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Health Professionals in the 21st Century: Results from an Inter Professional and Multi-institutional Global Health Competencies Survey (A Pilot Study)

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Authors' contributions

This work was carried out in collaboration between all authors. Authors MV, KP and PT contributed to the study conception, design and methodology. Authors MV and TR performed the statistical analysis. Author MV contributed to acquisition of data and initiated the first and final draft paper. Authors KP, RD, VW and PT commented and gave expert advice on the results, discussion and background. All authors read and approved the final manuscript.

Original Research Article

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ABSTRACT

Introduction: In the new century, worldwide health professionals face new pressures for changes towards more cost-effective and sustainable health care for all populations. Globalization creates daunting challenges as well as new opportunities for institutions and health professionals being more connected and rethink their strategies toward an inter professional practice. Although Health professionals are paying increased attention to issues of global health, there are no current assessment tools appropriate for evaluating their competency in global health. This study aimed to assess global health competencies of family medicine residents, nursing, physiotherapy and occupational

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therapy students.
Methodology: A cross-sectional study was conducted in five universities across Ontario, Canada. The online survey drew from 429 participants, including students and residents between May to October 2011. The surveys were previously evaluated for face and content validity and reliability. Descriptive statistics and chi-square tests were used to evaluate the quantitative data. The level of significance was set at 5%.
Results: Self-reported knowledge and confidence in global health issues and global health skills were low for family medicine residents, nursing, physiotherapy and occupational therapy students. The percentage of residents and students who self-reported as confident was less than 60% for all global health issues.
Conclusion: This study also highlights a need for the development of interdisciplinary education in global health. The new century requires professionals competent in global health. Institutions must offer interprofessional approaches and a curriculum that exposes them to varied learning methods and opportunities to improve their knowledge and skills in global health.

Keywords: Globalization; health equity; health professionals; global health.

1. INTRODUCTION

Interprofessional care is emerging as an important strategy to address the challenges of a rapidly changing and increasingly interconnected world [1]. The education of health professionals in nearly all countries tends not address health inequalities between sub-populations [1,2]. Health professional training programs have not been effectively addressing these because of fragmented and static curricula, inadequate teaching techniques and vertical and separate departmental professional silos which are some of the barriers to achieve health equity [1,2,3]. The new century requires for redesigning and implementing of educational reforms for health professionals, as well as a need to adapt core competencies to respond to population health needs and overcome professional silos [4].

Recent reports from the USA, the UK and Canada have shown that health professionals in these countries are not being effectively prepared in undergraduate, postgraduate or continuing education programs to address the new challenges [5-7]. An online survey of nursing faculties in the United States, Canada, Latin American and Caribbean countries highlighted the importance of identifying global health competencies for nurses and for exploring strategies to incorporate these competencies into curricula [8]. The World Confederation of Physical Therapy supports the commitment of the physiotherapists in global activities such as primary health care, infectious diseases including HIV-AIDS, community based rehabilitation, disaster management, female genital mutilation, torture, etc. [9]. A study of occupational therapy students, supervisors and on-site staff involved in an international fieldwork placement found that global health activities are an essential component in the occupational therapy curriculum [10].

It is important to highlight that education systems can improve the competence and effectiveness of health professionals through competency-based education [11]. Progresses in global health can only be realized through the development of a workforce that has been educated to promote health for all, independent from their socioeconomic position, ethnicity, geographic location, etc. [11]. Therefore, to help address this knowledge gap in global health competencies for health professionals in the 21st century, a web-based survey was

conducted with family medicine residents, physiotherapy, occupational therapy and nursing students from five universities in Ontario Canada with the objective to identify students 'competencies in global health.

2. MATERIALS AND METHODS

2.1 Study Participants

A total of 2060 students and residents from five universities within Ontario, Canada were invited to participate in the study. A total of 429 participants were included in the analysis. *Inclusion criteria were* predefined as follows: 18 years or older; 1st year resident in a family medicine residency program or 1st year student from a master's program in physiotherapy or occupational therapy or in the last year of a nursing undergraduate program in one of the participating universities in Ontario.

2.2 Instrument

The survey was developed using items from three validated questionnaires: (1) One to measure actual and perceived resident physician knowledge of underserved patient populations in the United States adapted to the Canadian population [12]; 2) items from a global health competency skills survey for medical students [13]; and 3) Canadian Medical Education Directives for Specialists (CanMEDS) competencies [14]. The survey was comprised of 30 questions subdivided into four parts: 1) Knowledge in global health and health equity (Self-assessment); 2) Global health skills (self-assessment); 3) Learning needs about global health and 4) About you – socioeconomic and demographic questions. This global health survey was previously validated and demonstrated good internal consistency and validity with a Cronbach's alpha >0.8. A detailed description of the survey's development, piloting, reliability testing and validation has been published elsewhere [15]. Each participant also was offered the opportunity to provide additional comments at the end of the survey (open-ended format).

The questions regarding knowledge self-assessment confidence could be answered by either 'not at all confident', 'somewhat confident' or 'very confident'. The questions received the following code: 0 (not at all), 0.5 (somewhat) and 1 (very). For global health self-assessment skills we used the following code for negative questions: 1 = strongly disagree; 0.75 = Disagree; 0.50 = Neutral; 0.25 = Agree; 0 = strongly agree). For positive questions (1 = strongly agree; 0.75 = Agree; 0.50 = Neutral; 0.25 = Disagree; 0 = strongly disagree). Thus, for both positive and negative questions, 1 represents the highest level of competency and 0 represents the lowest.

2.3 Data Collection

Participants were recruited through directors or coordinators of their respective programs. From May to October 2011, students and residents received an electronic e-mail invitation with a weblink to access the online survey and consent form. A reminder e-mail was sent to all invited participants at two week intervals. For the purpose of gathering information, a web based program (http://www.surveymonkey.com) was used to design an electronic questionnaire and collect data.

2.4 Ethical Considerations

Ethical approval was obtained from all universities involved: University of Ottawa, McMaster University and Queen's University, University of Toronto, Algonquin College and University of Western Ontario.

2.5 Analysis

The results were analyzed using SPSS 17.0 (Statistical Package for the Social Sciences SPSS, University of Ottawa, Canada). Descriptive statistics were used to calculate frequencies and means. Chi-square test was used to make comparisons among responses of family medicine residents, nursing, occupational therapists and physiotherapy students

3. RESULTS

The survey was completed by 429 of the 2060 students and residents invited (response rate: 20.83%) from four programs within five universities in Ontario, Canada. Of the 429 respondents, 38.7% were family medicine residents, 22.6% were nursing students, 15.9% were physiotherapy students and 22.8% were from the occupational therapy program. A summary of responses to the survey is shown in Table 1.

Table 1. Socio-demographic characteristics of the participants (N=429)*

Variables program	N	%
Family Medicine Residency	166	38.7
Nursing	97	22.6
Physiotherapy	68	15.9
Occupational Therapy	98	22.8
Sex		
Male	77	17.9
Female	352	82.1
Age (yrs)	26.47 (mean)	
Background		
White	297	69.2
Chinese	39	9.1
South Asian	35	8.2
Black	10	2.3
Latin American	4	.9
Southeast Asian	2	.5
West Asian	2	.5
Aboriginal	7	1.6
Other	33	7.7
Language able to speak		
One language	183	42.7
Two languages	171	39.9
Three languages	47	11.0
Four languages or more	28	6.4

** This is a revised table which includes two more variables.*

3.1 Self-reported Knowledge Confidence in Global Health

Overall, family medicine residents reported more confidence compared to the other students for: access to health care for low income nations (42.3%; P <.0001); relationship between environmental health and socioeconomic position (39.9%; P =0.014); relationship between house and health status (39.8%; P =0.005); relationship between food security and socioeconomic position (40.2%; P =0.001); mechanisms for why racial and ethnic disparities exist (44.2%; P =0.010); relationship between racial stereotyping and clinical decision making (40.1%; P =0.020) and the relationship between gender and access to health care (41.2%; P =0.053). Physiotherapy students were less confident for relationship between food security and socioeconomic position (41.4%; P =0.001) (Table 2).

3.2 Self-reported in Global Health Skills among Family Medicine Residents, Nursing, Physiotherapy and Occupational Therapy Students

More than half of family medicine residents find it challenging to actively listen to their patients' concerns (55.4%; *P*=0.051) compared to 23.1% of nursing 'students and 15.4% and 6.2% of the occupational therapy and physiotherapy students, respectively. Residents and students also reported low confidence in the following skills: provide care to patients with different backgrounds (Family medicine residents:52.8%; nursing: 20.8 %, physiotherapy: 10.4% and occupational therapy:16.0% (P=0.008)); identify needs of patients with different backgrounds (Family medicine residents: 44.3%; nursing: 29.6%; occupational therapy: 18.3% and physiotherapy: 7.8% (*P* =0.003)) and helping patients with different backgrounds to set up realistic goals for their health within the time available (Family medicine residents:49.4%; nursing: 21.1%; occupational therapy: 20.0% and physiotherapy: 9.5% *(P*=0.000)). Occupational therapy students found it challenging to address team disagreements related to caring for patients with different backgrounds (Occupational therapy: 31.5%; family medicine residents: 28.8%; nursing: 26.7% and physiotherapy 13.0% *(P*= 0.000)) (Table 3).

Table 2. Self-reported knowledge confidence in global health issues among family medicine residents, nursing, physiotherapy and occupational therapy students (n=429)

Self-reported knowledge confidence in global health issues	Residents and students by disciplines (%)					
	Family medicine residents	Nursing	Physiotherapy	Occupational Therapy	Total (%)	Pearson Chi-Square
Language barrier and adverse impact on health and health care						
Not at all confident	42.3	15.4	11.5	30.8	100	.611
confident	38.5	23.1	16.1	22.3	100	
Access to health care for low income nations						
Not all confident	32.7	13.6	24.1	29.6	100	.000*
Confident	42.3	28.1	10.9	18.7	100	
Relationship between income and health						
Not at all confident	14.3	14.3	42.9	28.6	100	.196
Confident	39.1	22.7	15.4	22.7	100	
Relationship between work and health						
Not at all confident	61.5	15.4	23.1	0	100	.132
Confident	38.0	22.8	15.6	23.6	100	
SEP and impact on health						
Not at all confident	29.4	11.8	35.3	23.5	100	.136
Confident	39.1	23.1	15.0	22.8	100	
Environmental Health and socioeconomic position						
Not at all confident	31.1	16.4	29.5	23.0	100	.014**
Confident	39.9	23.6	13.6	22.8	100	
Relationship between housing and health status						
Not at all confident	27.0	8.1	29.7	35.1	100	.005
Confident	39.8	24.0	14.5	21.7	100	
SEP and food security confidence						
Not at all confident	29.3	10.3	19.0	41.4	100	.001*
Confident	40.2	24.5	15.4	19.9	100	
Health outcome discrepancies among different groups in Canada						
Not at all confident	32.4	20.6	20.6	26.5	100	.231
Confident	40.7	23.2	14.4	21.7	100	

Table 2 Continue ……..

Mechanisms for why racial and ethnic disparities exist						
Not at all confident	29.0	23.2	20.6	27.1	100	.010**
Confident	44.2	22.3	13.1	20.4	100	
Racial stereotyping and clinical decision making						
Not at all confident	35.2	15.6	22.1	27.0	100	.020**
Confident	40.1	25.4	13.4	21.2	100	
Gender and access to health care						
Not at all confident	30.3	19.2	21.2	29.3	100	.053
Confident	41.2	23.6	14.2	20.9	100	.611

** P< 0.01 and * *P< 0.05*

Table 3. Self-perceived global health skills among family medicine residents, nursing, physiotherapy and occupational therapy' students (n=429)

Self-reported global health skills	Residents and students by disciplines (%)				
	Family medicine residents	Nursing	Physiotherapy	Occupational Therapy	Pearson Chi-Square
I find challenging to communicate with patients with different background					
Strongly agree	44.5	23.5	11	21.0	.229
Neutral	40.2	17.2	16.4	26.2	
Disagree	34.0	25.6	18.6	21.8	
Listening actively patients concerning is challenging					
Strongly agree	55.4	23.0	6.2	15.4	.051**
Neutral	32.1	21.5	19.6	26.8	
Disagree	36.4	22.7	17.2	23.7	
Addressing team disagreements related to care for patients with different backgrounds is challenging					
Strongly agree	28.8	26.7	13.0	31.5	.000*
Neutral	39.4	15.2	19.5	25.9	
Disagree	47.7	25.2	15.2	11.9	
It is challenging to provide care to patients with different backgrounds					
Strongly agree	52.8	20.8	10.4	16.0	.008*
Neutral	33.3	21.0	17.1	28.6	
Disagree	32.7	24.6	18.6	24.1	

Table 3 Continue ……..

It is challenging to discuss sensitive issues (eg. Alcohol, drugs, sexual issues, etc) with my patients with different backgrounds than my own					
Strongly agree	39.9	24.7	13.9	21.5	.009*
Neutral	29.7	16.2	25.3	28.8	
Disagree	43.8	25.0	11.2	20.0	
I find challenging to identify needs of my patients with different backgrounds					
Strongly agree	44.3	29.6	7.8	18.3	.003*
Neutral	43.9	14.6	15.5	26.0	
Disagree	31.9	23.6	20.9	23.6	
Helping patients with different backgrounds to set up realistic goals for their health is challenging within the time available					
Strongly agree	49.4	21.1	9.5	20.0	.000*
Neutral	40.3	20.8	15.4	23.5	
Disagree	17.0	28.0	28.0	27.0	
I know to use the expertise of other health professionals when working with my patients with different backgrounds					
Strongly agree	37.8	29.6	11.2	21.4	.184
Neutral	43.0	16.9	18.8	21.3	
Disagree	35.1	24.0	15.8	25.1	
I am effective in completing my clinical responsibilities when working with patients with different backgrounds					
Strongly agree	59.1	18.2	13.6	9.1	.005*
Neutral	43.2	11.9	14.4	30.5	
Disagree	35.3	27.3	16.6	20.8	
I know how to access resources to keep up to date with global health issues					
Strongly agree	49.2	21.0	13.8	16.0	.001*
Neutral	35.2	16.2	18.1	30.5	
Disagree	28.0	29.4	16.8	25.8	
I actively participate in global health activities					
Strongly agree	36.2	22.1	18.1	23.6	.001*
Neutral	27.5	26.4	17.6	28.5	
Disagree	58.3	20.2	7.1	14.4	

** P< 0.01 and * *P< 0.05*

5. DISCUSSION

To our knowledge, this is the first study to assess global health competencies across multiple disciplines. The results of the pilot-study survey demonstrated that all students lack global health competency but non-physicians most of all. Therefore, going forward, global health educational programs in allied health professions need to upgrade their global health skills set. An evaluation of the program content and students' knowledge and skills in global health may contribute to develop curricula with global health content for health professionals. In general, there is a lack of studies to evaluate clinical knowledge in global health and the effect of global health training on the quality of patient care [16], thus it is difficult to compare our results with other studies. Another challenge of this study is comparing self-reported knowledge and self-reported confidence in global health across disciplines because each discipline can have different set of expectations for different global health issues. More studies are needed to assess the validity of using self-perceived global health competencies. For example, studies could assess the association of self-perceived competency to patient outcomes. Although there is an increased interest in global health among students and residents, the response rate for our survey was low. The low is actually typical of this type of study [17,18]. Most of our respondents were females, which reflect persistent gender composition of the healthcare workforce. Gender composition has a huge impact health-system performance and gender stereo-types are strong between health professionals [19]. The results of this survey are consistent with the findings of other studies where there is a feminization of the health workforce. Gender imbalance in health services has a major impact on available services. Studies have shown that women work fewer hours in their professional careers than do men and are less likely to work in rural areas [20]. Although many studies refer that gender plays a significant role in the clinical decision process, there is a lack of data disaggregated by sex and ethnicity that may help to better understand the learning needs in global health and the impact of gender and ethnicity in health care services and health outcomes.

Overall, for self-reported knowledge confidence in global health issues, family medicine residents scored better compared to nursing, physiotherapy and occupational therapy students. Although they were more confident than the other students in several issues, the percentage of residents who self-reported themselves confident was less than 50% for all global health issues.

In the recent years, only a few studies have explored global health competencies for health professionals. A US survey among residents found low self-perceived and actual knowledge in global health for family physician residents [21]. Another survey among physicians across 15 programs in four countries in 2004 showed that physicians who had formal global health training have more basic parasite knowledge and recognition of Strongyloides risk [16]. A global health competencies survey among nursing faculty from United States, Canada, Latin America and Caribbean countries indicated that respondents concur that global health is important for undergraduate nursing students and that there is a lack of support to include global health competencies in the nursing curricula [8].

A recent exploratory study regarding ideal global health competencies needed for working in resource-poor countries among Canadian physiotherapists with a minimum of 6 months experience working in poor countries showed seven competencies: 1) Expert, 2) Communicator, 3) Collaborator, 4) Manager, 5) Advocate, 6) Scholarly Practitioner and 7) Professional. Furthermore, Global Health Learner, Critical Thinker and Respectful Guest were also included to incorporate other competencies that participants considered important [22]. Nursing, medical, occupational therapy and physiotherapy students who attended an inter professional student seminar promoted by a Canadian University considered global health as an important vehicle for an inter professional education. Moreover, global health was considered by participants as an excellent opportunity for professionals to understand the role of each profession and help to promote relationships and respect between different professionals [23].

Global health is a field for different professionals due to the complex approach needed to solve current health problems. One of the items of the Global Health Competencies Survey was about the challenge in addressing team disagreements related to care for patients with different backgrounds. Thirty one percent of occupational therapist students referred that they agree with this statement, followed by family physician residents, nursing and physiotherapist students. This result demonstrates the need for an inter professional training to address the "professional silos" present in each discipline.

A crisis is emerging and health professionals are struggling to keep up the new health care challenges. Their education is failing to address patient and population priorities. The emergence of chronic diseases, where the treatment pathway encompasses transitions from

home to hospital to rehabilitation centers and back to home again, requires inter professional collaboration – social workers, nurses, physiotherapists, occupational therapists, physicians, psychologists, etc. [24] Patient management requires effective teamwork [25,26] and it is becoming a complex task because of the fragmentation, professional silos, insufficient adaptation to local contexts and inflexibility of the curricula. The need for a new professionalism focused on patient-centered and team-based has been extensively discussed [27].

The new century requires an adaptation of professional core competencies centered in specific contexts integrated with global health knowledge. According to the Commission on Education of Health Professionals for the 21st Century, in many countries, the competencies of professionals are not aligned with the diversity of the characteristics of patients and populations such as social, linguistic, origin (rural or urban) and ethnic background [1]. The changes necessary for an effective health professional practice demands a long pathway, which starts at the admission process. The admission processes in most health programs are centered only in a competitive merit-base, focusing on recruiting the best and brightest students for professional and academic leadership. The consequences are programs full of students who are disproportionately admitted from the higher socioeconomic and social classes as well as dominant ethnic groups [2]. Schools need to set criteria for admission that consider the national profile of social, linguistic and ethnic diversity. Furthermore, key values and personal characteristics such as communication and collaborative skills need to be assessed in the admission process [26].

An important focus is how best to improve the curriculum. There is a movement to align the curriculum as a tool of learning to achieve competencies and educational goals. Students should have a variety of choices in learning activities and educational methods to help them achieve competencies and also opportunities for inter professional education [26]. According to report of the Commission on Education of Health Professionals for the 21st Century, the curriculum is rarely re-examined and schools change the objectives to meet what the professors want to teach [1]. The report also recommends that core curriculum for medicine, nursing, physiotherapy, occupational therapy and other allied health fields must adopt trans disciplinary and multi school approaches where global health skills and concepts can be more integrated and engaged with local communities and policy makers [1]. The global health knowledge and skills highlighted in this survey are consistent with the global health competencies framework developed by a working group of global health educators from Ontario's six medical schools regarding global health curricula, competencies, and pedagogical methodologies [28]. In the new century, health professionals are encountering more socially diverse patients which demand a complex understanding of their needs. The increasing cross-border and cross-continental movement of people means diseases are spread more easily. Patient management requires unprecedented interdisciplinary intervention, integrated care and communication across disciplines. Evaluation of the professionals/students competencies in global health are important to prepare professionals to be more responsive to actual population health needs and properly address global health priorities and strengthen health systems. Although our survey evaluated the global health competencies for each profession separately, it is important to point out that the complex problems that involve global health issues demand an inter professional practice where each discipline has important contribution to improve the health of the population, tailored treatments and prevention strategies and subsequently enhance health systems performance.

A major limitation of this study is the low response rate. Some possible reasons for the low response rate were: students had exams or some events in their universities at the same time that the survey was available online and the language of the survey. The replication of the study at different provinces in Canada would enable better generalizability of the findings of the study. Another potential limitation is that the survey was available only in English, which possibly excluded the participation of many Francophone participants. To overcome this limitation we emphasize the need for further studies considering a larger number of participants. The replication of the study at different provinces in Canada would enable better generalizability of the findings of the study. Furthermore, this study has a cross-sectional design which restricts assumptions concerning causality regarding the association of the global health knowledge/skills and students participants from different disciplines. Hence, relationships among variables must be interpreted with caution.

This pilot study emphasizes the need to incorporate global health issues into the curricula, especially in allied sciences. The global health competencies survey could be used to evaluate the current health professionals' curricula. Health programs can survey their students and use the results to develop global health content and activities such as seminars, international internship, electives and include global health content in the ongoing courses. This assessment is important to prepare future health professionals to approach national and global health challenges.

5. CONCLUSION

The results demonstrated that health students in Ontario have weaknesses in several global health issues. Each topic is related with important competencies to work with patients from socially diverse backgrounds in the globalized world. The current health curricula do not offer opportunities to mutual learning and interdisciplinary approaches. The new century requires a renaissance to new professionals competent in global health, patient-centered and able to work with inter professional collaboration and inter sectoral approaches. Ultimately, curricula reforms must begin with a change in the mindset that acknowledges the challenges in the new century and seeks to overcome them.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

All authors hereby declare that "Principles of laboratory animal care" (NIH publication No. 85-23, revised 1985) were followed, as well as specific national laws where applicable. All experiments have been examined and approved by the appropriate ethics committee.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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