

BMJ Open Exploring the effectiveness of a cascading mentorship model in developing CanMEDS competencies in postgraduate medical education: a qualitative interview study among resident mentors at a medical school in Canada

Tina Guo ¹, Mushfika Chowdhury,² Rahna Rasouli,³ Mitesh Patel^{1,4}

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For numbered affiliations see end of article.

Correspondence to

Dr Tina Guo;
tina.guo@ucalgary.ca

ABSTRACT

Objectives The CanMEDS framework, an educational framework for physicians used in Canada, defined competencies that physicians require to meet patients' needs, all of which can be cultivated through mentorship activities. The Advocacy Mentorship Initiative (AMI) at the University of Toronto used a cascading mentorship model (CMM), whereby resident mentors (RMs) mentored undergraduate medical student mentors (MSMs), who in turn mentored youth raised in at-risk environments. Both RMs and MSMs were mentored by the AMI programme lead, a staff psychiatrist, with expertise in child and adolescent psychiatry. The research question of this study was as follows: What were the merits of using a CMM in enhancing the knowledge, competencies and residency experiences of RMs in AMI?

Design Qualitative interview study.

Setting and participants RMs involved in AMI from January 2017 to December 2020 were invited to participate in the study. A total of 11 RMs agreed to participate.

Methods Interviews were conducted to canvas participants about how AMI impacted them, and these were recorded, transcribed and anonymised. Braun and Clarke's approach to thematic analysis was used to identify 'subthemes' and 'themes'.

Results Eleven RMs participated in the study. A major theme identified was how AMI enhanced the medical learner experience by augmenting the educational experience of MSMs, strengthening RMs' values and attitudes, and strengthening RMs' knowledge and competencies. The second theme captured was the effective facets of a mentorship programme in AMI, including the CMM, and collaborative and inclusive relationships between mentors and mentees.

Conclusions RMs identified that the CMM of AMI cultivated CanMEDS competencies in medical learners; deepened medical learners' understanding of social determinants of health; and offered a bidirectional approach to teaching and learning between MSMs

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Resident mentors (RMs) involved with Advocacy Mentorship Initiative (AMI) over the course of multiple years were invited to participate in the study, allowing RMs' experiences over the evolution of AMI to be captured, as opposed to a single year during which AMI was in existence.
- ⇒ Qualitative approach allows study to capture nuances of RMs' experiences.
- ⇒ No quantitative metric(s) were used to measure RMs' self-reported outcomes and competencies following involvement in AMI.
- ⇒ No control group to examine experiences and outcomes of residents who were not involved in AMI, or who were involved in AMI, but did not agree to participate in the study, for comparison.
- ⇒ No standardised tool(s) used to objectively assess RMs' learning outcomes.

and RMs. MSMs and RMs also learnt from the staff psychiatrist.

INTRODUCTION

Physicians and medical learners are uniquely positioned to advocate for patients and marginalised populations. Health advocacy is a core tenet of the CanMEDS framework, which identifies competencies physicians require to meet the needs of patient populations.¹ The CanMEDS framework is an educational framework for physicians used in Canada. The framework includes six roles (professional, communicator, collaborator, leader, health advocate and scholar) that are integrated into a central role of medical expert. In this paper, competencies will



henceforth refer to CanMEDS competencies. Medical schools have historically had a paucity of learners from under-represented minorities, leading to a physician population that has not accurately represented their patient populations.² In recent years, medical schools have sought to recruit students from under-represented minorities, and integrate equity, diversity and inclusion initiatives into postgraduate residency training.³ By ensuring diversity in medical learners, patient care may be improved, particularly for marginalised populations.⁴ These include populations that are vulnerable due to poor social determinants of health (SDOH), such as low socioeconomic status, low literacy, immigrant or refugee status, or belonging to visible minorities. To ensure equity of healthcare delivery, physicians must be trained as health advocates to combat poorer health outcomes associated with marginalised populations.⁵ Despite the importance of undergraduate medical education training in SDOH in providing future physicians with the knowledge and skills to combat health inequity, limited space in the curriculum has been identified as one of the most significant barriers to integrating SDOH in medical school teaching.⁶ This could be mitigated by using an extra-curricular initiative as an avenue to enhance learning about SDOH. Numerous studies have described traditional didactic teaching strategies to teach SDOH being complemented by experiential learning in the form of community-based education in the form of direct interactions with families and communities.⁷

Resident physicians can enhance their teaching skills through education and mentorship of medical students, thereby furthering their ability to fulfill their CanMEDS roles. Mentorship of clinician-scientists has a demonstrable impact on career development, as well as career satisfaction.⁸

Some residency programmes have integrated initiatives to cultivate proficiency in areas such as mentorship, teaching and advocacy.⁹ However, the use and examination of a cascading mentorship model (CMM) to develop these skills in resident physicians has not been reported. The significance of this study is that it examines the use of a CMM in developing CanMEDS competencies, as well as other professional and academic outcomes, in resident physicians.

A CMM enables a group of individuals with expertise or experience to mentor another group of individuals with less experience or knowledge, who in turn, mentor yet another group of individuals. A CMM is an innovative approach to mentorship that has been used in academia, education and youth engagement.^{10 11}

The Advocacy Mentorship Initiative (AMI) at the University of Toronto (UofT) used a CMM to provide undergraduate medical students the opportunity to mentor vulnerable youth in the community. These medical student mentors (MSMs) were in turn mentored by resident mentors (RMs). Both MSMs and RMs were then supervised by a staff psychiatrist with specialty qualifications in both child and adolescent psychiatry and

forensic psychiatry. AMI demonstrated utility in developing MSMs' advocacy-related skills, building their knowledge in SDOH in the context of child development and psychiatry, and providing them with career support and advice.¹² The research question of this study was as follows:

What were the merits of using a CMM in enhancing the knowledge, competencies and residency experiences of RMs in AMI?

METHODS

Advocacy Mentorship Initiative

At-risk youth in the city of Toronto, Ontario, Canada were identified through a community organisation. Through AMI's matching programme, MSMs were each individually matched with one at-risk youth identified through the community organisation. MSMs were then tasked with providing general mentorship through engagement with youth in recreational and social activities. Groups of four to six MSMs were in turn mentored by RMs at the UofT, who provided teaching about general psychiatry topics, as well as targeted mentorship for each MSM. Each group of MSMs was mentored by two RMs. The matching programme and monthly meetings that were attended by all MSMs and RMs were overseen by the senior author (MP). The structure of an AMI mentoring group is shown in [figure 1](#).

Participant recruitment

Seventeen RMs involved with AMI from January 2017 to December 2020 were invited to participate in the study, and those who agreed to participate then attended structured interviews that took place from March to April 2021, and that lasted 30–60 min. One of the authors (MC) carried out the interviews. Interviewees were asked specific questions (online supplemental appendix 1) about the topics of discussion with their mentees, their perceived role(s) as a mentor, how AMI involvement impacted their teaching skills and how AMI affected their personal and professional development. In addition, interviewees were asked targeted questions about how AMI led to improvement in RMs' specific CanMEDS competencies, including professionalism, health advocacy and others. The interviews were conducted virtually over the Webex platform. In regard to the Survey component of (online supplemental appendix 1), survey responses were not collected. Instead, survey questions were asked as open-ended questions, as opposed to having interviewees respond to a list of items and check which applies to them. The lists were used as probes, if responses were minimal, and the interviewer wanted to elicit a more robust response. For example, the interviewer might inquire further into whether the interviewees had any discussions of 'SDOH', and then request examples.

Qualitative data analysis

All interviews were recorded, transcribed and anonymised. A single coder (MC) coded all transcripts using

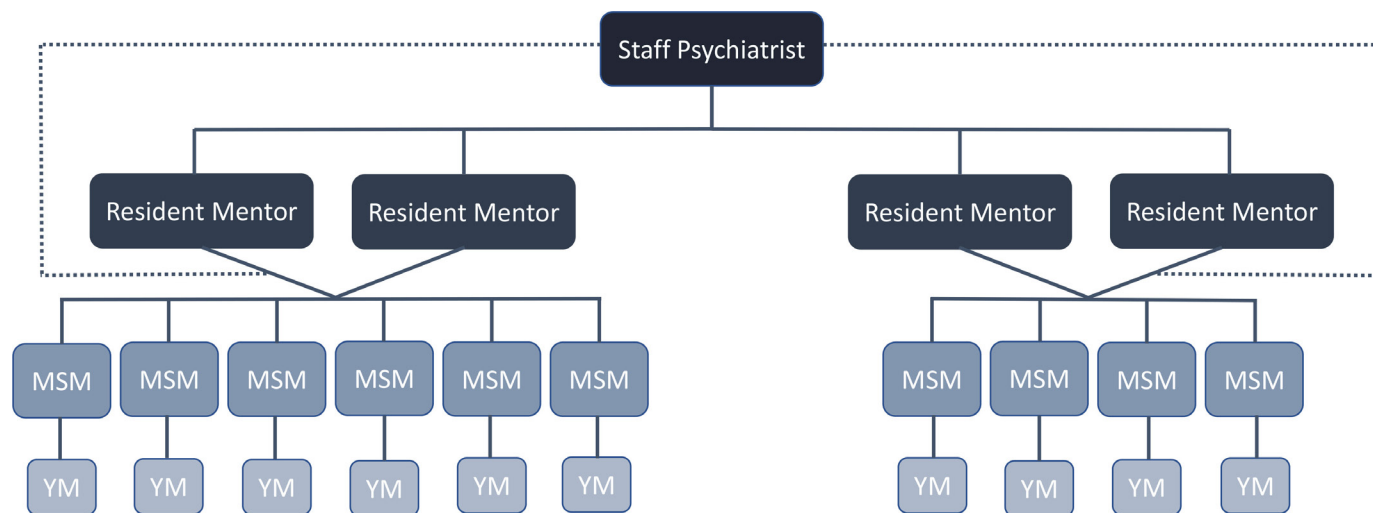


Figure 1 Structure of an AMI mentoring group. A mentoring group within the AMI consists of four to six MSMs, who each mentor one at-risk youth mentee, and are in turn mentored by two RMs, specialising in either psychiatry or adolescent medicine. The AMI staff psychiatrist provided additional guidance and supervision to RMs and MSMs across all mentoring groups. AMI, Advocacy Mentorship Initiative; MSM, medical student mentor; RMs, resident mentor; YM, youth mentee.

Braun and Clarke's approach to thematic analysis for the purpose of identifying salient themes throughout the interviews.¹³ Transcripts were read once first to obtain a gestalt of the data set. For the initial coding level, transcripts were then read again, and line-by-line coding was performed for each transcript. Initial codes conveying the same content were merged and renamed. Concurrent with the initial-level coding process, initial codes conveying related ideas were grouped together as newly developed mid-level codes, which will henceforth be referred to as subthemes, and named in the Results section. On completion of initial-level and mid-level coding, concepts encompassing multiple mid-level codes were used to derive 'themes', which are named later in the manuscript. An auditing trail of all analytical decisions was maintained during the process of deriving themes. As part of the auditing trail, MC kept a personal reflexive journal to record their own introspection, which influenced analytical decision-making. Following characterisation of themes and subthemes, transcript content was reviewed by two other authors (TG and MP), and, if necessary, recategorised by the same two other authors (TG and MP) to ensure alignment of transcript content with assigned subthemes and themes, as well as to preserve clarity and minimise redundancy. Subthemes that were considered too broad were then further categorised into multiple distinct subthemes. Redundant subthemes were removed. Direct quotations from RMs have been lightly edited for clarity.

The research team consisted of one psychiatry resident physician, one staff psychiatrist with expertise in both child and adolescent psychiatry and forensic psychiatry, one graduate student pursuing an MA in School and Clinical Child Psychology and one medical student.

Patient and public involvement

None.

RESULTS

A total of 11 RMs participated in the study, including 10 psychiatry residents and one adolescent medicine resident. Data saturation was reached at eight participants. MC continued to code for the additional three participants recruited, but the codes used for these three participants were identical to pre-existing codes used for the previous eight participants, therefore confirming that data saturation was reached because there were no longer new ideas emerging from coding of more participants.

The qualitative data analysis yielded two themes: (1) Enhancing the medical learner experience and (2) Facets of an effective mentorship programme.

Enhancing the medical learner experience

The means by which AMI enhanced the medical learner experience was the most commonly discussed theme among study participants, and was divided into three subthemes: (A) Augmenting the educational experiences of MSMs, (B) Strengthening RMs' values and attitudes and (C) Strengthening RMs' knowledge and competencies. Representative quotations are captured in table 1.

Augmenting the educational experience of MSMs

RMs noticed that the opportunity to mentor marginalised youth augmented the educational experience of MSMs, thereby better preparing them for future clinical work. RMs advised MSMs about setting boundaries to maintain safe interactions with youth and their families. Specific topics of discussion between RMs and MSMs were identified (online supplemental appendix 2), and demonstrably revolved around how to set boundaries between MSMs and youth mentees. RMs encouraged MSMs to be cognizant of the possible impact of SDOH (eg, socioeconomic status, immigration status, language barriers, race) on child development and family dynamics vis-a-vis their youth mentees. MSMs described to RMs some adverse

Table 1 Ways in which AMI enhanced the learning experience of medical learners

Subtheme A: Ways in which RMs noticed AMI augmented the educational experience of MSMs	Representative quotations
RMs mentored MSMs on navigating relationships with youth mentees	<p>'rewarding to give mentorship on the relationship aspects of medical practice'</p> <p>'enjoyed listening to [MSMs] work through problems that arose through their mentorship relationships and be able to help them formulate and understand what might be happening in those relationships'</p>
RMs taught MSMs about boundary-setting in future training and practice	'Medical students get enough of... "never say no, put your best foot forward all the time, keep trying". Medical school fosters that Type A environment - the environment that you should always be working'
Subtheme B: Ways in which AMI strengthened RMs' values and attitudes	Representative quotations
RMs gained insight into more holistic treatment recommendations beyond pharmacological and psychotherapeutic treatments	<p>'[the MSMs' and youth's interactions were] much more play-based and creativity-based'</p> <p>'I've actually sometimes recommended [online resources used by MSMs for youth] to my patients...These aren't in our books for how to treat patients'</p>
RMs gained insight into questions to develop more holistic discharge plans	'Who is going to follow this patient? What kind of resources should and can they be connected to? Do they have the cognitive capacity to follow up with these things? If not, do we need to involve the family?'
RMs gained insight into the importance of incorporating patients' lived experience into formulating and diagnosing patients	<p>'I started to value external life experience, rather than DSM criteria'</p> <p>'started to read books about lived experience or listen to podcasts of lived experience... so that when I practice, I can use...the experience of patients to make the diagnosis, rather than just...the DSM criteria'</p> <p>'more clearly picture what [my patients'] home environments may be like and what challenges they might face'</p>
Subtheme C: Ways in which AMI strengthened RMs' knowledge and competencies	Representative quotations
RMs gained insights about marginalised youth and SDOH	<p>'I gained...knowledge about marginalized youth, even just about normal human socialization and interaction from a young age, and what issues young children may face'</p> <p>'I get a naturalistic perspective of youth in the community, in day-to-day interactions'</p> <p>'Because of AMI, I...have a really good grasp on childhood disorders, how they present, and what kind of nuanced questions to ask'</p>
RMs received feedback from MSMs about mentorship and teaching skills	<p>'I would make a suggestion and then get a response [about] the language I used, or maybe I wasn't sensitive or crossed some boundaries'</p> <p>'When [MSMs] asked me questions, and I wasn't able to answer...that was instantaneous feedback [about] a knowledge gap for me'</p>
RMs gained insight into the necessity of understanding MSMs' learning needs and objectives to be good educators	<p>'[AMI] helped [MSMs] feel that [I'm] empathic and [I] care about their experience, rather than just spewing knowledge'</p> <p>'When [I] take the time to figure out [MSMs'] anxieties and easing that, it shows [I] care about them as students. I think from there, they take what [I] say more seriously.'</p> <p>'it's usually when people are having problems that teaching...sinks in. I try to pick out those opportunities so that the teaching becomes more high-yield.'</p> <p>'recalibrate [my] expectations of what medical students knew and how they felt to help support them better'</p>
RMs experienced growth in their CanMEDS competencies	<p>'made me a better communicator and teacher'</p> <p>'helped me with professionalism. Because I have to teach [the MSMs] professional boundaries, it reminds me of where the professional boundaries are'</p> <p>'[In terms of] the scholar aspect, there's a lot of teaching involved, either formal or informal.'</p> <p>'communication skills and leadership skills were definitely relevant'</p> <p>'time management and modeling time management [were relevant]... showing up on time even if [I] had a long workday—that was modelled by myself and [my co-mentor]... [time management] was something I learned because I wanted to model what it would look like to maintain obligations and commitments, and balance'</p> <p>'In terms of collaboration, I had to ask: How [am I] and the [co-mentor] going to run the group? How do [I] share that responsibility? And also, how do [I] ensure everyone is getting enough support from [me]?''</p>

AMI, Advocacy Mentorship Initiative; MSMs, medical student mentors; RMs, resident mentors; SDOH, social determinants of health.

childhood events experienced by their youth mentees, such as food insecurity, inadequate access to hygiene products, single-parent households or adoption. RMs taught MSMs about how to characterise attachment styles and their impact on child development by observing the interactions between youth and their caregiver(s). Therefore, MSMs obtained experiential exposure to SDOH, attachment styles and the lived experience of marginalised populations.

RMs described feeling a sense of reward when assisting MSMs, and often working collaboratively alongside them to navigate challenging situations. Among the key challenges that RMs helped MSMs navigate were the tasks of initiating, maintaining and at times, terminating their relationships with youth mentees. RMs noticed improvements in MSMs' professionalism, particularly their skills in time management and boundary-setting, which is pertinent to their future training and practice. Over time, RMs observed growth in MSMs' confidence in providing input when discussing their respective youth mentees.

RMs perceived that they were able to provide MSMs with insight into the residency experience. RMs indicated that MSMs cultivated the foundations of a mentorship network that could aid them professionally in the future. Through AMI, RMs modelled for MSMs how to incorporate advocacy into their future training and practice. Finally, AMI provided an opportunity to discuss wellness and balancing responsibilities.

Strengthening RMs' values and attitudes

AMI provided RMs with an opportunity to translate their value of mentorship into something actionable by mentoring MSMs and bolstering their morale.

RMs also valued having opportunities to 'pay it forward' by mentoring MSMs after receiving mentorship from others when they, themselves, were medical students. In contrast, other RMs wanted to provide better representation among mentors in medicine because they, themselves, struggled to find mentors who represented them when they were medical students.

Supporting and learning from vulnerable youth also reinforced RMs' emphasis on the developmental and psychosocial aspects of patients' lives. RMs with limited prior exposure to children and adolescents endorsed enthusiasm to continue working with this population. Observing how children's behaviour and attitudes were shaped by their circumstances fostered greater empathy in RMs towards their patients. RMs subsequently reported being more cognizant of patients' developmental and social histories, and learning to incorporate the lived experiences of marginalised populations into formulating and diagnosing their patients. In recognising the impact of developmental and psychosocial factors on mental health, RMs became more invested in researching community services that could support their own patients in a psychological or social capacity. RMs shared how their treatment recommendations for their patients extended beyond pharmacology and psychotherapy. Working with

vulnerable youth from families with limited resources, RMs and MSMs also learnt to generate creative and resourceful approaches to support youth.

Finally, AMI taught RMs 'how to look up resources', 'critically analyse what is helpful' and 'use connections' with other colleagues to find appropriate resources, thereby employing a holistic approach to discharge planning that involved outpatient community resources.

Strengthening RMs' knowledge and competencies

Through their MSMs, RMs were able to learn about marginalised youth, as well as the impact of various SDOH on youth.

Involvement in AMI allowed RMs to receive feedback from MSMs about strategies to improve their skills in mentorship and teaching. Through teaching MSMs, RMs were more equipped to identify MSMs' existing knowledge and knowledge deficits. Therefore, RMs learnt that being an effective educator required understanding MSMs' learning needs and objectives, as well as 'easing [MSMs'] anxieties and validating their experience', as opposed to merely 'spewing knowledge'.

RMs supplemented their informal mentorship of MSMs with formal didactic lectures on child development and psychiatry. While teaching, they acknowledged the deficits in their own knowledge and experience, thereby learning to model transparency and accountability as healthcare educators.

RMs alluded to how the competencies they cultivated in AMI could be extrapolated to their clinical training and future practice. Beyond practising health advocacy by supporting vulnerable youth, RMs described growth in other CanMEDS competencies, including communication, collaboration, scholarship, professionalism and leadership.

Facets of an effective mentorship programme

RMs highlighted what they believed to be two facets of an effective mentorship programme: (A) The Benefits of AMI's CMM, and (B) Ways in which AMI facilitated collaborative and inclusive relationships between mentors and mentees. Representative quotations are captured in [table 2](#).

The cascading mentorship model

A CMM allowed MSMs to receive mentorship from RMs, who provided teaching by leveraging their clinical experience, while validating MSMs' decisions and commitment to their youth mentees. The teaching that RMs provided for MSMs in navigating their interactions with youth mentees served as a form of case-based learning. RMs' personalised mentorship and didactic teaching could then be directly applied to youth mentees.

In light of RMs' limited time due to greater clinical responsibilities, the CMM effectively allowed RMs to support many vulnerable youth through MSMs, who served, in part, as intermediaries to relay recommendations from RMs to youth. Their ability to observe their

**Table 2** Facets of an effective mentorship programme

Sub-theme A: Benefits of AMI's CMM	Representative quotations
RMs' mentorship and teaching could directly be applied to youth mentees	'the lecture I did was on autism, and then two of my medical students found out that their mentees actually had [autism]'
RMs' mentorship could be applied to more youth through MSMs, who served as intermediaries	'[I was] able to help or influence two sets of people...[I was] mentoring [MSMs] and their mentees' 'Between two residents, [we had] the ability to impact eight people at the same time...because there were four medical students and four [youth mentees]'
Bidirectional model of teaching and learning between RMs and MSMs	'I was learning from the medical students because some of them were involved in other advocacy initiatives' 'It reminded me to continue to seek mentorship, myself, because [mentorship is] bi-directional... I have both something to gain and something to offer by remaining in professional mentorship relationships' 'I value offering [mentorship] to others. I value receiving [mentorship] from others'
Working with a staff physician who modelled values of championing advocacy and integrating mentorship into medical school curricula	'I thought it was cool to meet someone who had two kinds of specialty training, who is not only a child and adolescent psychiatry, but also [a forensic psychiatrist] too' 'As a staff psychiatrist who wants to develop curriculum and wants to work, I think [AMI] did... impact me in a positive way. I can wear many hats, the way [the staff psychiatrist] does'
Sub-theme B: Ways in which AMI facilitated collaborative and inclusive relationships between mentors and mentees	Representative quotations
Contributed to dismantling the hierarchical dynamic between residents and medical students	'[I was an] accessible and more relatable, less intimidating person to reach out to talk about things. If my role was replaced by a staff physician, I wonder if the power dynamic and hierarchy would have limited or stifled the conversation'
Diverse perspectives represented through incorporating residents from different specialties	'I liked the fact that it was group mentorship, so we could mentor each other' 'we came from different backgrounds, so keeping track of...what [the other RM was] contributing, and what...I was contributing was...important' 'working with a co-mentor from a different specialty...helped me develop skills in working with other people from different specialties in patient care'
MSMs were matched with youth mentees from similar backgrounds	'we had one cis-man [in our group], and he was mentoring a young man... After recognizing that this child didn't have a father figure in his life, I think it was intentional for the organizers to match [the cis-man MSM and his mentee] together so that [the mentee] would have a strong male figure in his life' 'One of the medical students was Chinese-speaking, so they got paired with a Chinese-speaking family. There was another [youth mentee] who was an immigrant from a Middle Eastern country, and the medical student had a similar background' 'I think it was positive...just being able to share exactly those experiences, being able to speak the same language [as the youth mentee], and being able to speak the same language as the families'
AMI, Advocacy Mentorship Initiative; CMM, cascading mentorship model; MSMs, medical student mentors; RMs, resident mentors.	

impacts on marginalised youth fostered the engagement of RMs.

RMs emphasised the bidirectional model of teaching that AMI provided through opportunities to learn from their MSMs, and indirectly, from their youth mentees.

RMs simultaneously sought to emulate the staff psychiatrist's (ie, the programme lead's) values of championing advocacy and integrating mentorship into medical school curricula.

Collaborative and inclusive relationships between mentors and mentees

RMs emphasised that the success of AMI was, in part, attributable to the collaborative relationships between mentors and mentees. RMs observed how AMI provided a safe space for MSMs to comfortably ask RMs questions. The relationship between RMs and MSMs felt 'casual', 'comfortable' and 'social', unlike an 'obligation'. Specifically, this atmosphere created less pressure for MSMs

to perform, unlike clinical teaching settings in medical school, thereby contributing to dismantling the hierarchical dynamic between residents and medical students. RMs believed that MSMs spoke more freely about their medical training during AMI meetings compared with clinical teaching and learning environments, in which MSMs might be concerned that their feedback would affect their evaluation. RMs also noticed that MSMs seemed more comfortable accessing ongoing mentorship from residents beyond AMI.

RMs also believed that incorporation of both adolescent medicine and psychiatry residents as RMs provided a diverse, collaborative and inclusive approach to mentorship. Similarly, the differences in training levels among the RMs also offered a different facet of diversity among RMs.

Finally, AMI matched MSMs with youth mentees from similar backgrounds, which leveraged a person-centred approach focused on equity and inclusion. One RM noticed how many medical learners in AMI belonged to under-represented minorities, and theorised how this may be attributable to their personal experiences of being marginalised. Another RM shared how even outside of AMI, medical learners with similar intersectional identities reached out to one another so as to have colleagues and mentors with whom they resonated. RMs emphasised the value of diverse and inclusive initiatives for MSMs. AMI modelled the significance of such initiatives by demonstrating the impact of youth and MSMs having mentors of similar backgrounds with whom they resonated.

DISCUSSION

The CMM of AMI strengthened self-reported CanMEDS competencies in RMs, as well as the CanMEDS competencies of MSMs, as perceived by RMs. Through mentoring and teaching MSMs, RMs fostered collaborative relationships with MSMs to support youth raised in at-risk environments, while acknowledging the challenges that MSMs encountered. Furthermore, RMs described opportunities to develop their professionalism and model this for MSMs, in the form of managing both clinical duties and responsibilities with AMI. In supporting vulnerable youth, RMs also cultivated their health advocacy skills. Simultaneously, while mentoring youth and articulating the rewards and challenges they encountered, RMs noted that MSMs cultivated their communication skills. They also found that they could collaborate with MSMs to problem-solve challenges that the MSMs experienced. Finally, RMs informed they were able to model advocacy in their future training and practice for MSMs.

AMI also provided the opportunity for RMs and MSMs to learn about SDOH bidirectionally through the CMM. RMs heard from MSMs about how MSMs experientially learnt about SDOH by directly witnessing the impact of these determinants, such as socioeconomic status, literacy, immigration status and single-parent households on youth. Meanwhile, RMs supplemented this experiential learning by providing didactic teaching on topics such

as attachment styles, child development, and child and adolescent psychiatry. A study evaluating the outcomes of a healthy equity curriculum demonstrated that when experiential learning about SDOH through partnership with community organisations was used in a longitudinal health equity curriculum for medical students, students reported increased knowledge and confidence about SDOH over time.¹⁴ Simultaneously, through hearing about their MSMs' experiences with vulnerable youth, RMs learnt about and applied their knowledge surrounding the same topics. Therefore, RMs deepened their understanding of SDOH through the AMI's CMM.

Finally, the CMM of AMI accommodated a bidirectional model of teaching and learning between RMs and MSMs. RMs and MSMs also benefited from the tutelage and supervision of the staff psychiatrist who oversaw AMI. RMs not only provided didactic teaching pertaining to child development and child and adolescent psychiatry, but also counselled MSMs around boundary-setting. Furthermore, RMs helped MSMs navigate the challenges of interacting with youth mentees, as well as to balance their academic and extracurricular commitments with personal wellness. Simultaneously, RMs' skills in teaching and mentorship improved through MSMs providing them with ongoing informal feedback, even though this was not formally mandated in AMI. In garnering teaching experience and feedback, RMs learnt to recognise MSMs' learning objectives, and to acknowledge their own knowledge deficits in order to be effective and transparent educators.

A past study showed that effective mentoring relationships required reciprocity, mutual respect, clear expectations, personal connection and shared values.¹⁵ Similarly, the features of effective mentoring relationships defined by RMs in this study included bidirectional teaching and learning between RMs and MSMs, dismantling of the conventional hierarchical dynamic between residents and mentors, clear professional expectations of RMs and MSMs in their respective roles, and shared values of advocacy and mentorship.

There is potential for further research into the impact of using a CMM or other mentorship initiatives that involve community organisations on professional, learning and interpersonal outcomes for medical learners, including medical students and residents. In addition, a CMM can be applied to other initiatives and in other specialties or programmes to examine their impact on mentorship, and teaching and learning.

There were several limitations to the methodology of the study. First, there was no control group in the study to examine the outcomes and experiences of residents who were not involved in AMI for comparison. Similarly, there was no control group to examine the outcomes and experiences of residents who were involved in AMI, but chose not to participate in the study, for comparison. In addition, the study examined the self-reported outcomes of residents involved in AMI, but did not use any standardised tools to measure or assess the learning outcomes



of RMs. Therefore, it is unknown whether or not the self-reported outcomes of residents are a reliable representation of objective achievements in learning outcomes.

CONCLUSION

Through their involvement with the AMI, RMs strengthened their competencies in all CanMEDS domains, including advocacy, communication, collaboration, professionalism, scholarship and leadership. These competencies were specifically strengthened in interactions between RMs and MSMs, as well as through the supervision and guidance of the staff psychiatrist overseeing AMI. The CMM of AMI allowed RMs to hear about MSMs' interactions with vulnerable youth mentees, which enhanced their knowledge about SDOH. The knowledge about the impact of social and developmental factors on mental health was then extrapolated to their delivery of patient care. Furthermore, the CMM of AMI offered new opportunities for RMs to feel engaged and rewarded by not only advocating for and supporting vulnerable youth, but also teaching MSMs. Simultaneously, the CMM offered a bidirectional approach to teaching and learning, allowing RMs to foster their skills in teaching and mentorship, while MSMs observed professionalism, time management, and advocacy modelled to them by RMs.

The study's findings support the role of integrating a CMM into more initiatives in postgraduate residency training in order to strengthen residents' CanMEDS competencies, particularly their skills in teaching, mentorship and advocacy. The CMM allows residents to learn not only from more senior physicians, including staff physicians, but also from medical students and community members. Initiatives like AMI also clearly demonstrate the significance of equity, diversity and inclusion among medical learners and physicians, as well as the importance of representation among role models in medicine.

Author affiliations

¹Psychiatry, University of Toronto, Toronto, Ontario, Canada

²Applied Psychology and Human Development, University of Toronto, Toronto, Ontario, Canada

³Medicine, University of Toronto, Toronto, Ontario, Canada

⁴Centre for Addiction and Mental Health, Toronto, Ontario, Canada

Twitter Rahna Rasouli @rahna.rasouli

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Contributors MP planned the study, secured funding for the study and supervised the writing and editing of the manuscript. MP acted as guarantor of the study. TG wrote and edited the manuscript. MC conducted the interviews, analysed the interview transcripts and drafted the Methods and Results sections of the manuscript. RR assisted with the writing and editing of the manuscript.

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Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by University of Toronto Health Sciences REB ID: 39687. Participants gave informed consent to participate in the study before taking part.

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Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

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ORCID iD

Tina Guo <http://orcid.org/0000-0001-9255-9933>

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