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Radiology Exposure in the Undergraduate Curriculum: A Medical Student Perspective on Quality and Opportunities for Positive Change

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Abstract

Purpose: This article is a continuation of a qualitative study designed to explore how radiology exposures can impact medical student opinions and perceptions of radiology and radiologists. We focused on: 1) conducting a radiology exposure inventory from the perspective of the medical student; 2) student evaluation of the quality of the radiology exposures and suggestions for positive change; and 3) development of a framework to address the needs of medical students as it relates to radiology education in the undergraduate medical curriculum.
Methods: Research methodology and design for this qualitative study were described in detail in a previous article by Visscher et al [1].
Results: Participants included 28 medical students; 18 were in medical school years 1 and 2 (preclerkship), and 10 were in years 3 and 4 (clerkship). Specific to the focus of this article, the data revealed 3 major findings: 1) multiple exposures to radiology exist, and they are received and valued differently depending on the medical student's stage of professional development; 2) medical students value radiology education and want their radiology exposure to be comprehensive and high quality; 3) Medical students have constructive suggestions for improving the quality of both formal and informal radiology exposures.
Conclusions: Performing a radiology exposure inventory from a medical student perspective is a useful way to explore how students receive and value radiology instruction. Medical students want a more comprehensive radiology education that can be summarized using the 5 C's of Radiology Education framework. The 5 C's (curriculum, coaching, collaborating, career and commitment) reflect medical students' desires to learn content that will support them in clinical practice, be supported in their professional development, and have the necessary information to make informed career decisions.

Résumé

Objet : Le présent article s'inscrit dans la foulée d'une étude qualitative visant à explorer la façon dont l'exposition à la radiologie influe sur l'opinion et les perceptions des étudiants en médecine à l'égard de la radiologie et des radiologistes. Il est principalement axé sur les éléments suivants : 1) l'inventaire des activités de familiarisation avec la radiologie du point de vue de l'étudiant en médecine; 2) l'évaluation de la qualité des activités de familiarisation avec la radiologie et les suggestions d'amélioration de l'étudiant; 3) l'élaboration d'un cadre conceptuel pour répondre aux besoins des étudiants en médecine en matière de formation en radiologie pendant le programme de premier cycle en médecine.
Méthodes : La méthodologie et la structure de l'étude qualitative ont été décrites en détail dans un article précédent de Visscher et coll [1].
Résultats : Parmi les 28 étudiants en médecine qui ont participé à l'étude, 18 étaient des étudiants de première et de deuxième années de médecine (avant le début du stage clinique) et 10 étaient des étudiants de troisième et de quatrième années (en stage clinique). En ce qui concerne les éléments abordés dans le présent article, les données ont permis trois grandes constatations : 1) les étudiants en médecine peuvent être exposés plusieurs fois à la radiologie; la façon dont les activités de familiarisation sont reçues et perçues varie en fonction de l'étape à laquelle l'étudiant est rendu dans son cheminement professionnel; 2) les étudiants en médecine accordent de l'importance à la formation en radiologie et souhaitent que les activités de familiarisation avec la radiologie soient exhaustives et de grande qualité; 3) les

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étudiants en médecine proposent des solutions constructives pour améliorer la qualité des activités formelles et informelles de familiarisation avec la radiologie.

Conclusions : L'inventaire des activités de familiarisation avec la radiologie du point de vue de l'étudiant en médecine permet de mieux cerner la façon dont la formation en radiologie est reçue et perçue par les étudiants. Les étudiants en médecine veulent recevoir une formation exhaustive en radiologie, qui reflète les cinq principes du cadre de formation en radiologie (que l'on appelle les *5 C's* en anglais : *curriculum* [programme], *coaching* [encadrement], *collaborating* [collaboration], *career* [carrière] et *commitment* [engagement]). Les étudiants veulent apprendre des notions qui leur serviront en milieu clinique, obtenir du soutien pendant leur cheminement professionnel et recevoir l'information dont ils ont besoin pour faire un choix de carrière éclairé.

Key Words: Education; Medical students; Qualitative research; Radiology and radiologists; Undergraduate medical education

There is ample evidence in the radiology literature to demonstrate that good radiology education in the undergraduate medical curriculum (UMC) results in higher interest in radiology as a career and improved respect for radiologists as consultants [2−4]. What is less clear is how to integrate radiology education into the UMC in a way that supports the broad goals of the medical school while also promoting the future of the radiology profession.

In addition to creating and evaluating specific educational interventions, some physician educators have constructed frameworks and guidelines for radiology education in the UMC. In the United States, through the Association of University Radiologists, the Alliance of Medical Student Educators in Radiology has created peer-reviewed teaching and curriculum resources [5]. In England, Mirsadraee et al [6] created a set of consensus points to serve as directive principles for developing a more comprehensive radiology curriculum. In Belgium, Kourdioukova et al [7] crafted a large-scale curriculum redesign project centred on student experiences and perceptions.

To develop interventions and enacted curriculum frameworks, radiology programs must understand how radiology is taught at each of the author's representative institution. As per Gunderman et al's [8] recommendation, before entering into curricular discussions, each radiology educator needs to be clear about what the current state of medical student education is at his or her institution. Furthermore, to drive quality improvement initiatives, radiology educators require both an understanding of the impact different radiology exposures have on medical student experiences and a willingness to accept suggestions for positive change.

This article is the second part of a qualitative study designed to explore how radiology exposures at a single Canadian institution can impact medical student opinions and perceptions of radiology and radiologists [1]. The first part of the study revealed that: 1) the stereotype of the isolated radiologist working in a dark room persists mainly through informal interactions, the ''hidden curriculum''; 2) students, especially those in preclerkship, want accurate information to modify or reinforce these beliefs; 3) due to the perceived lack of exposure to radiology in medical school, every contact a radiologist has with a medical student has a significant impact, either positive or negative; and 4) students want meaningful interactions with radiologists and radiology residents. To help guide these interactions, we offered the memory aid of explain, engage, offer and converse.

Here we report on: 1) a radiology exposure inventory from the perspective of the medical student; 2) student evaluation of the quality of the radiology exposures; 3) suggestions for positive change; and 4) a framework to address the needs of medical students as it relates to radiology education in the UMC.

Materials and Methods

Research methodology and design for this qualitative study are described in detail by Visscher et al [1]. Here we utilise data from focus groups of students in years 1−4 of medical school and do not include findings from the national survey reported in the previous article. The current study includes analysis from an additional independent review by S.S. In total, K.L.V., G.N., and S.S. completed the initial analysis independently using a modified thematic analysis as detailed by Visscher et al [1]. They then met to compare and contrast coding generated from the thematic analysis, and to clarify and resolve variations in understanding in coding. The final analysis was independently reviewed by L.F. to ensure that the analysis provided a reasonable account of the data without gaps or leaps of logic [9]. Any differences identified were discussed until agreement by all 4 authors was reached. This strategy is referred to as investigator triangulation and is accepted as a means of increasing the strength (or validity) of qualitative data analysis [10].

Results

Participants included 28 medical students; 18 were in medical school years 1 and 2 (preclerkship) and 10 were in years 3 and 4 (clerkship). Specific to the focus of this article, the data revealed 3 major findings.

Finding 1

Multiple exposures to radiology exist and medical students value them differently depending on the medical student's stage of professional development.