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Journal of Medical Education and Training

Research Article | Open Access

Remaining Socially Accountable: Student Perspectives on the Curricular Execution of Northern Ontario School of Medicine's Social Accountability Mandate

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Received: 20 March 2021; **Accepted:** 18 August 2021; **Published:** 23 August 2021

Abstract

Background: Social accountability (SA) is required to achieve quality, equity, relevance and effectiveness in medicine. Evaluating implementation of SA will inform curricular development to educate socially accountable physicians.

Objective: Elicit perspectives of Undergraduate Medical Education (UME) students at the Northern Ontario School of Medicine (NOSM) about the implementation of the SA mandate in order to inform curriculum reform.

Materials & Methods: Data was collected using a cross-sectional voluntary response survey with Likert-scale and short-answer questions. Frequency analysis and thematic analysis were used to analyze data.

Results: Survey showed ≥80% positive response when describing if practical placements allowed engagement with priority populations (PP) and if the mandate inspired involvement in the communities and evaluation of their specialist/generalist needs. There was a 60-79% positive response when evaluating if the curriculum reflects community needs, responsiveness to needs, if educators reflect the PP, if there are health promotion opportunities, and if the curriculum prepared students to engage with PP clinically. Conversely, <60% positive response that curriculum provides engagement with all PP, the student body reflects PP, or that educators had expertise with PP. The qualitative themes that emerged were the expansion of the SA mandate to include other marginalized populations prevalent in Northern Ontario, increasing the representation of PP, and areas for curriculum reform.

Conclusion: To improve SA, inclusion of Lesbian Gay Bisexual Transgender Queer/Questioning Inclusive (LGBTQ+) individuals, immigrants, and refugees in the SA mandate is recommended, as well as populations suffering from mental health and substance abuse, housing insecurity, and low socioeconomic status (SES). Implementation of an acceptance stream for low SES students, active recruitment in rural/remote communities, and filling faculty positions with individuals representing PP for representative student body/faculty. Students suggested curricular change to include lectures and educational resources directed towards identified PP. Finally, students expressed a need for practical health promotion and advocacy, including advocacy projects or interprofessional student-led clinics.

Keywords: Medical Education; Rural Medicine; Social Accountability; Social Accountability Mandate

Abbreviations

SA: Social Accountability; SES: Socioeconomic Status; UME: Undergraduate Medical Education; NOSM: Northern Ontario School of Medicine; PP: Priority Populations; SES: Socioeconomic Status; WHO: World Health Organization; THEnet: The Training for Health Equity Network; IFMSA: International Federation of Medical Students' Association; LGBTQ+: Lesbian Gay Bisexual Transgender Queer/Questioning Inclusive; DISCuSS: Diversity, Identify, Search, Create module, Sustainability, Social accountability; LHIN: Local Health Integrated Network; ICE: Integrated Community Experiences; CLS: Community Learning Session; CBL: Case Based Learning; TOS: Topic Oriented Sessions; RAP: Research & Advocacy Project

Introduction

In 1995, the World Health Organization (WHO) first recognized that in addition to producing competent clinicians, medical schools have a responsibility to address the needs of society [1]. The "Social Accountability of Medical Schools" was defined as the need to direct education, research, and services towards addressing the priority health concerns of the community, region, and nation that they serve [2]. This concept was created in order to ensure the quality, equity, relevance, and cost-effectiveness of the healthcare that individuals receive, to which they have a right [3]. Therefore, the social, economic, cultural and environmental determinants of health in a region must guide the development and focus of a medical education and inform curriculum reform. By the very nature of the concept, what social accountability means to a particular institution will evolve with the needs of the region that it serves.

In 2005, The Northern Ontario School of Medicine (NOSM) opened with a social accountability mandate focused on improving the health of the people and communities of Northern Ontario [2]. Adherence to this mandate ensures that NOSM responds to the needs and the diversity of the populations of Northern Ontario [3]. Northern Ontario is geographically vast with a dynamic resource based economy and unique socioeconomic characteristics that differ from the southern part of the province of Ontario and the rest of Canada [4]. Northern, rural, and remote areas consist of diverse communities and cultural groups [4]. The School has a responsibility to actively involve and provide engagement with stakeholders in all of its broad communities, specifically Indigenous, Francophone, remote, rural and underserviced communities [3]. The education at NOSM is geared towards the goal of producing socially accountable and competent physicians for the people living in Northern Ontario [2,3].

The educational climate of a medical school is described as the learning environment as perceived, and represents the manifestation of the educational environment and curriculum for the students [5,6]. The social accountability curriculum would therefore be included within this consideration of climate. A medical school is an evolving organization that must be learning and changing through evaluation of its curriculum and its climate [6]. Climate within medical schools must be subject to continuous quality improvement and innovation in order to further the medical school as a learning organization [6].

The Training for Health Equity Network (THEnet), in collaboration with the International Federation of Medical Students' Association (IFMSA), developed an Evaluation Framework tool for measuring social accountability within medical schools [7-9]. Utilizing this Evaluation Framework, this study aimed to elicit the perspectives of NOSM's Undergraduate Medical Education (UME) students on how effectively the social accountability mandate is being implemented in the curriculum. The goal of this study was to achieve a holistic view of i) how effectively social accountability is being taught at NOSM and ii) how the curricula has prepared students for integrated community experiences, clerkship, and other clinical encounters.

Materials & Methods

Study Design

The study involved a cross-sectional, self-administered survey to students in all four years of NOSM UME program. The survey was developed on a web-based platform (Qualtrics) and distributed via email to improve ease of completion and data collection. The survey was distributed at the end of the academic year to ensure applicability of responses by first year students and was sent through a neutral third party (Learner Affairs) to ensure no coercion. Survey was distributed during an 8-week period between June and July of 2020. Survey responses were voluntary. Prior to completing the survey, respondents were informed about the details of the study and were advised that the completion and return of the survey implied consent. The survey did not include any questions pertaining to the identification of the individual, which allowed respondents to remain anonymous.

Participants

Medical students from all four years of NOSM UME (n=261) were invited to participate in this study. NOSM UME has two main sites, which are located at Laurentian University (Sudbury, Ontario) and Lakehead University (Thunder Bay, Ontario). Students from either site were welcome to participate.

Outcome Measures

THEnet's "The Framework for Social Accountability in Health Workforce Education" was designed collaboratively and built on Boelen and Woollard's conceptualization, production and usability model [7-10]. THEnet evaluation framework is applicable and useful across contexts, which indicates validity [8,11]. The reliability of the framework has yet to be formally assessed, but the tool was successfully used at the same institution during this study and a previous investigation several years prior, both which yielded valuable results [8,11]. In collaboration with THEnet, the IFMSA developed a toolkit based on the framework to measure social accountability within medical education [7-9]. Utilizing this toolkit, a survey was designed to elicit the perspectives of NOSM's Undergraduate Medical Education (UME) students on how effectively the social accountability mandate is being implemented in the curriculum [7-9]. Though not explicitly described in the survey, this study inherently measures NOSM's educational climate as it relates to social accountability curriculum [6]. Through this survey, perspectives were gathered from students in all years of NOSM UME. The survey included 12 Likert scale questions to determine the current state of the curriculum with areas to elaborate, as well as 6 open-ended survey questions elicit qualitative responses with suggestions from respondents. The survey was available in both French and English.

Data Analysis

Frequency analysis was undertaken on the Likert scale questions [12]. The Likert scale was bi-polar in nature with the opportunity for both positive and negative response [13]. Positive Response was above the neutral option, and negative response was below the neutral option [13]. Positive Response was defined as those who responded with 4 (adequate) and 5 (exemplary) with the exception of Likert Question 12 that allowed for more specific response about practicing in an area that serves the SA mandate (4; Yes I plan to practice part-time/locum, and 5; Yes, I plan to practice full time). Negative Response was defined as 1 (not at all) and 2 (insufficient) with the exception of Likert Question 12 (1; not at all, and 2; I do not think so). The neutral response was defined as those who responded with 3 (I don't know/ I am unsure). To determine whether there was a significant difference between the frequency of positive, negative and neutral responses, we conducted the chi-square test for equal proportions. The correlation between responses and year of study was also assessed using Spearman's correlation. Significant results were based on a p-value below 0.05. All statistical analyses were done in Statistical Analysis System (SAS) version 9.4 (SAS Institute, Inc., Cary, North Carolina).

The qualitative data was exported to spreadsheets where the primary researcher was able to familiarize themselves with the data by reading the data twice, followed by a process of open coding. This included examining small sections of text made up of words, phrases, and sentences. Initial notes were made during this stage of analysis. The primary researcher performed the initial coding for the project. Thematic analysis was undertaken using reflexive memoing and successive rounds of coding [14]. Investigator triangulation was used to evaluate the data in order to provide multiple observations and conclusions to allow for confirmation of findings and add breadth to the phenomenon of interest [15]. Additionally, peer debriefing throughout the process added rigour and ensured validity. Open coding was followed by axial coding, which allowed for connections to be made between the emerging categories. The categories were then sorted and compared to develop key themes and subthemes.

Ethical Considerations

The Laurentian Research Ethics Board and Lakehead Research Ethics Board approved the study protocol and found no cause for concern in the research design and methods.

Results

Quantitative (Tables 1.1, 1.2)

Qualitative (Table 2)

Discussion and Recommendations

Theme 1: Expanding the Social Accountability Mandate and Defined Priority Populations

Priority populations are defined as those groups that would benefit most from public health programs and services, that are at risk, and for which public health interventions may be reasonably considered to have a substantial impact at the population level [16]. As an Ontario medical school, NOSM adheres to this definition of priority populations. These priority populations are identified by considering those with health inequities including: increased burden of illness; or increased risk for adverse health outcome(s); and/or those who may experience barriers in accessing public health or other health services or who would benefit from public health action [16,17]. Upon examination of the Likert scale responses, the majority of respondents believe that NOSM's curriculum adequately reflects the needs of the population, communities and regions it serves in terms of Indigenous, Francophone, and rural and remote communities (Table 1.1). Students identified that the school is adequately responsive to the needs and feedback of the community stakeholders and community partners. However, only 55.6% of respondents believe that NOSM provides engagement with all priority populations in an adequate or exemplary manner, while 44.4% believe that the level of engagement is insufficient or totally absent (Table 1.1).

Expanding on this, there was a recurrent theme in the qualitative data that there are several priority populations in Northern Ontario

Table 1.1: Frequency Analysis of the Likert-scale responses*.

Question	Responses (n=27)			P-value
	Number of positive[1] responses (%)	Number of negative[2] responses (%)	Number of neutral[3] responses (%)	
Does NOSM's curriculum reflect the needs of the populations, communities and regions it serves?	8 (63.6)	14 (36.4)	0 (0.0)	0.2008
Do you think the school is responsive to needs and feedback of the community stakeholders and community partners?	12 (60.0)	6 (30.0)	2 (10.0)	0.0225[&]
Does NOSM provide engagement with all priority populations?	10 (55.6)	8 (44.4)	0 (0.0)	0.2222
Do the places/locations of your practical learning experiences include the presence of and engagement with the populations that you will serve?	18 (85.7)	3 (14.3)	0 (0.0)	0.0011[&]
Does your class reflect the socio-demographic characteristics of your priority populations?	9 (45.0)	11 (55.0)	0 (0.0)	0.2000
Do your teachers reflect the socio-demographic characteristics of your priority populations?	4 (21.1)	15 (78.9)	0 (0.0)	0.0116[&]
Do your teachers have the educational expertise of working with priority populations?	9 (52.9)	8 (47.1)	0 (0.0)	0.8084
Does your learning experience provide you with opportunities to provide health promotion services and care within the community?	13 (61.9)	8 (38.1)	0 (0.0)	0.2752
Does your school encourage you to examine the generalist and specialist needs in the communities in which you learn?	17 (85.0)	3 (15.0)	0 (0.0)	0.0017[&]
Does your curriculum effectively prepare you to engage with priority populations in a clinical setting?	12 (60.0)	8 (40.0)	0 (0.0)	0.3711
Has the school's social accountability mandate inspired you to become more involved in the community you plan to practice in?	16 (84.2)	3 (15.8)	0 (0.0)	0.0029[&]
Do you plan on practicing in an area that serves your school's social accountability mandate?	12 (57.1)	2 (9.5)	7 (33.3)	0.0281[&]

Abbreviations: NOSM=Northern Ontario School of Medicine

*All responses were made on a 5-Point Likert-scale.

[+] Response rate to the survey was 10.4 (n=27). The respondents were distributed through years 1-4 of NOSM UME (n=27, Year 1 = 4.6%, Year 2 = 27.3%, Year 3 = 40.9%, Year 4 = 27.3%).

[&]Significant difference (p-value < 0.05).

[1]Positive Response is defined as those who responded with 4 (adequate) or 5 (exemplary) on the Likert-scale.

[2]Negative Response is defined as those who responded with 1 (poor) 2 (inadequate)

[3]Neutral Response is defined as those who responded with 3 (unsure)

that are not currently identified by NOSM's social accountability mandate. It was articulated that: "*...there are many priority populations missed, especially those that do not have a collective organization that represents them (ie: making it difficult to get feedback from).*" The identified priority populations within NOSM's mandate are Indigenous, Francophone, remote, rural and underserviced communities [3]. The results of this survey have identified a number of other populations that respondents believe should be included in the definition of priority populations: "*to include more vulnerable populations that do exist in Northern Ontario including those who are housing insecure, those with addictions, members of the LGBTQ+ community, as well as refugee & immigrant populations*".

Given the constant changes in and diversity of the health needs of a given community, the definition of social accountability in a region is not static and there is a need for constant evaluation and adjustment of what social accountability means for a medical institution or an individual practitioner [18]. It is important for medical students to be taught to identify and understand the changing needs of society and adapt themselves to the changing expectations of the community [18]. It is generally accepted that medical schools are slower to introduce focused curriculum that responds to emergent diversity and health disparity topics [19]. Ensuring that the content of the curriculum is socially accountable and up to date is a constant challenge for medical educators given restricted curricular time and faculty availability [20]. Additionally, many of these priority populations are 'last mile' populations, which is a term that has been used across disciplines to refer to populations who are farthest away, most difficult to reach, or last to benefit from a program or service [21]. Addressing the health issues of these populations in a meaningful way requires innovation [21]. The DISCuSS model (Diversity, Identify, Search, Create module, Sustainability, Social accountability) provides a community-engaged, iterative approach to curriculum development relevant to social accountability [20]. The DISCuSS model highlights the importance of a collaborative effort of multidisciplinary working groups that identify gaps, search for evidence and create modules with community engagement [20]. It is encouraging that NOSM students were able to independently recognize additional priority populations in their region based on the education that they have received at NOSM. Priority populations are prevalent in Northern Ontario and are part of the community; however these populations are not as clearly addressed by the NOSM curriculum. The DISCuSS model could be helpful when evaluating and developing learning modules to address the recognized priority populations. Expanding the NOSM social accountability mandate and defined priority populations to include these marginalized groups would allow for more educational resources within the curriculum to be directed at addressing their concerns.

i) Inclusion of the LGBTQ+ Populations

The need for the inclusion of LGBTQ+ communities in NOSM's curriculum and identified priority populations was an issue that was repeatedly raised by the respondents to this survey: "*...there is a large LGBTQ+ population in Northern Ontario but they are not addressed in our curriculum".* LGBTQ+ People face higher rates of depression, anxiety, obsessive-compulsive and phobic disorders, suicidality, self-

Table 1.2: Bivariate Relationship between Likert-Scale Responses and Year of Study.

Question	Year of Study	Number of positive[1] responses (%)	Number of negative[2] responses (%)	Number of neutral[3] responses (%)	Spearman coefficient	P-value
Does NOSM's curriculum reflect the needs of the populations, communities and regions it serves?	Year 1	1 (4.6)	0 (0.0)	0 (0.0)	-0.0631	0.7804
	Year 2	4 (18.2)	2 (9.1)	0 (0.0)		
	Year 3	5 (22.7)	4 (18.2)	0 (0.0)		
	Year 4	4 (18.2)	9 (9.1)	0 (0.0)		
Do you think the school is responsive to needs and feedback of the community stakeholders and community partners?	Year 1	0 (0.0)	0 (0.0)	0 (0.0)	0.09	0.7059
	Year 2	3 (15.0)	2 (10.0)	1 (5.0)		
	Year 3	5 (25.0)	2 (10.0)	1 (5.0)		
	Year 4	4 (20.0)	2 (10.0)	0 (0.0)		
Does NOSM provide engagement with all priority populations?	Year 1	0 (0.0)	0 (0.0)	0 (0.0)	-0.2739	0.2715
	Year 2	4 (22.2)	2 (11.1)	0 (0.0)		
	Year 3	4 (22.2)	2 (11.1)	0 (0.0)		
	Year 4	2 (11.1)	4 (22.2)	0 (0.0)		
Do the places/locations of your practical learning experiences include the presence of and engagement with the populations that you will serve?	Year 1	1 (4.8)	0 (0.0)	0 (0.0)	-0.533	0.0129[&]
	Year 2	6 (28.6)	0 (0.0)	0 (0.0)		
	Year 3	8 (38.1)	0 (0.0)	0 (0.0)		
	Year 4	3 (14.3)	3 (14.3)	0 (0.0)		
Does your class reflect the socio-demographic characteristics of your priority populations?	Year 1	1 (5.0)	0 (0.0)	0 (0.0)	-0.2763	0.2383
	Year 2	3 (15.0)	2 (10.0)	0 (0.0)		
	Year 3	3 (15.0)	5 (25.0)	0 (0.0)		
	Year 4	2 (10.0)	4 (20.0)	0 (0.0)		
Do your teachers reflect the socio-demographic characteristics of your priority populations?	Year 1	0 (0.0)	0 (0.0)	0 (0.0)	-0.0501	0.8387
	Year 2	0 (0.0)	4 (21.1)	0 (0.0)		
	Year 3	4 (21.1)	4 (21.1)	0 (0.0)		
	Year 4	0 (0.0)	6 (31.6)	0 (0.0)		
Do your teachers have the educational expertise of working with priority populations?	Year 1	0 (0.0)	0 (0.0)	0 (0.0)	-0.2295	0.3755
	Year 2	3 (17.7)	2 (11.8)	0 (0.0)		
	Year 3	4 (23.5)	2 (11.8)	0 (0.0)		
	Year 4	2 (11.8)	4 (23.5)	0 (0.0)		
Does your learning experience provide you with opportunities to provide health promotion services and care within the community?	Year 1	0 (0.0)	1 (4.8)	0 (0.0)	0.111	0.6321
	Year 2	4 (19.1)	2 (9.5)	0 (0.0)		
	Year 3	5 (23.8)	3 (14.3)	0 (0.0)		
	Year 4	4 (19.1)	2 (9.5)	0 (0.0)		
Does your school encourage you to examine the generalist and specialist needs in the communities in which you learn?	Year 1	0 (0.0)	1 (5.0)	0 (0.0)	0.5487	0.0122[&]
	Year 2	4 (20.0)	2 (10.0)	0 (0.0)		
	Year 3	7 (35.0)	0 (0.0)	0 (0.0)		
	Year 4	6 (30.0)	0 (0.0)	0 (0.0)		
Does your curriculum effectively prepare you to engage with priority populations in a clinical setting?	Year 1	0 (0.0)	1 (5.0)	0 (0.0)	0.159	0.5032
	Year 2	3 (15.0)	2 (10.0)	0 (0.0)		
	Year 3	5 (25.0)	3 (15.0)	0 (0.0)		
	Year 4	4 (20.0)	2 (10.0)	0 (0.0)		
Has the school's social accountability mandate inspired you to become more involved in the community you plan to practice in?	Year 1	0 (0.0)	0 (0.0)	0 (0.0)	0.4161	0.0764
	Year 2	4 (21.1)	1 (5.3)	0 (0.0)		
	Year 3	6 (31.6)	1 (5.3)	0 (0.0)		
	Year 4	6 (31.6)	0 (0.0)	0 (0.0)		
Do you plan on practicing in an area that serves your school's social accountability mandate?	Year 1	0 (0.0)	0 (0.0)	0 (0.0)	0.4402	0.0458[&]
	Year 2	3 (14.3)	1 (4.8)	2 (9.5)		
	Year 3	3 (14.3)	1 (4.8)	4 (19.1)		
	Year 4	6 (28.6)	0 (0.0)	0 (0.0)		

Abbreviations: NOSM=Northern Ontario School of Medicine

*All responses were made on a 5-Point Likert-scale.

[+] Response rate to the survey was 10.4% (n=27). The respondents were distributed through years 1-4 of NOSM UME (n=27, Year 1 = 4.6%, Year 2 = 27.3%, Year 3 = 40.9%, Year 4 = 27.3%).

[&]Significant difference (p-value < 0.05).

[1]Positive Response is defined as those who responded with 4 (adequate) or 5 (exemplary) on the Likert-scale.

[2]Negative Response is defined as those who responded with 1 (poor) 2 (inadequate)

[3]Neutral Response is defined as those who responded with 3 (unsure)

Table 2: Opinions of students concerning main areas for improvement within NOSM's social accountability curriculum collected from open-text questions.

Themes	Subthemes
Theme 1: Expanding the Social Accountability Mandate	Include LGBTQ+ populations as a priority population Include Immigrant populations and Refugee populations as priority populations Inclusion of Populations suffering from Mental Health & Substance Abuse, Housing insecurity, and Low Socioeconomic Status (SES)
Theme 2: Representation of Priority Populations in Student Body and Faculty	Inclusion of a Stream of Acceptance for Lower Socioeconomic Status (SES) Applicants Better Representation of Rural/Remote Communities in Student Body NOSM Graduates/Priority populations represented in Faculty
Theme 3: Curriculum Reform	Refining the current curriculum to avoid repetition and stereotypes Further inclusion of other priority populations in the required curriculum Bridging the gap between theoretical social accountability and clinical social accountability

Abbreviations: LGBTQ+= Lesbian Gay Bisexual Transgender Queer/Questioning Inclusive; NOSM=Northern Ontario School of Medicine; SES=Socioeconomic Status

harm, and substance use [22]. LGBTQ+ individuals face discrimination and stigma, especially in rural and remote areas [23]. In addition, LGBTQ+ individuals experience barriers to accessing care including a lack of relevant safe sex information and the lack of Trans care in primary care (2324). LGBTQ+ individuals are within every part of society and require a specific focus in curriculum, education, and accountability to ensure they are not invisible within the system [24].

ii) Inclusion of Immigrant and Refugee Populations

Students expressed the need for the inclusion of immigrant and refugee populations in the curriculum. It was articulated that: "*very little attention has been given to other [than Indigenous] marginalized communities such as immigrants, refugees…even though these are also populations that need special attention in medical practice*". Hundreds of refugees have moved to Sudbury (Ontario) and surrounding areas in recent years [25]. Further immigration to Northern communities is expected in coming years, with the introduction of the Government of Canada's 'Northern and Rural Immigration Pilot' [26]. It is reported that recent immigrants are in poorer health when compared to Canadian born individuals [27]. Immigrant enrolment rates in primary care are reported to be consistently lower than among long-term Canadian residents. This information has implications on equitable primary care access for immigrant populations [27,28].

iii) Inclusion of Populations suffering from Mental Health & Substance Abuse, Housing insecurity, and Low Socioeconomic Status (SES)

Students felt that populations suffering from mental health and substance abuse, housing insecurity, and low socioeconomic status deserved a more prominent role in the curriculum due to their prevalence in Northern Ontario [29]. One student raised the need for "*more focus on poverty [including] practical strategies for helping patients with low income*". Another student stated: "*I think there needs to be more education on the [housing insecure] population, because one session doesn't reflect the unfortunate proportion of homeless persons in the region*".

Supporting these assertions, rural residents are often more likely to report persistent low-income status, limited employment opportunities, higher unemployment rates, and more barriers obtaining affordable housing (30). Additionally, some of the highest rates of opioid abuse and its effects are reported in the Northern Local Health Integration Network (LHIN)'s [29].

Recommendations

The populations identified from the data fit the definition of "priority population" for Northern Ontario, and therefore their inclusion in the Social Accountability mandate and subsequent direction of resources towards these priority populations is recommended.

Theme 2: Representation of Priority Populations in Student Body and Faculty

Many students feel that there is room for improvement in regard to the representation of priority populations in the student body. From the Likert data, 55.0% of respondents believe that their class insufficiently, or not at all reflects the socio-demographic characteristics of priority populations, while 45.0% believe that their class is adequately or exemplarily representative (Table 1.1). There were two areas for improvement addressed by the qualitative data; lack of low socioeconomic status (SES) individuals enrolled at NOSM and limited number of students from rural/remote communities represented in their cohort student body. The Likert data showed that the majority (76%) of respondents reported that their teachers reflect the socio-demographic characteristics of their priority populations in an insufficient way, or not at all. Additionally, only 52.9% of respondents believe that their teachers have adequate or exemplary educational expertise working with priority populations and 47.1% of respondents believe that their teachers are lacking in this area (Table 1.1). Within the qualitative data, students identified the desire for more NOSM graduates or individuals that represent priority populations that have training in social accountability as faculty members.

i) Inclusion of a Stream of Acceptance for Lower Socioeconomic Status (SES) Applicants

Many students expressed their desire for the implementation of a defined Stream of Acceptance for Low Socioeconomic Status (SES) Applicants. One student stated: "*My classmates and professors do not reflect [Low SES] at all. With more burdens and challenges placed on low socioeconomic economic students, the admissions process isn't the same for them as it would be for someone who comes from the 'middle or upper class'… I truly believe that people who have lived experiences would be better suited to apply NOSM's social accountability mandate and be empathetic in future practice rather than just being sympathetic to [low SES patients]*". Other Canadian medical schools have previously allocated seats for low SES individuals in their Undergraduate Medical Education programs [31,32]. The University of Calgary's Cumming School of Medicine goes one step further, implementing a pathway program for undergraduate students to help support their goal of a medical career [33]. Many students cited these schools as examples for NOSM, describing the importance of supporting low SES students as a facet of social accountability: "*I feel that students coming from families of high SES are grossly overrepresented. I feel that NOSM should add a low SES stream/spots similar to what U of Ottawa has done at their medical school in order to account for the added barriers faced by students in this demographic*." One student suggested that NOSM implement an hands-on advocacy project in which medical students interact with and mentor young students from priority populations

and low SES backgrounds: "*[Childhood is] where the passion is usually started, and also the time where children meet the greatest barriers, especially as they become aware of their family's financial/ socioeconomic status. I think there are a lot of "kids" who would like to become doctors, but that come from a background where they feel it can't happen because of all the barriers.*"

ii) More Representation of Rural/Remote Communities in Student Body

Some students feel as if there is a good representation of Northern Ontario's larger centers (Sudbury and Thunder Bay) in the Student Body; however there is a lack of representation of the Rural/Remote communities: "*I do not see an emphasis on recruiting students from smaller Northern communities, particularly remote areas. If these students were included in recruitment [for UME], I believe the school would more accurately reflect the needs of the populations it serves*". These rural/remote communities are the areas that struggle with physician recruitment and retention, it would follow that NOSM put a concerted effort into recruiting students from these communities in order to ensure equitable access to care [34,35]. There has been some effort to do this, but students reported that the effort should be increased stating: "*the recruitment of students from rural and remote communities needs to be stronger*". A suggestion was made that "*engagement with young students (elementary, middle, and high school) earlier on may be helpful to show students from [priority] populations that medicine is an option for their careers. It would also be helpful to facilitate more "pipelines" to support these students getting into medical school*".

iii) NOSM Graduates/Priority populations represented in Faculty

It was acknowledged that there is some effort to fill Faculty positions at NOSM with individuals that represent the priority populations, but students reported that: "*It's pretty uncommon for our teachers to be NOSM [graduates] or even be from Northern Ontario. It would be nice to see this changed.*" A need for more Indigenous faculty members was also communicated. The desire for NOSM trained preceptors and faculty was expressed due to lack of social accountability in clinical or practical situations. A student recounted: "*On my clinical rotations in year 2 and 3, I felt that my preceptors were not always practicing medicine in a socially accountable manner. It would be fantastic to eventually have all preceptors at clinical sites who have been trained (and practice) in a socially accountable way.*" To credit NOSM and the educators they have employed, one student stated "*I find that certain educators, especially those who are currently completing research on social accountability, are very supportive of helping me understand the complex needs of priority populations. For example, these mentors have facilitated discussions with me about my future career plans, which has allowed me to think further about how my plans could be done in a socially accountable manner*". An increase in faculty diversity to represent the aforementioned priority populations (LGBTQ+, Immigrant, Refugee, Low SES) was also expressed: "*[NOSM should] diversify the staff in order to let us learn from voices of people who our priority population should serve. NOSM does a good job of having Indigenous and Francophone voices in our education but more populations should be addressed*".

Recommendations

i) Inclusion of Acceptance Stream for Low Socioeconomic Status Students.

ii) Increase recruitment efforts in rural/remote communities.

iii) Fill available faculty positions with NOSM graduates and/or individuals representing priority populations.

Theme 3: Curriculum Reform

Results from the Likert scale data found that NOSM delivers a learning experience that provides students with opportunities to provide health promotion services and care within the community, with students specifically highlighting NOSM's three Integrated Community Experiences (ICE), as well as the inclusion of Community Learning Sessions (CLS) in NOSM's curriculum as beneficial. ICE placements are 4-Week experiences where students from Year 1 & 2 UME are placed in communities in Northern Ontario (36). There is one ICE placement in Year 1 within an Indigenous community in order to allow for cultural learning and two ICE placements in Year 2 with a clinical focus [36]. CLS placements are weekly placements with physicians and other health professionals within Sudbury and Thunder Bay for students to receive longitudinal clinical and interprofessional learning [36].

The majority of students feel that NOSM offers a curriculum that effectively prepares them to adequately engage with priority populations in a clinical setting. It was found that most students feel that NOSM strongly encourages its students to examine the generalist and specialist needs in the communities in which they learn. UME students in Years 3 and 4 indicate more strongly that evaluating generalist and specialist needs of the community is encouraged (Table 1.2). This finding suggests that reflection on this topic may be more practical in a clinical setting. The school's social accountability mandate has inspired many students to become more involved in the community of which they plan to practice in. The practical learning experiences that students experience at NOSM include the engagement with the populations that they wish to serve. One student stated: "*I had never considered social accountability as an organizational culture until applying and being accepted into NOSM. It is an admirable ideal and should always be strived for.*" When asked if students plan on practicing in an area that serves their school's social accountability mandate 57.1% of respondents indicated that they plan to practice part-time/locum or full-time in an area that serves the social accountability mandate, while 33.3% of students were unsure about where they would practice (Table 1.1). The bivariate analysis revealed that students in Years 3 and 4 all responded positively to this question (Table 1.2). This could be attributed to the uncertainty involved in the early years of medical education.

The qualitative data found some areas for improvement within the curriculum that should be considered. Many students identified repetition in the social accountability curriculum as well as outdated literature that perpetuates generalizations and stereotypes among the priority populations. The priority populations that were previously identified as missing from the curriculum need more attention and directed resources. Finally, there was some difficulty expressed among students with implementing social accountability clinically from the theoretical framework/principles that is taught in years 1 and 2.

i) Refining the current curriculum to avoid repetition and stereotypes

Much of the curriculum at NOSM is taught through small group learning. Small group learning is divided into Case Based Learning (CBL) and Topic Oriented Sessions (TOS). CBL focuses on Northern and Rural Health, Personal and Professional Aspects of Medical Practice, and Social and Population Health [36]. TOS covers Foundations of Medicine and Clinical Medicine [36]. There was an overarching sentiment in the survey responses that NOSM is doing an adequate job addressing education surrounding Northern Ontario's Indigenous communities. However, many students stated that there were some areas for improvement. Students reported that Indigenous teaching is sometimes "*presented in a way that enforces stereotypes and generalizations*". A review of resources used for the CBL sessions would ensure only sources that are recent, relevant and free of stereotypes are used. Explicit education about racism and racism in healthcare would be a beneficial addition to the curriculum, both in the Indigenous context and for other minority populations: "*Our CBLs tend to "tip-toe" around issues of race;we often have Indigenous patients*

and discuss issues surrounding access to healthcare, food insecurity, etc., but there is a lack of conversation around racism by healthcare professionals and how to address it in the real world". Additionally, it was expressed that the curriculum is rather repetitive in regard to the Indigenous content: "*I actually found some of the material focused on Indigenous populations repetitive and felt that our time could have been better spent learning about other populations.*" A solution was suggested that after Year 1, CBL sessions and Essay Topics could focus on other priority populations to allow for a more holistic socially accountable education: "*I would branch out from [Indigenous and Francophone] focus after first year. There is room to explore other prominent communities in Northern Ontario with specific needs in the curriculum instead of repeating*".

ii) Further inclusion of other priority populations in the required curriculum

To expand on the previous point, it was suggested that NOSM "*needs to reassess how [social accountability] is being taught, limit excessive repetition, and replace the repetition with new learning points that address a broader population*". It was noted that NOSM has made a concerted effort in recent years to bridge these gaps in the curriculum: "*A very good step in this direction was the lecture we received through Learner Affairs on [LGBTQ+] health however, we need more exposure in our curriculum*". This lecture about LGBTQ+ health was cited multiple times as an excellent step in the right direction, but more efforts could be made to include these topics in the Foundations of Medicine Curriculum, CBL, and Essay Topics: "*We are trained in LGBTQ+ healthcare … but it isn't made enough of a topic for [Northern and Rural Health] essays or CBLs, and [Transgender] care should be taught more explicitly in our biomedical areas of care (i.e. endocrinology)*". The need for further inclusion of priority populations in the defined Social and Population Health curriculum, as well as the Foundations of Medicine and Clinical Medicine curriculums was a sentiment held by many students. A specific example of this was the lack of Dermatology on non-White skin in the curriculum: "*NOSM's dermatology curriculum does not reflect our social accountability mandate. We learn about dermatoses but do not address differences of conditions in non-White populations. There is also not a single image in the curriculum that is of a person of colour.*" This is an overarching problem in medicine, with analysis of general medicine textbooks finding only 4.5% of the images to depict dark skin [37]. This kind of gap in the curriculum has implications of further perpetuating health disparities among minority populations [37]. Students also stated that further inclusion of Francophone health in Structured Clinical Skills (SCS) would help better prepare students for clinical practice.

iii) Bridging the gap between theoretical social accountability and clinical social accountability

Finally, there was an identified lack of connection for many students between the social accountability curriculum and the application of social accountability in practice: "*I find that on paper, and in the classroom, NOSM does an exemplary job at fulfilling its social accountability mandate. But in clinical settings, I don't feel that social accountability is at the forefront, so it can sometimes be difficult as a student to see how social accountability can be put into action*". This is partially attributed to the previously mentioned limitations of non-NOSM graduates as the preceptors and clinical instructors. Many students feel that ICE placements and CLS are excellent learning experiences: "*Our ICE placements are fantastic learning opportunities because we get to work with medical doctors in a setting where we are delivering health services to Northern populations. Our CLS experience provides exposure to health promotion services in the community, but not all students receive adequate exposure to these opportunities*". This student states that a drawback of these placements is the non-uniform nature of the opportunities provided to each student. Further describing the benefits of ICE and CLS, a student wrote: "*I have learned far more, and retained far more, getting to talk to people on CLS and placement about poverty, bias in medicine, and social inequality than I ever could lecture.*"

Many students described the importance of health promotion in their education, and that there was room for increasing health promotion opportunities: "*I think that the medical school curriculum as a whole does not pay enough attention to providing preventative health services/ health promotion. Instead, we try to learn reactive health care - treating people who are already sick.*" It was described that in order to help bridge the gap between theoretical and clinical social accountability, ICE and CLS placements should include an element of health promotion and advocacy: "*[NOSM should be] facilitating opportunities for students to gain "real-life" social accountability skills, and learning how to bring all of our skills and knowledge outside of the classroom*". This was further echoed for the [cultural] ICE placement, where students feel that they benefit greatly from being in the communities, they are not providing any reciprocal benefits: "*CBM 106 [ICE] is essential, but it is also cultural tourism. If we were actually allowed to help out in communities with medical care or some sort of community project, we might learn more*".

One student suggested integrating interprofessional student-led clinics into NOSM's curriculum, highlighting that the clinics would benefit "*the development of interprofessional collaboration among learners and the abilities to learn directly from priority populations in a safe and invaluable way.*" The same student also stated: "*There is no better way to learn the reality of a population than going to them and asking the basic questions like 'What is a day in your life like? What do you want to see from health care professionals and the system?'*" Interprofessional student-led clinics have been successful elsewhere, and may improve access to primary care while also preparing students for clinical practice [38].

A suggestion was raised to include advocacy projects in the curriculum: "*It may be helpful to integrate more opportunities for gaining health promotion or advocacy skills into the curriculum earlier on in medical school. For example, as part of our pandemic curriculum, we had the Research & Advocacy Project (RAP) rounds and advocacy project. I felt that both of these were fantastic for opening my eyes to many health challenges occurring during the pandemic, and I felt much more confident in my advocacy skills after beginning this project. Further, I began to learn more about what advocacy is, and all of the different ways that advocacy can be done (e.g., infographics, app development, public health education initiatives, letters to MPs, etc.)*" The bivariate analysis revealed that when compared to previous years, more students in Year 4 feel they are given inadequate opportunities to engage with the communities and populations which they will serve (Table 1.2). This could be remedied through practical advocacy projects [39,40]. It has been described that involvement in advocacy projects early in medical education allows students to develop the advocacy skills needed to sustain their advocacy efforts in residency training and over a career [39,40]. Additionally, advocacy projects could play a key role in addressing the health disparities of 'last mile' populations [21]. Within conceptual research for 'last mile' populations, community engagement, advocacy, and participatory approaches to research were all identified as key strategies for addressing health inequity [21]. Along with introducing an advocacy project, other Canadian medical schools have created a Social Medicine Network. This is an online platform that provides a list of health advocacy related opportunities for addressing issues that impede health equity [41,42]. These opportunities include volunteering, clinical electives, research and leadership in areas involving marginalized populations [39]. This allows medical students to seek opportunities to address health disparities and practice the CanMEDS role of advocacy early in their training [39,43]. A student expressed that creating a database for students to become involved in advocacy may be a beneficial step for NOSM: "*I feel that connecting*

clinical faculty who are involved in health promotion or advocacy projects with students would be extremely helpful for this."

Recommendations

i) Evaluate the current curriculum surrounding Indigenous Populations and remove repetition to allow for fewer, more impactful lessons

ii) Include lectures and educational resources towards aforementioned priority populations (LGBTQIA+, Immigrant, Refugee, etc.) and direct Case Based Learning in Year 2 and Community Learning Sessions towards these topics.

iii) Allow for more hands-on health promotion and advocacy within the community during Community Learning Sessions and Integrated Clinical Experiences, including potential advocacy projects or interprofessional student led clinics.

Limitations

A major limitation of this study was the low response rate of 10.4%, but previous studies have stated that a similar low response rate did not limit the value of the data that was recorded [44]. Further, the limited sample size did now allow for extensive subgroup analysis. If this study were to be repeated, it should be administered during the academic year, to ensure that students are up to date with their communications. Finally, the inclusion of survey questions targeted at eliciting socio-demographic characteristics of the participants would allow for more in-depth sub-group analysis.

Conclusion

Societal inequality is dynamic and rapidly changing, with specific social, environmental and economic forces affecting inequality in a region [45]. Educational climate is a manifestation or reality of the curriculum and the learning environment as perceived by the students [6]. A medical school is an evolving organization that must be learning and changing through evaluation of its curriculum through the action research studies of its climate [6]. Climate within medical schools must be subject to continuous quality improvement and innovation in order to foster the best educational climate [6]. Though not explicitly described in the survey, this study inherently measures NOSM's educational climate as it relates to social accountability curriculum [6]. Since the inception of NOSM in 2005, there have been significant changes in the fabric of society that creates the quilt of Northern Ontario. In order to be responsive to the changing needs of the region, a commitment to continuous evaluation of priority populations and health needs is essential to maintain a climate that fosters successful and effective medical professionals.

The data suggests that overall NOSM is doing an adequate job with the implementation of Social Accountability principles within the curriculum, however, specific areas of weakness have been identified. It is recognized that there is limited space within a medical school curriculum. According to the perspectives of NOSM UME students, there is room for the refinement and adjustment of the current curriculum to make room for other priority populations and suggestions. This information would be valuable for the betterment of the strategies for i) educating about social accountability and ii) informing curriculum reform for medical schools.

The approach utilized for this survey was a rapid inexpensive form of institutional self-evaluation that could be replicated by other institutions in similar contexts. The findings of this study through conduction of an evaluation exercise, although on a small scale, helps illuminate areas of weakness in the delivery of social accountability for one institution but perhaps can serve as a catalyst or as an example for other institutions in a similar context to document through self-evaluation exercises what their successes and weaknesses are in the light of social accountability.

Going forward, it is also important to recognize intersectionality within priority populations, which describes that human lives and experiences cannot be accurately understood by prioritizing a single characteristic [46]. Socio-demographic categories are dynamic and each human experience is informed by multiple simultaneous social processes [46]. In future investigations on this topic, it would be important to further illuminate intersectionality within the priority populations, as well as investigate the socio-demographic characteristics of the healthcare professionals participating in this curricular research [46]. This would allow for more in-depth analysis of the students curricular experience and background.

Ultimately, physicians are just a small sector of the interprofessional teams responsible for the delivery of healthcare [38]. Therefore, if social accountability education can be refined on a smaller scale, it may provide evidence for the potential implementation of instruction on social accountability in the educational curriculum of health and para-health professionals. This study will hopefully contribute to the ongoing effort to work towards health equity in all sectors of health education.

Acknowledgements

This study was completed with the support of the Laurentian based student-led outreach organization Reach Access Zhibbi (RAZ), particularly the Research Team. We would like to extend thanks to all of the participants who volunteered to be a part of this study. We would also like to thank Haley O'Grady, Disal Wickramasinghe, Chelsea Mason, Dr. Brian Ross, Dr. Sarita Verma, Dr. Alex Anawati, and Dr. Erin Cameron for their support in various stages of this study.

Contributors

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Conflict of Interest

Author Emma C. Goddard is a UME student at NOSM and author Gayle Adams-Carpino is a faculty member at NOSM. Neither individual participated in the survey nor were they primarily involved in assessing the results.

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Citation: Goddard EC, Truyens C, Roy DC, et al. Remaining Socially Accountable: Student Perspectives on the Curricular Execution of Northern Ontario School of Medicine's Social Accountability Mandate. J Medic Educ Training 2021; 5:061.