8)
Acute Monitoring Area	40 (13.1)
Operating Room	14 (4.6)
Neuro Acute Care Unit	14 (4.6)
Trauma Ward	13 (4.3)
Coronary Care Unit	12 (3.9)
Intensive Care Unit	9 (3.0)
Cardiac Catherization Laboratory	1 (0.3)
Admission to Monitored Setting	
Monitored Area	145 (47.5)
Non-Monitored Area	160 (52.5)
Admission Diagnosis	
Cardiovascular Emergencies	69 (22.6)
Sepsis/Infections	52 (17.0)
Fractures/Trauma	25 (8.2)
Neurologic Emergencies	21 (6.9)
Cancer and Complications	18 (5.9)
Respiratory Emergencies	17 (5.6)
Metabolic Emergencies	16 (5.2)
Intra-Abdominal Emergencies	15 (4.9)
Other	72 (23.6)
Admitting Service	
Medicine	104 (34.1)
Cardiology	62 (20.3)
General Surgery	17 (5.6)
Medical Oncology	14 (4.6)
Neurology	13 (4.3)
Trauma	13 (4.3)
Others*	82 (26.9)

*Other admitting services include Orthopedic Surgery, Intensive Care Unit, Hematology, Nephrology, Neurosurgery, Gynecology, Radiation Oncology, Vascular Surgery, Thoracic Surgery, Family Medicine, Respirology, Urology, Gastroenterology, and Otolaryngology

because of monitoring who did not suffer an arrhythmia were: administration of an intravenous fluid bolus for hypotension (18 patients, 5.9%), supplemental oxygen for hypoxia (16 patients, 5.2%), anti-hypertensive therapy for hypertension (5 patients, 1.6%), or administration of vasopressor therapy for persistent hypotension (3 patients, 1.0%). The RACE (Rapid Assessment of Critical Events) team was consulted for 2 patients (0.7%) in response to persistent hypotension. The following types of intervention were each performed in one patient (0.3%) within the study cohort: vascular line placement for blood pressure monitoring due to hypotension, repeat ECG for ST elevations seen on monitor, or discontinuation of a medication for hypotension.

In-hospital mortality was assessed, both while admitted in the ED and after transfer out of the ED. None of the patients died in the ED and the mortality while in an inpatient ward was 6.2% (19 patients).

The rate of intervention varied according to admitting service (Figure 2). The highest interventions rates were found in Neurology (5 patients, 38.5% intervention rate), Medical Oncology (4 patients, 35.7% intervention rate), and Orthopedics (3 patients, 17.6% intervention rate). Internal Medicine and Cardiology had the highest absolute number of interventions in 22 (21.2%) and 11 (17.4%) patients, respectively.

Logistic Regression Analysis

The multivariable logistic regression analysis of the six pre-determined variables (age, past medical history, abnormal vital signs, admission diagnosis, admission destination and CTAS) is detailed in Table 3. Three of the six variables were found to be statistically significant ($p<0.05$), indicating an association for requiring an intervention due to cardiac monitoring. The highest Odds Ratios (OR) were obtained for patients' past medical histories. Patients with histories of chronic or severe illnesses had ORs of 4.9 (95% CI 1.5, 16.3) and 4.0 (95% CI 1.2, 14.0), respectively ($p=0.04$). Patients with abnormal vitals had an OR of 3.6 (95% CI 1.6, 7.8; $p=0.002$). Finally, admitted patients assigned to a monitored setting had an OR of 2.3 (95% CI 1.1, 4.9; $p= 0.03$). Combined, the three statistically significant variables (past medical history, abnormal vitals and admission destination) provided a sensitivity of 100% (95% CI 93.2%, 100%) and specificity of 4.7% (95% CI 2.5%, 8.1%) for patients requiring an intervention due to cardiac monitoring as well as a 100% sensitivity for mortality in hospital.

DISCUSSION

In our study, the highest intervention rates were seen in patients admitted under Neurology and Medical Oncology. The Medical Oncology service utilized less hours per patient on ED cardiac monitors. Internal Medicine and Cardiology services utilized the most total monitored hours in the ED and had moderately high intervention rates. When considering the high total monitored hours utilized by Internal Medicine and Cardiology and their moderately elevated intervention rates, given the large volume of patients admitted to these two services, further research to identify risk factors for interventions identified by monitoring in this population is needed.

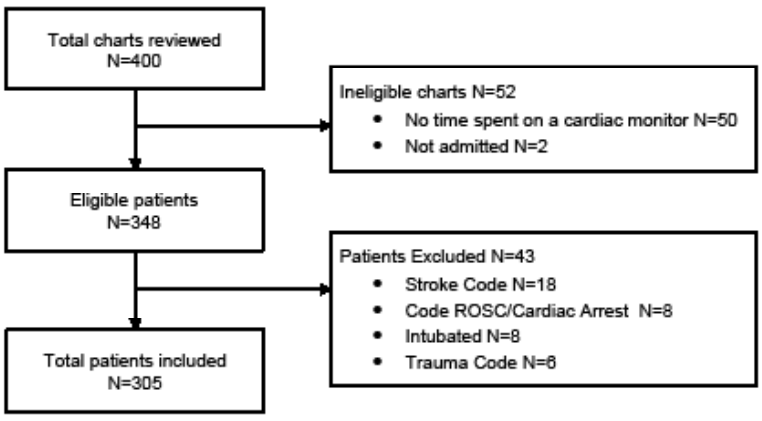
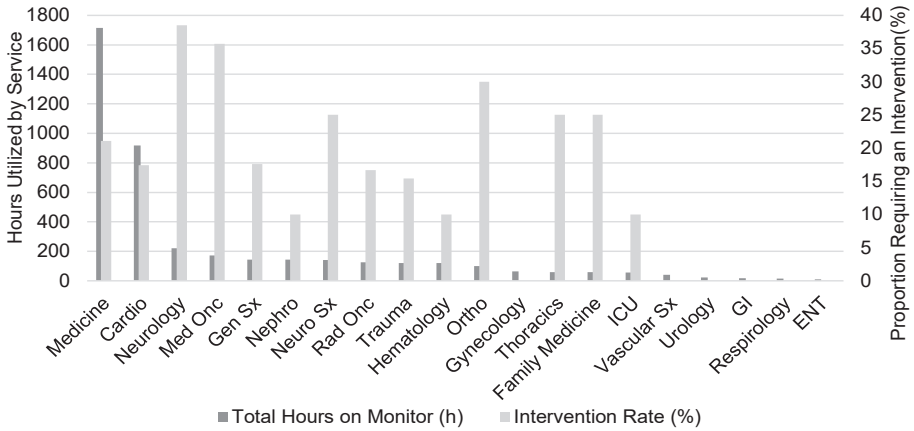


Figure 1. Patient flowchart. Flow of participants through the study.



Cardio (Cardiology), Med Onc (Medical Oncology), Gen Sx (General Surgery), Nephro (Nephrology), Neuro Sx (Neurosurgery), Rad Onc (Radiation Oncology), Ortho (Orthopedic Surgery), ICU (Intensive Care Unit), Vascular Sx (Vascular Surgery), GI (Gastroenterology), ENT (Otolaryngology)

Figure 2. Total Hours on Cardiac Monitor vs Intervention Rate According to Admitting Service

In keeping with previous literature, this study showed that overall, there was a very low incidence of interventions performed in response to detected arrhythmias from cardiac monitoring. Previous studies have reported high alarm rates for detected arrhythmias from cardiac monitors (26%) with only a small minority (6.3%) leading to a change in patient management[2]- our study observed similar results. The rate of arrhythmia detection was 5.6%, however only just over half of these patients (3.0% overall) underwent a subsequent intervention in response.

Overall, approximately 1 in 5 patients had events (i.e. arrhythmia, hypotension, hypoxia) detected due to close monitoring. There were notably far more interventions related to cardiac monitoring that were not due to an arrhythmia (i.e. fluid bolus for hypotension), in comparison to interventions solely due to an arrhythmia. The rates of these interventions were relatively high and suggests that closer clinical/nursing monitoring may be more important than actual cardiac monitoring. To our knowledge, there is no study specifically looking at this patient population and future studies identifying predictors for intervention may be warranted.

Previous studies have successfully created and prospectively validated clinical decision tools to aid ED physicians in safely identifying patients with chest pain that do not require further cardiac monitoring[10,11]. A similar decision tool predicting which boarded patients in the ED may require an intervention due to cardiac monitoring could not be developed based on our results. Half of the pre-determined variables (age, admission diagnosis, CTAS) did not show any statistically significant association with the need for an intervention. However, our multivariable logistic regression analysis yielded three variables that were significantly associated with requiring an intervention for patients boarded in the ED on cardiac monitors: chronic illness (hypertension, diabetes mellitus, cancer, chronic obstructive pulmonary disease or heart failure) or severe illness (pacemaker, previous ICU stay, previous cardiac arrest, coronary artery disease or history of arrhythmia), admission destination (monitored setting) and abnormal vital signs. Although these variables had fairly high ORs it should be noted that the associated confidence intervals were quite wide. They did however, when combined, have a sensitivity of 100% as predictors for intervention and were also 100% sensitive in predicting mortality.

This study is a retrospective chart review which should be noted as a limitation. Although there is paucity of research specifically on patients boarded in the ED on cardiac monitors, this study does stimulate additional research questions which ideally can be further investigated prospectively. Furthermore, this study investigated a relatively small sample size of patients. A large prospective study will allow identification of additional factors to construct a statistically robust clinical decision tool. Such a decision tool could be of particular value in patients admitted under services that utilize the most total hours on cardiac monitors in the ED, such as Internal Medicine and Cardiology.

Table 2. Arrhythmias detected and interventions for patients on cardiac monitors

Variable – n (%)	N=305
Total Detected Arrhythmias	**17 (5.6)**
Ventricular Tachycardia	4 (1.3)
Sinus Bradycardia	4 (1.3)
Atrioventricular Block	2 (0.7)
Rapid Atrial Fibrillation	2 (0.7)
Significant Sinus Tachycardia	1 (0.3)
Significant Ectopy	1 (0.3)
Junctional Bradycardia	1 (0.3)
Junctional Tachycardia	1 (0.3)
Supraventricular Tachycardia	1 (0.3)
Total Interventions Due to Detected Arrhythmias	**9 (3.0)**
Anti-Arrhythmic	5 (1.6)
Transferred to Resuscitation Bay	2 (0.7)
Magnesium Sulfate	1 (0.3)
Fluids	1 (0.3)
No Intervention	8 (2.6)
Total Interventions Not Related to Detected Arrhythmias	**47 (15.4)**
Bolus of Intravenous Fluids for Hypotension	18 (5.9)
Supplemental Oxygen for Hypoxia	16 (5.2)
Anti-Hypertensive for Hypertension	5 (1.6)
Vasopressor for Hypotension	3 (1.0)
Rapid Assessment of Clinical Events (RACE) Consult for Hypotension	2 (0.7)
Line Placement for Blood Pressure Monitoring Due to Hypotension	1 (0.3)
Repeat Electrocardiogram for ST Elevations on Monitor	1 (0.3)
Home Medication Held for Hypotension	1 (0.3)

Table 3. Logistic Regression Analysis for variables associated with a patient requiring an intervention

Variable	Odds ratio (95% CI)	p-value
Age	1.01 (0.99; 1.03)	0.39
Illness		0.04
Severe	4.04 (1.16; 14.04)	
Chronic	4.89 (1.47; 16.30)	
None	ref	
Abnormal Vitals	3.55 (1.61; 7.81)	0.002
Admission Diagnosis		0.77
Cardiovascular Emergencies	0.93 (0.33; 2.63)	
Sepsis/Infections	1.83 (0.65; 5.13)	
Fractures/Trauma	2.54 (0.67; 9.64)	
Neurologic Emergencies	2.38 (0.60; 9.50)	
Cancer and Complications	--*	
Respiratory Emergencies	1.57 (0.38; 6.53)	
Metabolic Emergencies	1.37 (0.23; 8.20)	
Intra-abdominal Emergencies	2.58 (0.53; 12.90)	
Other	ref	
Admission Destination		0.03
Monitored Area	2.32 (1.11; 4,87)	
Non-Monitored Area	ref	
CTAS		0.49
1	ref	
2	1.51 (0.26; 8.68)	
3	0.78 (0.12; 4.96)	
4	--*	

*Odds ratio could not be calculated as no events were recorded that led to an intervention.
CI = Confidence Interval

CONCLUSION

This study demonstrates that for patients boarded in the ED on cardiac monitors, approximately only one in five suffer an event detected due to close monitoring, and an even lower proportion require an intervention due to these detected events. Patients admitted to Internal Medicine and Cardiology utilize the most total hours on cardiac monitors with the highest absolute number of interventions due to cardiac monitoring. Results from this study showed that this patient population should specifically be further investigated. Additionally, three variables were identified as being associated with requiring an intervention due to cardiac monitoring with 100% sensitivity: past medical history (chronic or severe illness), admission to a monitored setting and abnormal vital signs. Based on these results, patients with no chronic or severe illness, normal vital signs and destined to an unmonitored inpatient location can potentially be removed from cardiac monitoring in the ED.

There is currently no validated tool to guide clinicians in identifying boarded patients in the ED that can be safely taken off a cardiac monitor. Further prospective studies will be needed to develop a robust tool to guide physicians in the optimal use of ED cardiac monitoring for boarded patients.

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Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Medicinal Melodies: A Scoping Review of Music In Medical Education

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Date Submitted: September 2, 2024
Date Accepted: December 4, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.V15i1.7275

Keywords: *Music, medical education, medical humanities*

ABSTRACT

As medical education advances, integrating empathy and emotional intelligence with technical skills remains essential. The field of medical humanities, encompassing disciplines such as the study of music, is increasingly recognized as crucial for cultivating these interpersonal and emotional competencies. Music has been recognized for its significant role in enhancing interpersonal skills, stress management, and empathy among medical students. This review examines various approaches to integrating music into medical education, including active participation in performances, reflective listening practices, structured coursework, and professional development workshops. Participation in musical groups has shown benefits in stress relief, teamwork, and cultural appreciation. Reflective listening to music, such as attending performances and analyzing them, helps enhance self-awareness and non-verbal communication skills. Formal coursework and clinical applications of music therapy provide students with insights into how music can improve patient care, fostering greater patient engagement and building stronger rapport. While professional development seminars are beneficial, they often face challenges in securing student engagement and may lack opportunities for direct patient interaction. Despite the promising evidence, challenges exist. Methods relying on musical skills might exclude non-musicians, and the effectiveness of listening-based approaches can vary with personal music preferences. Theoretical frameworks in music-based pedagogy advocate for integrating these methodologies with empirically supported clinical practices to develop a comprehensive and structured curriculum. Overall, integrating music into medical education offers the potential to enhance humanistic practices and improve patient interactions, though further research is needed to optimize and formalize these approaches.

RÉSUMÉ

À mesure que la formation médicale progresse, l'intégration de l'empathie et de l'intelligence émotionnelle aux compétences techniques demeure essentielle. Le domaine des sciences humaines médicales, qui englobe des disciplines telles que l'étude de la musique, est de plus en plus reconnu comme crucial pour cultiver ces compétences interpersonnelles et émotionnelles. La musique a été reconnue pour son rôle significatif dans l'amélioration des compétences interpersonnelles, de la gestion du stress et de l'empathie chez les étudiants en médecine. Cette étude examine diverses approches pour intégrer la musique dans la formation médicale, y compris la participation active à des représentations, des pratiques d'écoute réflexive, des cours structurés et des ateliers de développement professionnel. La participation à des groupes musicaux s'est révélée bénéfique pour le soulagement du stress, le travail d'équipe et l'appréciation de la culture. Une écoute réfléchie de la musique, par exemple en assistant à des représentations et en les analysant, contribue à améliorer la conscience de soi et les compétences en matière de communication non verbale. Les cours structurés et les applications cliniques de la musicothérapie permettent aux étudiants de mieux comprendre comment la musique peut améliorer les soins prodigués aux patients, ce qui favorise l'engagement des patients et l'établissement de rapports plus étroits. Bien que les séminaires de développement professionnel soient bénéfiques, ils se heurtent souvent à la difficulté de susciter l'engagement des étudiants et peuvent manquer d'occasions d'interaction directe avec les patients. Malgré les preuves prometteuses, il existe des défis à relever. Les méthodes reposant sur les compétences musicales peuvent exclure les non-musiciens, et l'efficacité des approches basées sur l'écoute peut varier en fonction des préférences musicales personnelles. Les cadres théoriques de la pédagogie basée sur la musique préconisent l'intégration de ces méthodologies aux pratiques cliniques soutenues empiriquement afin de développer un programme d'études complet et structuré. Dans l'ensemble, l'intégration de la musique dans la formation médicale offre la possibilité de renforcer les pratiques humanistes et d'améliorer les interactions avec les patients, bien que des recherches supplémentaires soient nécessaires pour optimiser et formaliser ces approches.

INTRODUCTION

As medical science continues to advance with innovative therapies, the need for medical education to develop physicians who are both technically skilled and emotionally intelligent remains crucial. Both physicians and patients agree that empathy is one of the core tenets of patient care and that it can positively influence clinical outcomes.[1] However, the pedagogical foundation for teaching empathy remains unclear, particularly considering the demanding nature of technical education, the implicit curriculum that may foster desensitization and detachment, and evidence indicating a decline in empathy as students progress through medical school.[2] Disillusionment with the healthcare system has reached concerning levels among a significant number of patients, due in part to a lack of empathy in physicians.[3]

In response, there has been a renewed focus on integrating medical humanities into the education of healthcare professionals. This approach highlights the practice of humanistic medicine, which prioritizes placing the patient at the center of care. It emphasizes the importance of maintaining respect, dignity, and a genuine interest in the patient's well-being as fundamental values. Additionally, it advocates for a holistic approach that considers the patient's emotional, social, and psychological needs alongside their physical health.[3] Medical humanities aim to restore trust and strengthen the patient-provider relationship by fostering empathy, communication, and ethical reasoning. Subjects include history, philosophy, literature, and music, whose study can provide a more holistic view of illness and patient experience.

The study of music is unique in that the connection between excellence as a musician and physician has long been known, with many physicians and medical students engaging in musical activities.[4] Some educators assert that music can impart the principles of humanistic practice to medical students. Evidence suggests that medical students with musical backgrounds exhibit enhanced active listening skills, communicative abilities, and stress management techniques.[4] These skills collectively contribute to more effective and empathetic interactions with patients, although more work is needed to robustly confirm these associations.[4] Consequently, several medical schools have incorporated aspects of music, including music therapy, into their curricula. These additions serve a dual purpose: they equip students with a therapeutic tool that can enhance patient care and offer a distinctive opportunity for students to gain a more profound understanding of patient experiences. By engaging with music in this way, students are encouraged to consider the cultural and historical contexts that shape patient care, ultimately enriching their educational journey and broadening their perspective on the diverse needs of the individuals they will treat.5 Despite its potential, there is a notable gap in research regarding the formal integration of music into medical education and its deliberate use to enhance reflective practices, interpersonal skills, and empathy among medical students. Therefore, this scoping review aims to explore the extent to which music has been implemented in medical education and to contrast the various methods by which it is used among various medical schools.

METHODS

Relevant Research Studies

All articles were obtained from the electronic databases PubMed, EMBASE, and OVID Medline. The search involved MeSH, keywords, and title and abstract searches. The following terms were used to obtain the articles used: music [MeSH and Keyword], music therapy [MeSH and Keyword] AND medical student [MeSH and Keyword], medical school [MeSH and Keyword], medical education [MeSH and Keyword], medical faculty [MeSH and Keyword], undergraduate medical education [MeSH and Keyword], medical graduate [MeSH], med student [Keyword], med school [Keyword], med program [Keyword], medical trainee [Keyword], undergrad medical education [Keyword].

Selection of Articles

The inclusion criteria consisted of articles that: 1) were in English; 2) involved medical students and medical education; 3) were about how music is or can be used in medical education; 4) were about contemporary medical practices. Articles were excluded if they: 1) were about graduate students, higher educational levels, or non-medical students; 2) involved music in other contexts (music in the operating room, etc.); 3) were about humanity topics other than music; 4) were not published full articles (abstracts, posters, etc.); 5) were retracted papers. This process is summarized in Figure 1.

RESULTS

Article Review Process

Following selection, 1478 potential papers that fit the preliminary search criteria were collected (PubMed: 381, OVID Medline: 308, EMBASE: 789). Duplicates were removed, leaving 868 papers remaining. A title review was conducted, and relevant articles were chosen, reducing the number of articles to 127. An abstract review further reduced the number of articles, leaving 48 for full manuscript review. The manuscript review aimed to determine how relevant these articles were in answering the research question, and to determine whether they fit into predetermined inclusion criteria. Papers connecting contemporary medicine and the benefits of music in medical education were included. Any articles that discussed how other humanities benefited medical education were excluded. Articles that focused only on how music benefited students academically were also excluded. The final number of articles included was 14. Results are displayed in Table 1.

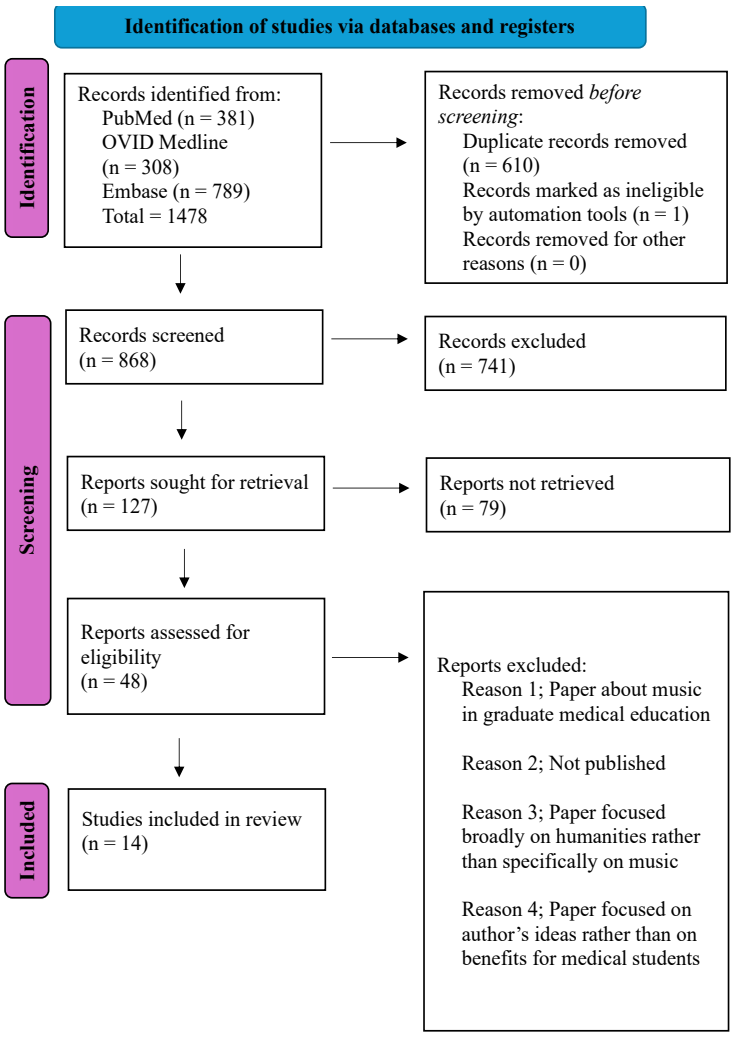

Figure 1. PRISMA flowchart for article selection

Of the 14 selected articles, 5 were commentaries, 3 had qualitative study designs, 3 had quantitative study designs, and 3 were case reports. All 14 articles claimed that music can significantly improve humanistic characteristics in medical students, and can support the technical curriculum well. Medical schools have employed four distinct modalities to integrate music into their curricula: participation in performance, reflective listening, formal coursework, and professional development workshops. Additionally, educators have suggested theoretical frameworks and objectives for incorporating music into medical education.

Through participation in performance, students of varying skill levels and ethnic backgrounds formed bands and orchestras, performing for the community. Commonly noted benefits included stress management, mentorship, teamwork, and diversity; as such, this method has gained positive appraisal from students and faculty alike.[5-7] Other medical schools have utilized listening to music as an educational tool by requiring students to attend performances and reflect on their experiences, or by incorporating background music in academic settings. For instance, one study involved a group of students with no formal music training who attended 15 opera performances.[8] Students noted that attending the performances as a group and discussing afterward promoted reflective attitudes, and self-examination, fostering disclosure of emotions.[8] Students observed that the characters in the opera performance embodied a range of emotional archetypes, offering a distinctive perspective on human emotions by illustrating both negative and positive values, attitudes, and behaviors. Researchers also noted that these attitudes demonstrated a lasting impact, described as a 'delayed effect', persisting beyond the immediate exposure to the performances.[8] In another study, 72 medical students were asked to attend string quartet performances, to promote awareness of non-verbal communication skills within team dynamics.[9] Researchers employed pre- and post-performance surveys to evaluate shifts in attitudes. The results demonstrated a statistically significant improvement in students' ability to interpret non-verbal communication within healthcare teams, as well as in interactions between patients and providers, following the performance.[9] One other commentary indicated that classroom attendance improved after playing music in the background and that students reported lower levels of stress.[10]

Table 1. Summary of various strategies medical schools have used to implement music into medical education (14 articles)

Author	Modality	Advantages	Disadvantages
Ortega et al.[5]	Performing in a musical ensemble	Improves problem-solving ability Enhances communication with diverse groups Promotes cultural competency by performing genres from different cultures Enhances teamwork and interpersonal relationships	Difficult to measure changes in cultural competency
Brooks[6]	Participation in an orchestra performing classical music	Improving emotional regulation Improves collaboration Promotes service mindset	N/A
Moshman[7]	Participation in an orchestra performing classical music	Promotes a sense of teamwork Improves communication skills	N/A
Blasco et al.[8]	Listening to opera performances	Promotes disclosure of emotions Promotes reflective attitudes that persist long after the performance Can model positive and negative emotional behaviors	N/A
Hall et al.[9]	Listening to chamber music performances	May improve recognition of non-verbal cues Does not require students to have a musical background Promotes leadership among students	Difficult to remove Hawthorne bias in testing No clinical measure of improved non-verbal communication
Cook[10]	Background music in academic setting	Improves class attendance Reduces subjective stress levels in students	N/A
Kobus et al.[11]	Music therapy: theory and clinical application	Can improve engagement with patients Evidence-based practices for students to use Fosters interdisciplinary dialogue when approaching patient care	Coursework is biased toward students with a background in music
Thompson et al.[12]	Compulsory creativity classes, which can involve musical expression	Students explore insights into patient experiences Pushes students to think "outside the box" Promotes disclosure of emotions Can improve empathy for patient experiences	Compulsory engagement may cause some students to lose interest
Frich and Fugelli[13]	Professional development workshop	May provide alternative insights into patient experiences Provides a connection between music and physiology	Students show varying levels of interest; some struggle to see relevance
Harz et al.[14]	Professional development workshop	May provide alternative insights into patient experiences Creates awareness of hidden curriculum promoting desensitization Promotes reflective attitudes	Event lasts one day, and reflective attitudes may not persist
Ledger and Joynes[15]	Professional development workshop	Improves subjective self-awareness of emotion Promotes reflective attitudes Improves awareness of the therapeutic benefit of music in patient care	Biased towards students who have a musical background Workshop is interest-based, so many non-musicians hesitate to participate
Rivas et al.[16]	Professional development workshop	Improves self-awareness Improves management of own emotions Promotes empathy and emotional intelligence	Measures of emotional intelligence may not be rigorous enough to be applied to the patient-provider relationship
Davidoff[17]	Theoretical Frameworks and Pedagogical Goals	Offers 10 professional skills medical students can learn from musicians Can help develop resilience and self-awareness in students, with feedback from educators	N/A
Dornan and Kelly[18]	Theoretical Frameworks and Pedagogical Goals	Can teach students to become more present with patients Promotes active listening skills and engagement Can help students develop better rapport with patients	N/A

To maximize the accessibility of music's benefits for a broad range of students, other medical schools took a more formal approach, directly teaching the benefits of music, rather than putting the onus on students. In one medical school, students participated in a course regarding the benefits of music therapy in pediatric care, with a focus on how it can complement contemporary medical treatments.[11] The course was structured into two stages: a pre-clinical phase, during which students were introduced to the fundamentals of music therapy and its impact on patient well-being, including vital signs and emotional health; and a subsequent clinical phase, where students applied these principles in patient interactions. Notably, 100% of the students recognized that music significantly enhances patient well-being in the stressful environment of a hospital.[11] Children became more alert, calm, and communicative following music therapy, and 94% of students were fascinated by how quickly they could form a connection with unfamiliar patients.[11] 57% of students reported being able to fully concentrate on the patient, blocking out other distractions.[11] 94% of students in this study wished to recommend complementary therapies such as music to patients and families in their future practice.[11] Another medical school has incorporated mandatory creativity classes, allowing students to engage in artistic expression, such as music, to explore themes related to patient care and emotional well-being.[12]

Professional development training represents another method for formally integrating music education into medical school curricula. Like course-based approaches, these seminars aim to increase awareness of how music can support emotional development and enhance patient care. At one medical school, these seminars concentrated on research linking music with medicine across various fields, including physiology, endocrinology, and neurology, with a focus on evidence-based practices and the latest research advancements.[13] Other seminars took similar approaches, aiming to educate students on how music can improve emotional intelligence, promote reflective attitudes, and provide alternative insights into patient experiences.[14-16] Furthermore, one workshop also worked to build awareness about the hidden curriculum promoting desensitization.[14]

Lastly, rather than listing the benefits they noticed in students, some authors provided theoretical frameworks for music-based pedagogy, giving opinions on what these courses must focus on developing in students.[17,18] Results are displayed in Table 1.

DISCUSSION

Dr. William Osler once said, "The good physician treats the disease; the great physician treats the patient who has the disease." The significance of humanistic practice in medicine is widely acknowledged by both physicians and medical schools. In response, medical schools have adopted music-based approaches to cultivate humanistic values among medical students, with the expectation that these values will be integrated into their professional practice. Through the search performed, this article aims to characterize the methods various medical schools have taken in implementing music-based education to teach medical students the principles of humanistic practice and to explore the strengths and limitations of each approach.

Participation in Performance

Initially, musical groups were developed to promote interpersonal relations among students, but numerous benefits were revealed as they grew in popularity. Firstly, students had the opportunity to attend rehearsals after work and classes, allowing them to concentrate on the art of music-making and channel their stress into creative expression.[6] Additionally, variations in musical skill levels within these groups had a beneficial impact on the students. More experienced students offered musical mentorship to their peers, fostering an environment of reciprocal feedback and collaborative learning. They facilitated discussions on diverse approaches to interpreting different musical passages, thereby enhancing the overall learning experience for all participants.[5] Finally, the bands attracted students of various ethnic backgrounds and performed numerous styles of music, exposing students to the musical traditions of other cultures.[5] Additional literature supports these findings, demonstrating that engagement in musical activities significantly enhances students' interpersonal relationships, communication skills, emotional regulation, and cultural appreciation. These studies highlight the broad positive impact of musical involvement on various aspects of personal and social development.[19,20] Therefore, involvement in medical school bands, orchestras, or other musical activities offers students a proven method for cultivating emotional resilience through stress relief, enhancing essential communication skills, and developing cultural competency—factors that have been demonstrated to

positively influence patient care.[4] The primary limitation of this approach is that it requires certain musical skills as a prerequisite, which may exclude medical students without a musical background from experiencing its benefits. Additionally, measuring changes in cultural competency over time presents a challenge, complicating the assessment of long-term impacts.

Listening and Consequent Reflection

A growing body of evidence suggests that the study of music is effective at developing emotional regulation, reflective attitudes, self-awareness, and communication skills. A study involving 265 university students found that those actively engaged in music demonstrated greater awareness of both positive and negative emotions. Additionally, these students showed an enhanced ability to articulate their emotions more effectively.[21] The idea that music can be used to teach communication skills to medical professionals is also well-known, and there is a consensus that jazz is an excellent genre to model good communication skills, teaching students the art of active listening and conversational skills.[22-25] This suggests that different genres of music may have varying effects on the development of these attitudes among students. Additionally, other studies have reported substantial improvements in medical students' mental health, noting reductions in anxiety and stress, as well as enhanced cognitive function, when music is utilized in this manner.[26-28] Therefore, engaging in music listening and reflection has been shown to enhance and sustain emotional self-awareness, improve appreciation of non-verbal communication, and reduce stress among students. However, this approach is not without its limitations, as the effectiveness may be diminished if students do not appreciate or connect with the specific style of music used. This presents a challenge in assessing changes in reflective attitudes and communication skills, as students who favor the style of music employed are more likely to experience its benefits. Additionally, the application of music genres such as opera, which is often performed in Italian, may be problematic if students lose interest due to language barriers.

University Coursework and Clinical Application

Engaging with patients is a recognized method to improve adherence to treatment protocols and quality of care.[29] In a relevant study examining patient satisfaction with healthcare providers, researchers discovered that a provider's ability to fully engage with patients significantly enhances the satisfaction levels with the medical care received.[30] Therefore, the key to effectively integrating music into coursework appears to be emphasizing its clinical benefits for patients. By providing students with opportunities to observe firsthand how music can enhance patients' emotional states and facilitate rapport-building with unfamiliar patients, the advantages of incorporating music become more apparent and meaningful to them.[11] Furthermore, students who had musical backgrounds, and those who did not were involved in this study, controlling for bias that favors students who already enjoy music.[11] As such, the strengths of this approach are clear since there is less focus on the artistic side of music and more focus on the evidence-based usage of music to benefit patient care, appealing to the scientific basis students may seek as aspiring physicians. Importantly, this can also better control the bias that favors students who are already interested in music.

Professional Development Seminars

While seminars have some positive effects, such as building awareness of the hidden curriculum promoting desensitization, and aiming to improve emotional intelligence, empathy, and reflective attitudes,[14] they are not without flaws. One issue is that many students question the relevance of music in medicine, representing a sizable group in one study.[13] This may be attributed to the absence of direct patient interactions in the seminars, whereas the coursework included concrete examples illustrating the influence of music on patient well-being. As previously mentioned, showcasing the direct impact of music on patient interactions and outcomes provides a robust and compelling means of validating its effectiveness to students. This practical demonstration helps bridge the gap between theoretical knowledge and real-world application, thereby enhancing the perceived relevance and efficacy of music in clinical settings.[11] Another problem is that students may lose interest if attendance is made compulsory, and bias within these seminars favors students who are already involved in music. Furthermore, none of the seminars included in this study employed quantitative measures to assess changes in emotional intelligence. Additionally, the concept of emotional intelligence itself has faced significant criticism, with some studies arguing that it lacks sufficient rigor to be regarded as a formal theoretical framework.[31] Therefore, while seminars do have important positive characteristics that should not be overlooked, they may not be the best approach for the development of humanistic skills. This is not to say that professional development workshops

are ineffective, but that a combination approach, involving both building awareness around desensitization, as well as evidence-based usage of music in patient care may be more beneficial for medical students.

Theoretical Basis for Effective Pedagogy

Overall, research suggests that music has a well-earned place in medical education. The benefits of developing humanistic characteristics in medical students will have important implications for the future of medical practice and will serve to improve interactions with patients, treatment protocols, and patient satisfaction. The challenge for educators lies in creating a rigorous and formal curriculum that engages a broad range of students. A notable commentary has addressed this challenge by outlining ten professional skills that music can impart to physicians. These skills include practice, mentorship-seeking, and teamwork, providing a foundation for integrating music into medical education.[17] Another study provides the basis for music being used to teach students the art of being present with patients, an essential skill in humanistic practice.[18] When these theoretical aspects are combined with evidence-based applications of music in clinical settings, as shown above,[11] the foundation for a formalized and effective music-based course in medical education begins to emerge.

Limitations

This study is not without its limitations. Due to the search terms used, certain relevant papers may have been excluded. Furthermore, some included articles were commentaries, providing expert opinions rather than quantitative evidence. Nevertheless, given the substantial number of articles reviewed and the quality of the data presented in the included studies, the conclusions drawn are substantiated by a significant body of literature. Furthermore, expert opinions match the conclusions made in quantitative studies, lessening ambiguity about the rigor of these opinions.

CONCLUSION

Medical schools have developed various methods of introducing music into medical school curricula to improve humanistic characteristics in their students. Methods such as allowing students to form bands, listening to music and reflecting on it, and implanting music into coursework and professional development all have unique approaches to educating students. However, certain methods, such as incorporating music into coursework and clinical teaching, have shown a more profound impact on students, significantly altering their attitudes and perspectives on patient care. Consequently, future research should focus on a combined approach that integrates theoretical frameworks for pedagogy with evidence-based practices. It should include using music as a therapeutic tool in clinical experiences to maximize the effectiveness of music in medical education. Ultimately, this approach holds the potential to substantially deepen students' comprehension of humanism in medical practice and enhance patients' interactions with healthcare providers, thereby improving overall patient experiences.

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Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Signing On: A New Chapter in Medical Education for Inclusive Care; Scoping Review

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Date Submitted: September 25, 2024
Date Accepted: November 29, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.V15i1.7286

Keywords: *Medical education, Deaf awareness, D&HH, ASL*

ABSTRACT

Patients with sensory disabilities, including deafness and hearing loss (D&HH), continue to face significant communication barriers with healthcare providers, adversely affecting the quality of care they receive. Despite this, only a limited number of medical schools incorporate formal education on Deaf awareness. This review investigates how deaf competency training can be integrated into medical education to enhance student awareness and improve health outcomes for the D&HH community. Articles were sourced from PubMed, EMBASE, and OVID Medline using MeSH (Medical Subject Headings) terms and keywords. Studies were included if they were published in English, focused on medical students, and discussed the benefits of Deaf awareness and American Sign Language (ASL) training. Exclusion criteria encompassed studies not relevant to medical students, non-medical contexts, incomplete articles, and retracted studies. The review analyzed nine relevant articles spanning a total of 959 participants. It was found that professional development workshops significantly increased Deaf awareness and improved attitudes among medical students. Notably, these workshops fostered a deeper understanding of the unique challenges faced by the D&HH community, highlighting the importance of effective communication strategies in clinical settings. However, the limited literature on Deaf awareness training in medical curricula, coupled with small sample sizes in existing studies, restricts the ability to draw definitive conclusions. Future research should prioritize developing clinically relevant and specialty-specific Deaf awareness training programs, while also considering longer workshop durations to enhance effectiveness. Such initiatives could ultimately improve health outcomes for the D&HH community and promote more inclusive healthcare.

RÉSUMÉ

Les patients ayant des handicaps sensoriels, y compris la surdité et la perte d'audition, continuent d'être confrontés à d'importants obstacles à la communication avec les prestataires de soins de santé, ce qui nuit à la qualité des soins qu'ils reçoivent. Malgré cela, seul un nombre limité d'écoles de médecine intègrent un enseignement formel sur la sensibilisation à la surdité. Cette revue étudie la manière dont la formation aux compétences en matière de la surdité peut être intégrée dans l'enseignement médical afin de sensibiliser les étudiants et d'améliorer les résultats en matière de santé pour la communauté sourde et malentendante (SM). Les articles ont été recherchés dans PubMed, EMBASE et OVID Medline en utilisant des termes et des mots-clés MeSH (acronyme anglais : Medical Subject Headings). Les études ont été retenues si elles étaient publiées en anglais, si elles portaient sur des étudiants en médecine et si elles traitaient des avantages de la sensibilisation à la surdité et de la formation à la langue des signes américaine (acronyme anglais : ASL). Les critères d'exclusion comprenaient les études non pertinentes pour les étudiants en médecine, les contextes non médicaux, les articles incomplets et les études rétractées. La revue a analysé neuf articles pertinents couvrant un total de 959 participants. Il a été constaté que les ateliers de développement professionnel augmentaient de manière significative la sensibilisation à la surdité et amélioraient les attitudes des étudiants en médecine. Ces ateliers ont notamment favorisé une meilleure compréhension des défis uniques auxquels est confrontée la communauté SM, soulignant l'importance de stratégies de communication efficaces dans les milieux cliniques. Cependant, la littérature limitée sur la formation à la sensibilisation à la surdité dans les programmes d'études médicales, associée à la petite taille des échantillons dans les études existantes, limite la capacité à tirer des conclusions définitives. Les recherches futures devraient donner la priorité à l'élaboration de programmes de formation à la sensibilisation à la surdité cliniquement pertinents et spécifiques à une spécialité, tout en envisageant également des durées d'atelier plus longues pour améliorer l'efficacité. De telles initiatives pourraient en fin de compte améliorer les résultats en matière de santé pour la communauté SM et promouvoir des soins de santé plus inclusifs.

INTRODUCTION

Effective patient communication has gained significant prominence in medical education, reflecting the evolving patient-provider dynamic toward an equal partnership characterized by shared decision-making.[1] This focus is anticipated to enable medical students to cultivate positive relationships with their patients across diverse contexts.[1] However, patients with specific sensory disabilities, such as deafness and hard of hearing (D&HH), continue to face substantial communication barriers with their physicians, hindering the quality of care they receive.[2] 'Deaf' refers to individuals who use American Sign Language (ASL) as their primary mode of communication.[3]. Individuals who are D&HH frequently report feelings of isolation and mistrust in healthcare settings, while. Meanwhile, physicians often feel inadequately prepared to care for D&HH patients and exhibit limited understanding of deaf culture.[2-5] As a result, D&HH individuals frequently experience substandard patient care, contributing to significant health disparities within this population.[6] The cumulative impact of these challenges has strained the patient-physician relationship, fostering mistrust and leading to a reluctance among the D&HH community to seek healthcare services.[7] This lack of trust not only limits access to necessary medical care but also exacerbates existing health inequalities, highlighting the urgent need for improved communication strategies and culturally competent care.

The medical community has increasingly recognized the importance of sensitivity training within medical curricula. However, only a limited number of medical schools provide formal education on Deaf awareness, and there is currently no established educational standard for understanding Deaf culture.[3-5] This gap is further evidenced by the fact that most students and practicing physicians lack even basic proficiency in sign language.[8] This deficiency not only hampers effective communication with D&HH patients but also underscores the critical need for comprehensive training programs that encompass both Deaf culture and communication skills.

Research has demonstrated that Deaf culture competency training in medical education can enhance the capacity for care and appreciation for the Deaf community.[9] Following training, many students agree that formal Deaf competency training complements holistic medical practices.[3] As students develop their signing skills and demonstrate a heightened sensitivity to Deaf culture, it is anticipated that Deaf patients are more likely to feel valued and experience better health outcomes.[7] Therefore, there is a compelling rationale for incorporating Deaf competency training into medical education. By equipping future healthcare professionals with the necessary skills and cultural understanding, we can enhance communication, foster trust, and ultimately improve the quality of care provided to D&HH patients.

This review aims to investigate how Deaf competency training can be integrated into medical education to enhance student awareness and improve health outcomes for the D&HH community.

METHODS

Article Collection

The articles were collected from the electronic databases PubMed, EMBASE, and OVID Medline. The search involved MeSH (Medical Subject Headings) terms, keywords, and title and abstract searches. The following terms were used for MeSH and Keyword searches: medical education, clinical education, health education, sign language, hearing-impaired. The following terms were used for MeSH searches only: hearing loss, hearing disorder medical student, clinical competence, medical school. The following terms were used for Keyword searches only: medical train, undergraduate medical, clerkship, pre-clerkship, medical instruction, medical apprentice, medical preparation, hearing impairment, persons with hearing impairments, deaf culture, deaf, ASL, American Sign Language, hard of hearing, hearing-disabled, HOH, D&HH, deaf patient.

Article Selection

The criteria for inclusion focused on articles that 1) were published in English; 2) specifically addressed medical students and medical education; and 3) discussed the advantages of deaf awareness and ASL training for these students. Articles were excluded if they: 1) pertained to undergraduate or graduate students in higher education settings; 2) examined deaf awareness and ASL training in contexts outside of medical education (such as workplace training); 3) covered topics related to humanity that did not focus on deaf awareness or ASL; 4) were not full articles (including abstracts and posters); or 5) had been retracted. This selection process is illustrated in Figure 1.

RESULTS

After consulting the preliminary search criteria, a total of 349 papers were collected (PubMed: 188, OVID Medline: 93, EMBASE: 68). Then, 174 duplicates were removed leaving 175 papers for further screening. Next, a title review was conducted and further reduced the relevant articles to 21. An abstract review then condensed the article number to 11 and a deeper manuscript review resulted in 9 papers that were relevant to the research question and fit within the inclusion criteria. Articles were excluded based on a predetermined exclusion criterion. The article review process is detailed in Table 1.

The nine articles analyzed comprised five quantitative study designs, two qualitative study designs, one mixed-method design, and one letter to the editor. Notably, seven of the nine articles included a professional development workshop, or a similar format (such as a course or module) aimed at enhancing Deaf awareness among medical students. The remaining two articles employed survey methodologies to evaluate existing Deaf awareness and training practices across medical institutions. Each study utilized distinct metrics to evaluate or survey deaf cultural competency. Perlov and Lapinski implemented pre- and post-test surveys to measure changes in participants' beliefs and knowledge about deaf culture after participating in their workshops.[3,11] Hoang, Kung, Gilmore, and McGlade utilized a survey to explore medical students' perceptions and knowledge of Deaf culture, while also examining current strategies for integrating deaf awareness into medical education.[8-10,13] Narayan and O'Neill relied on pre-established instructor assessments to evaluate student performance during or after their workshops, providing a structured framework for gauging the effectiveness of their instructional methods.[5,12] Importantly, all variations of the professional development workshops resulted in an increase in Deaf awareness and fostered more positive attitudes toward D&HH individuals.[3,5,9-11] All studies employing pre- and post-intervention knowledge assessments revealed that medical students who completed a sign language program demonstrated greater knowledge and more positive attitudes toward Deaf culture compared to those who did not participate in the program.[9-10] Furthermore, many students reported that the professional development workshops were both enjoyable and beneficial for their peers in medical education.[2,12]

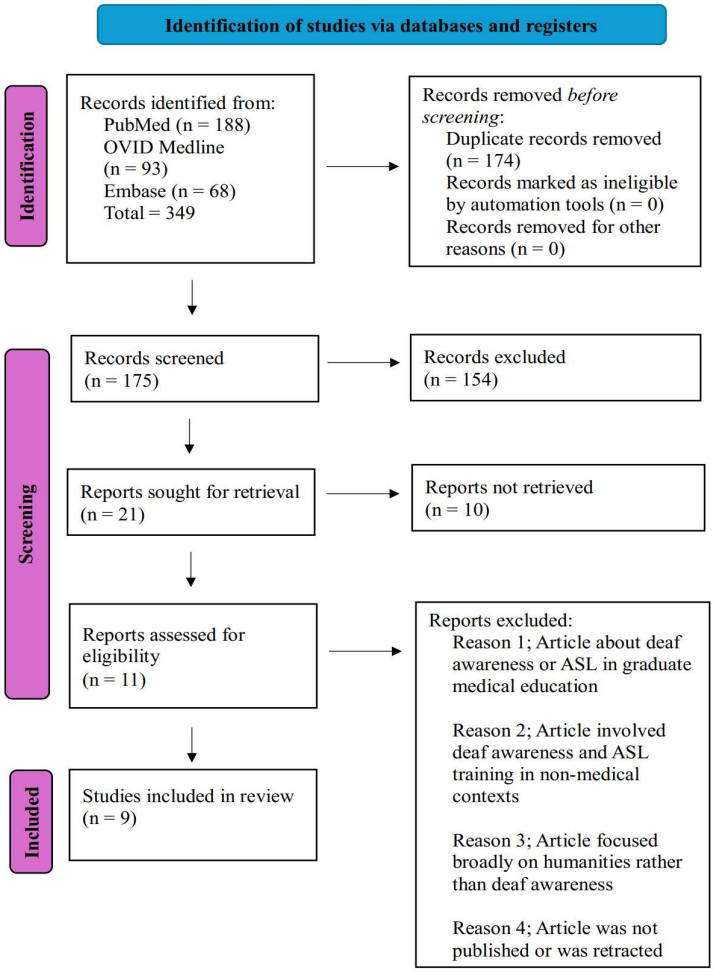

Figure 1. PRISMA flowchart for article selection

A common strength in the studies conducted by O'Neill, Gilmore, Lapinski, Narayan, Hoang, Smith and Perlov were the inclusion of clear goals for the successful implementation of each professional development workshop.[2-3,5,9-12] Moreover, the attainment of these goals was systematically evaluated in each respective study. A notable strength of the literature by Kung was its comprehensive assessment of Deaf awareness across all four years of medical school (n=158), while McGlade conducted a survey encompassing all medical schools in the UK and Ireland (n=38) for a broader analysis.[8,13] The studies conducted by Narayan and Smith demonstrated a notable strength in their incorporation of patient-interviewing training within their workshops, which significantly enhanced the practical applicability of Deaf awareness training.[2,5] This comprehensive approach underscores the importance of longitudinal evaluation and diverse training methods in fostering effective communication between healthcare providers and D&HH patients. However, several limitations were evident in the studies by Smith, Perlov, Lapinski, and O'Neill, particularly the relatively short duration of the workshops, which

Table 1. Summary of how medical schools have implemented deaf awareness training into medical education (9 articles)

Author	Modality	Reported Advantages	Reported Disadvantages
Smith and Hasnip[2]	Professional development course	Increasing deaf awareness Promotes reflective attitudes Improves clinical communication skills Increasing empathy by role-playing	Course lasts one day so attitudes may not persist Self-selection bias
Lapinski et al.[3]	Professional development workshop	Increasing proficiency in ASL Increasing deaf awareness Increasing appreciation and interest for the deaf community	Workshop started very early and lasted more than one day Low sample size (n=33) Difficult to assess clinical application No follow-up test for knowledge retention Lack of control group Self-selection bias
Narayan[5]	Professional development course	Improving proficiency in ASL Increasing deaf culture awareness Improving clinical interviewing skills Promotes empathy	Low retention due to busy school schedule
Kung et al.[8]	Questionnaire-based survey	Assessing deaf awareness across all four medical school years	Self-selection bias
Hoang et al.[9]	Professional development program	Improving knowledge on deaf culture Promotes reflective attitude	Low sample size (n=22) Self-selection bias Lack of specificity in survey questions
Gilmore et al.[10]	Professional development module	Improving deaf awareness Promotes positive attitude towards deaf persons Promotes knowledge sharing through teaching methods	Knowledge and attitude do not persist over time Low response rate (15.7%) Module is biased toward students who had a pre-existing interest in sign language Less accessibility due to non-universal sign language Self-selection bias
Perlov et al.[11]	Professional development course	Increasing deaf culture awareness	Knowledge across some facets of deaf culture did not differ after course Low sample size (n=<98)
O'Neill et al.[12]	Professional development module	Improving communication with deaf patients Increasing awareness of the impact of deafness on peoples' lives and deaf culture	Low Sample Size (n=54)
McGlade et al.[13]	Questionnaire-based survey	Surveys deaf training practices across a broad range of medical institutions	N/A

ranged from 4 to 72 hours (24 hours, 10 hours, 4 hours, and 72 hours respectively).[2-3,11-12] These time constraints could limit the depth and long-term impact of the training. Additionally, Smith's study lacked an objective assessment to evaluate the overall effectiveness of the Deaf awareness course, a significant weakness that diminishes the ability to measure the true efficacy of the training program.[2]

A detailed account of survey questions and knowledge tests was a strength in Kung and Hoang's study, respectively.[8-9] A common problem cited by Gilmore, Lapinski, Hoang, Perlov and O'Neill were a low sample size (n=52, 33, 22, 98, 54 respectively).[3,9-12] Additionally, both Gilmore and Perlov reported low response rates (15.7% and 15% respectively).[10-11] In addition to a low sample size, the voluntary participation of the individuals in Lapinski, Kung, Gilmore, Hoang and Smith's study may have contributed to self-selection bias.[2-3,8-10] The results are shown in Table 1.

Overall, medical students who participated in the deaf awareness workshops gained an increased understanding of deaf culture and developed a more positive attitude towards D&HH people.[2-3,5,9-12] In some workshops, students gained direct proficiency in ASL and reported satisfaction in being able to communicate with deaf patients.[3,12] Finally, some workshops allowed students to gain direct skills in clinical interviewing and communication while promoting reflective attitudes and empathetic role-taking.[2-3,5,9,12]

DISCUSSION

As of 2017, individuals who are Deaf and Hard of Hearing (D&HH) represent 15.9% of the adult population in the United States, making ASL the third most commonly used language in the country.[6,14] Despite this significant demographic presence, D&HH individuals encounter numerous language and educational barriers that hinder their ability to access information and receive equitable healthcare.[6]

Deaf awareness training aims to address these disparities by enabling medical students to cultivate a deeper understanding of the D&HH community, equipping them with the skills necessary to deliver culturally competent care in future practices.[6] This training not only emphasizes the unique linguistic and cultural aspects of the D&HH community but also fosters empathy and effective communication strategies that can enhance patient-provider interactions. Through hands-on activities, such as role-playing and shadowing interpreters, students can gain practical insights into the challenges faced by D&HH individuals in healthcare settings.

This article explores various methods of implementing Deaf awareness training within medical institutions. Each method will be evaluated based on its strengths, such as the capacity to deliver real-time feedback and foster interactive learning experiences, as well as its limitations, including potential challenges related to accessibility and participant engagement. Through an analysis of these varied approaches, this article aims to identify effective strategies for incorporating Deaf awareness training into medical education, with the ultimate goal of enhancing health outcomes for the D&HH community and addressing disparities in healthcare access and quality.

Professional Development Workshop

Surprisingly, the most common method of delivering Deaf awareness training identified in the reviewed articles was through professional development workshops. These workshops varied in their structure but generally incorporated a blend of elements designed to enhance participants' understanding and skills. Components typically included lectures, knowledge assessments, American Sign Language (ASL) training, clinical skills development, reflective exercises, and role-playing activities.[2-3,5,9-12] While each of these workshops demonstrated positive outcomes in increasing Deaf awareness among participants, there were notable limitations across the studies that should be considered.

A significant drawback noted in many of the studies was the small sample sizes or low response rates, which raised concerns about the generalizability of the findings.[3,9-11] Many of the studies relied on participants who voluntarily opted in, which may introduce bias by attracting individuals with a pre-existing interest in Deaf culture or a background in related training.[2-3,8-10] This self-selection bias means that the participants in these studies may not accurately represent the broader population of medical professionals, potentially skewing the results toward individuals already more attuned to issues pertaining to Deaf awareness. Additionally, researchers did not always screen participants for previous exposure to Deaf awareness training, further complicating the ability to assess the true impact of the workshops. This lack of screening could mean that some participants already had a foundational understanding of the subject, influencing the overall outcomes and limiting

the ability to measure the training's effectiveness in a more diverse group of healthcare professionals.

Given these limitations, it is crucial for future research to address these biases by implementing more rigorous participant recruitment strategies, such as random sampling or ensuring a more balanced representation of healthcare professionals with varying levels of prior knowledge. Additionally, studies should consider controlling for prior exposure to Deaf awareness training to better isolate the effects of the intervention itself. These improvements could lead to more reliable conclusions regarding the effectiveness of different training approaches and their applicability to a wider range of healthcare providers.

Clinical Application

Gathering and providing information to patients has been a fundamental principle of physician communication.[15] However, many physicians are not adequately prepared to deliver linguistically competent care to Deaf patients.[9] Narayan aimed to address this gap by incorporating clinically relevant training into the professional development workshop.[5] Students were afforded the opportunity to practice their clinical interviewing skills in ASL and shadow a medical interpreter to gain insights into the nuances of Deaf medical communication (n=89).[5] In a study conducted by Smith, students practiced formulating simple diagnostic questions in ASL and interpreting responses (n=415).[2] Subsequently, they engaged in a role-playing scenario where they were tasked with reaching a diagnosis through clinical consultation with a Deaf participant.[2] This approach provides students with the opportunity to apply their newly acquired ASL skills in a realistic and practical context, enhancing the relevance and utility of the training. In a meta-analysis conducted by Hattie, 51 studies were reviewed to evaluate how various teaching interventions impact student learning outcomes.[16] The findings exemplified that a high degree of learning and cognitive awareness is achieved when training is conducted in conjunction with a simulated, real-world context.[16] This suggests that medical students, when exposed to sign language training within simulated clinical environments, are more likely to effectively transfer their skills to real clinical situations involving Deaf and hard-of-hearing patients. Such immersive learning experiences enable students to bridge the gap between theoretical knowledge and practical application, ultimately improving their ability to communicate with Deaf patients in a way that is both efficient and empathetic. Therefore, incorporating sign language training into medical curricula alongside clinical simulations could be a highly effective strategy for enhancing both the competence and confidence of healthcare professionals in providing care to the D&HH community.

Specialty-specific training

Certain medical specialties necessitate more frequent day-to-day communication than other disciplines, which include interactions with patients or families who may be D&HH. Therefore, Deaf communication training should be tailored to each clerkship rotation in medical school to ensure that students are adequately prepared to communicate effectively in sign language across all medical disciplines. Customizing training in this manner will help future physicians develop the necessary skills to provide inclusive care, fostering accessibility.

In a study conducted by Zelesniak, physicians ranked various medical specialties based on the level of social interactive competency required, with radiology receiving the highest ranking. This finding highlights the importance of incorporating Deaf communication training across a variety of specialties, as even fields traditionally perceived as less interactive may encounter situations where effective communication with D&HH patients is essential. By equipping medical students with tailored training that aligns with the specific demands of their future specialties, medical education can better prepare them for real-world clinical scenarios, ultimately improving patient care and satisfaction for the D&HH community.[17] Consequently, a sign language course specifically designed for radiology could emphasize key terminology and phrases that are commonly used within that specialty.

Limitations

There are several limitations to this scoping review. Firstly, there is a paucity of literature concerning the implementation of deaf awareness training in medical curricula, which limits the ability to draw definitive conclusions about the efficacy of such training. As new research emerges, the findings of this review may evolve. Additionally, the search criteria employed may have inadvertently excluded relevant and insightful articles, particularly those focused on different dialects of sign language that could enrich our understanding.

Among the articles selected for inclusion, many were brief and did not adequately address their own limitations, mak-

ing it challenging to evaluate their results comprehensively. Moreover, the variability in the quality of the studies reviewed poses a challenge in synthesizing findings across different contexts.

To improve the effectiveness of Deaf awareness training in medical curricula, future research should consider extending the duration of workshops to allow for a more thorough assessment of long-term learning outcomes and the overall efficacy of the training. Longer, more sustained interventions could provide participants with greater opportunities to internalize and apply key concepts related to Deaf culture and communication, ensuring that the knowledge gained is both retained and utilized in clinical settings. Additionally, extended training periods may allow for more comprehensive evaluations, including the assessment of real-world impact on patient interactions and healthcare outcomes for Deaf and hard-of-hearing individuals.

Future studies should explore a wider range of delivery methods for Deaf awareness training. This could include variations in the format (e.g., in-person workshops, online modules, or hybrid models), the integration of interactive components (e.g., role-playing or simulations), and the use of diverse teaching tools (e.g., video case studies, guest speakers from the Deaf community, or immersive experiences). By examining the effectiveness of these different approaches, research will be better positioned to provide robust, evidence-based recommendations for integrating Deaf awareness training into medical education. Such studies could also identify best practices for overcoming challenges related to accessibility, engagement, and learner retention, ultimately ensuring that healthcare professionals are equipped with the knowledge and skills necessary to provide high-quality care to Deaf and hard-of-hearing patients.

CONCLUSION

This review underscores the substantial benefits of integrating Deaf awareness training into medical education, highlighting its potential to enhance the overall quality of healthcare delivery. As medical institutions continue to explore innovative strategies for fostering a more holistic and comprehensive approach to education, it is essential to recognize Deaf awareness training as a key component of the curriculum. By incorporating such training, medical schools can better equip future physicians with the skills and knowledge necessary to address the diverse needs of their patients, particularly those who are Deaf or hard-of-hearing.

In doing so, institutions can expand the scope of care that medical professionals are prepared to provide, creating a more inclusive and responsive healthcare environment. This approach not only strengthens students' communication skills but also cultivates a deeper understanding of the unique challenges faced by D&HH individuals. Such a perspective is crucial for developing empathy and improving the quality of care provided to this community. Ultimately, embracing Deaf awareness training leads to better patient outcomes, as healthcare providers are better positioned to meet the needs of all patients, particularly those from marginalized groups who may otherwise experience barriers to equitable care.

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Conflicts of Interest Disclosure
There are no conflicts of interest to declare.

Rays of Change: Commentary on Potential Interventions for Skin Cancer Prevention in Ontario Medical Education

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Date Submitted: October 9, 2024
Date Accepted: November 17, 2024
Date Published: May 13, 2025

DOI: https://doi.org/10.18192/UOJM.v15i1.7293

Keywords: *sun protection, skin cancer, dermatology, prevention*

ABSTRACT

This commentary addresses the rising incidence of skin cancer in Ontario and the underrepresentation of Skin of Colour (SOC) populations from sun-protection advocacy. It proposes the installation of sunscreen dispensers in medical schools to promote sun safety habits and awareness among future healthcare providers. The initiative aims to normalize sunscreen use across all skin types, with educational infographics including SOC needs. Despite potential barriers such as cost and community resistance, the involvement of healthcare professionals and students could drive long-term change in sun-protective behaviors and improve population health outcomes.

RÉSUMÉ

Ce commentaire aborde l'augmentation de l'incidence du cancer de la peau en Ontario et la sous-représentation des populations à peau foncée (Skin of Colour, SOC) dans la promotion de la protection solaire. Il propose l'installation de distributeurs de crème solaire dans les écoles de médecine afin de promouvoir les habitudes de protection solaire et la sensibilisation auprès des futurs professionnels de santé. L'initiative vise à normaliser l'usage de la crème solaire pour tous les types de peau, en intégrant des infographies éducatives adaptées aux besoins des populations SOC. Malgré les obstacles potentiels tels que le coût et la résistance communautaire, l'implication des professionnels de santé et des étudiants pourrait favoriser un changement à long terme des comportements de protection solaire et améliorer les résultats de santé publique.

The Canadian healthcare system faces numerous challenges that necessitate thorough examination and interventions. This exploration focuses on the issues concerning skin cancer incidence, awareness, and the underrepresentation of Skin of Colour (SOC) populations from sun-protection advocacy in Ontario. The aim is to discuss evidence-based recommendations, potential implementation barriers, and the roles of healthcare providers.

CONCERN #1: HIGH SKIN CANCER INCIDENCE IN ONTARIO

The strong correlation between skin cancer and prolonged ultraviolet radiation (UVR) exposure emphasizes the critical role of sun protection, with early-life habits known to significantly impact adulthood.[1,2] From 1991 to 2016, skin cancer incidence rates in Ontario rose annually by 2.3% among individuals aged 50-74 and by 4.6% among those aged 75 and older.[3] In 2022, new melanoma cases in Ontario were projected to reach 4,150, with 570 associated deaths, making melanoma one of the four cancers with the most rapidly increasing incidence rate over the past 35 years.[4,5] Ontario led in melanoma cases (54% of the Canadian total) and deaths (57% of the Canadian total), signifying the need for Ontario policy intervention.[6]

CONCERN #2: LIMITED SKIN CANCER AWARENESS AMONG CANADIAN MEDICAL STUDENTS

Canadian skin cancer awareness lags behind countries like the USA and Australia.[7] In Alberta, only 45% of adults acknowledged the association between UVR and skin cancer, with less than half adopting sun protection behaviours.[8] Comparatively, over 90% of Australians were aware of melanoma risks.[9] The age-standardized incidence for melanoma in Ontario aligns with the average age of Canadian medical students (20-24), who exhibit a lower likelihood of sun-protective behaviours.[10] Globally, medical students show a low concern for skin cancer with Canadian counterparts displaying moderate knowledge (19-33% accuracy) of lifetime risk and common types of skin cancers with only 4.1% consistently using sun protection.[11,12]

CONCERN #3: UNDERREPRESENTATION OF SOC POPULATIONS FROM SUN-PROTECTION ADVOCACY

Although SOC populations have a lower skin cancer incidence, diagnoses often occur at advanced stages with increased morbidity and mortality.[13] Sunscreen advocacy is lower in SOC individuals, contributing to delayed diagnoses.[14–16] Societal ideals perpetuate misconceptions, with little representation of dark skin tones in sun-safety literature.[17,18] However, self-reported sunburn history challenges stereotypes, as 34-66% of Black respondents reported sunburn occurrences.[19] Native American respondents reported sunburn experiences (87%), with 9% attributing their lack of sunscreen use to believing that SOC populations cannot develop skin cancer.[20]

RECOMMENDATIONS FOR IMPROVEMENT

To normalize sunscreen use, Ontario Undergraduate Medical Education (UGME) Faculties should install at least one sunscreen dispenser at each campus. These dispensers should include educational infographics on the importance of sunscreen application in SOC populations, which includes benefits outside of skin cancer prevention such as protection against pigmentation changes. This initiative serves two main purposes: advocating for sunscreen use across all skin types and informing future healthcare professionals about sun safety, intending to translate this knowledge to patients. Notably, 94.6% of Canadian medical students express the importance of sun awareness teaching, indicating potential support for dispenser installation and maintenance.[12]

Existing sunscreen dispensers in Canada

Ontario cities with sunscreen dispensers include Toronto, Ottawa, and Timmins. In Toronto, #BeSunSafe, a skin cancer prevention program, partnered with the David Cornfield Melanoma Fund, the Douglas Wright Foundation, and Shoppers Drug Mart to install sunscreen dispensers across Toronto.[21] Since 2017, 1,000 litres of sunscreen have been dispensed.[21] In Ottawa, the University of Ottawa Faculty of Medicine has a touchless sunscreen dispenser at its entrance, with an infographic containing ingredients, instructions, and safety information. In Timmins, one dispenser, purchased by the Porcupine Health Unit, was installed at a local park, and the Business Improvement Association committed to keeping the dispenser full.[22] Additionally, the Save Your Skin Foundation, in partnership with Canadian medical students, launched ten dispensers across British Columbia, Prince Edward Island, New Brunswick, and Alberta.[23] These initiatives collectively emphasize the feasibility and significance of implementing sunscreen dispensers.

Potential barriers

Despite the potential benefits, significant barriers exist. These include high setup and maintenance costs, uncertainties about upkeep responsibility, and potential reliance on external partners for Health Canada-approved sunscreen.[24,25] Updating infographics based on new research adds complexity, and concerns exist about community resistance and potential oversight of information on SOC populations. Additionally, focusing exclusively on sunscreen may neglect other preventive measures like protective clothing and shade.[25] There are also other benefits to sunscreen use outside of skin cancer prevention which should be communicated in the infographics. Investigating the correlation between dispenser implementation and community sunscreen use and skin cancer incidence demands extensive time, posing the risk of investing resources without guaranteed impact.

Overcoming barriers

To combat these challenges, Ontario UGME dermatology or oncology interest groups could assign medical students to inquire about sunscreen dispenser availability on their campuses. Communicating with the UGME health representatives or formal endorsement by the Ontario Medical Student Alliance would be potential avenues for support. Potential partners could include The Ministry of Health, UGME Hospital affiliations, #BeSunSafe, David Cornfield Melanoma Fund, The Douglas Wright Foundation, and Shoppers Drug Mart. The dispensers should contain Health Canada-approved SPF 30+ sunscreen, free from harmful ingredients, and bold signage should be used for easy identification and placement at main entrances.[25,26]

In addition to practical steps, evidence-based advocacy and physician-led research can help overcome barriers to sunscreen dispenser implementation. Engaging medical professionals to assess the impact of these dispensers enables data collection on how they influence community sunscreen use and skin cancer prevention. Although investigating long-term outcomes demands time and resources, even preliminary research can strengthen support for future interventions. By focusing on smaller-scale studies initially, stakeholders can reduce investment risks while building confidence in the program's effectiveness. Physicians' involvement in this research supports sustainable change, as their advocacy and endorsement enhance the evidence base on sun-safety behaviors and inform policy adjustments. Early findings could attract additional partnerships, making sunscreen dispenser programs more feasible and scalable. In this way, medical professionals play a critical role in advancing skin cancer prevention through practical, data-driven initiatives.

Physician roles

Physicians play a pivotal role in endorsing and advocating for sunscreen dispenser installations. Their involvement in evidence-based advocacy, confirmation of infographic information, and participation in promotional activities would be crucial for spreading awareness. Active involvement in research initiatives and evaluating the outcomes of the proposed initiative would contribute to the literature on sun-safety behaviours and the impact of sunscreen dispensers on overall skin cancer incidence. However, physicians may face time constraints due to their demanding schedules, limiting their ability to actively engage in the logistics of sunscreen dispenser installation and maintenance. There could also be concerns about specific brand endorsements, potentially raising ethical questions related to commercial interests. Striking a balance between influential advocacy and potential conflicts of interest would be crucial for the success and ethical integrity of the proposed intervention.

CONCLUSION

Overall, sunscreen dispensers could increase sun safety behaviours. By targeting medical school campuses, this initiative would aim to instill sun safety habits in young adults, influencing a culture of healthy sun-safety habits. Dermatologists and healthcare providers could play a pivotal role in endorsing and educating patients about the benefits of sunscreen use, aligning with the preventive health approach. The recommendations also emphasize the importance of addressing disparities in skin cancer prevention among SOC populations, as educational infographics on dispensers should highlight the significance of SOC sunscreen use. Overall, installing sunscreen dispensers with educational infographics is a prevention method focused on increasing awareness, encouraging healthy habits, and protecting from the sun's UVR.

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